Stephen James Marshall

Shaping the University of the Future

Using Technology to Catalyse Change in University Learning and Teaching

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Stephen James Marshall
Victoria University of Wellington
Wellington
New Zealand

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The answer to large-scale reform is not to try to emulate the characteristics of the minority who are getting somewhere under present conditions … Rather, we must change existing conditions so that it is normal and possible for a majority of people to move forward. (Fullan 2001, p. 268)

The illiterate of the 21st Century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn. (Alvin Toffler 1970, p. 414)

Preface

This book had its genesis more than 15 years ago with the realisation that, despite significant engagement with the potential offered by technology, the university seemed strangely immune to the potential for change. The e-learning Maturity Model was created in an initially naïve belief that progress would follow from the identification and replication of best practice in the use of technology by the top international universities. The recognition that the problem facing the university is far more complex has seen my research expand beyond the technological, engaging with colleagues in many countries in the exploration of the shared problem we all face in stimulating and supporting change.

The goal of this book is to assist university leaders responding to technological change. Building resilient and agile universities is based on a clear understanding of the complex nature of the existing institution, its students and the organisational context. Universities need to learn how to sustain their relevance in a rapidly changing social, political, economic and technological environment. Effective organizations use technology to shape their operations in ways that build their capability and lead the wider understanding of the role higher education plays in a vibrant and healthy society.

Words like ‘transformation’ and ‘innovation’ are often invoked in a frenzied ritual of organisational behaviour that is driven by technocratic visions amid a sense of unrelenting service to commercial and political prerogatives. Technology, in particular, is positioned as an inevitable trigger of deterministic change, redefining entire industries in ways that make a variety of modern services cheap and ubiquitous. Higher education is not immune to this sense of technocratic predestination as illustrated most recently through the international response to the concept of the massive open online course (MOOC). This book rejects these simplistic linear models of technological transformation and innovation, instead positioning technology as a tool for exploring and understanding the university as a modern institution of society.

The idea of continuous change and organisational agility sustained by an ongoing process of sense-making—a deeper understanding of the nature of the particular organisation’s context and challenges—is a key feature of this book.

Technology provides a lens for re-evaluating and exploring the organisation's activities as well as offering new ideas or possibilities. The opportunities provided by technology enable the organisation to transform itself through a deep understanding of its identity and core purposes, rather than being transformed by technology. Change activities can then provide a means by which continuous engagement in understanding the roles and purposes of the university positions it for the future in a form defined for itself, rather than being determined and controlled by external interests.

Writing a book of this scale is a journey of discovery. Sense-making is both a tool described in this book and a description of its totality. The process of researching, discussing, writing and editing its chapters has been a sense-making journey where the cues have flowed from the conversations with colleagues, both in person and through the longer timescale of the published literature. The bibliography of this book spans millennia, reflecting the ongoing relationship between education and civilisation. Despite the common assumption that engagement with technology inevitably involves new ideas and 'innovation', many of the challenges and ideas engaged in this book have been explored for decades. This implies a mixed set of possible messages. Possibly the university is eternal and the issues discussed merely distractions, but more likely, the exponential and unpredictable pace of technologically catalysed change means that long-standing problems are culminating in a wicked problem requiring a shift in the mindset of university leaders and faculty.

Wellington, New Zealand Stephen James Marshall

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Contents

Chapter 1
Introduction

Abstract Transformational thinking and the technocratic drive for innovation are flawed models that distract universities from the real challenges they face. Driven by marketing and the pursuit of prestige, they create an exclusionary and disempowering narrative that weakens the core values and institutional purposes of the university. Sense-making provides an alternative conception of change capable of coping with the wicked problems facing universities and allows technology to be recognised as a catalyst rather than the cause of solution of change. The key features of sense-making, wicked problem analysis and scenario planning are reviewed as a toolkit that frames the analysis presented through this book.

Towards the end of the Second World War, US President Franklin Roosevelt looked forward to the postwar years and identified a number of rights that would provide security and prosperity for all in society. Among these was the right to a good education (Roosevelt, 1944). He is not alone in recognising the significance of education. The connection between education, technology and the economy is often identified as key to the success of a country:

> Human capital, embodied in one's people, is the most fundamental part of the wealth of nations. Other inputs, such as natural resources and financial capital, can be acquired at world prices in global markets, but the efficiency of one's labor force rarely can be. Not only does more education make the labor force more efficient, it makes people better able to embrace all kinds of change including the introduction of new technologies. And for some extraordinary individuals, more education enables them to create new technologies (Goldin & Katz, 2008, p. 41).

Education has much more to offer than wealth. The Council of Europe (1997) describes the importance of education in the *Lisbon Convention on the Recognition of Qualifications concerning Higher Education in the European Region*. Education, they state:

> is a human right … which is instrumental in the pursuit and advancement of knowledge, [it] constitutes an exceptionally rich cultural and scientific asset for both individuals and society … should play a vital role in promoting peace, mutual understanding and tolerance, and in creating mutual confidence among peoples and nations [and] the great diversity of education systems in the European region reflects its cultural, social, political, philosophical,

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> religious and economic diversity, an exceptional asset which should be fully respected (Council of Europe, 1997, p. 1).

We live in a complex world with challenging social, political and environmental problems. The processes of globalisation constantly remind us of the different experiences of people across the world, the many and varied ways that define human lives, the inequalities that prevent many from realising their potential. The current rise of nationalist and protectionist political movements in many developed countries suggests rising inequality is generating levels of conflict and social disorder that have not been widely experienced in decades.

For the majority of the human race, educational needs remain rudimentary as basic access to instruction in reading and writing is challenging for many, particularly women. Although it may be naïve to think any one thing can improve the lives of billions of people, education is nonetheless identified as having a dramatic impact on the quality of life for individuals and society beyond the direct benefits to students (Moretti, 2004). Education is typically associated with longer, healthier lives and with greater earnings from better jobs. Educated people commit fewer crimes and participate actively in civic life generating a society with less prejudice and greater civil liberties (Hout, 2012). In countries with more established educational systems, access to higher education is seen as essential to economic prosperity and growth, both individually and collectively.

Despite a general acceptance of the value of education, there are indications that the benefits reflect historical factors and contexts that may not continue to apply. Wolf (2004) suggests that economic benefits are even more complicated and potentially will not be easily realised in future. The costs of education, individually and collectively, present significant challenges. Countries and individuals increasingly struggle to afford the level and quantity of education they desire and which is beneficial both personally and to their society. The dominant campus-based model of higher education offered by universities and colleges is proving too expensive and is failing to deliver the outcomes needed. Similarly, personal benefits in happiness and quality of life associated with education may not be as evident in future (Bok, 2010).

Responding to these challenges requires leadership, responsiveness to change and the ability to look beyond hype and rhetoric to see how the university can sustain and grow in ways that continue to deliver significant benefits to society.

1.1 Leading Change in Educational Organisations

Leading complex organisations such as universities is a challenging proposition in a world that is rapidly evolving in response to demographic, political, economic, social and technological drivers. Purposefully changing an organisation in such an environment is risky, particularly given the scarcity of resources to help mitigate and reduce some of the risks. Each university sits in a unique context: a

combination of history, geography and community. This context frames the way the organisation perceives itself and is perceived by others. It is the primary factor influencing the ability of the organisation to change. This book aims to assist institutions engaging in a purposeful, transformative redefinition of their identities and systems where that transformation is built upon a clear understanding of the complex nature of the existing institution, students and organisational context.

Technology and its ability to change our expectations and perceptions of the university is a theme that runs throughout this book. Despite this focus, much of the book reflects the complex context of higher education rather than the impact of technological development. A key message of this book is that technology can stimulate change and suggest opportunities for new educational activities, but the realisation of the potential is entirely a consequence of effective institutional leadership. Vice Chancellors and other senior leaders need to recognise the importance of continually engaging with the internal and external understanding of their organisation's role and focus and using a range of tools to share power widely within the university. Technology provides options, but understanding their relevance and realising its full potential depend on leaders having a deep understanding of technology themselves and being prepared to move beyond rigid models of hierarchy and authority.

The process of leading organisational change in higher education is challenging. Modern universities operate within an intensely political space. The price of the success of a university in contributing to the social and economic well-being of modern society is the need to respond to a range of competing stakeholders. Much of the literature on higher education frames change in negative, conflicting and destructive terms. Academics, essential to the existence of the university, are stereotyped as opposed to any change, unreasonably resisting any new idea or technology. They are automatically treated as impediments to the success of a modern university, needing to be controlled and manipulated to achieve the desired outcomes. Leadership from the top, or coercion from external sources, reinforces this negativity and destroys the potential for collective collegial engagement.

This book explores a range of tools and models that reframe this narrative more positively. Technology is framed as mechanism that enables positive organisational conversations that facilitate distributed leadership, build consensus and support the engagement with change by internal and external stakeholders. Scenarios provide a means by which possible future models and challenges can be explored and understood. This approach enables the creation of strategies that empower the collective action of the organisation rather than merely communicating an abstract and unachievable marketing gloss. Benchmarking and other quality tools can be used to demonstrate the quality of organisational performance in ways that are accessible to a non-specialist audience, help communicate the rationale for necessary improvements, enable collaboration within and without the university and show the impact of strategic and operational changes on the capability of the organisation.

The shifting organisational structures of universities means that distributed leadership models are increasingly relevant, supporting a shift from the now almost

outdated enterprise or entrepreneurial university (Clark, 1998; Fayolle & Redford, 2014; Marginson & Considine, 2000) to a networked (Standaert, 2012) or ecological university (Barnett, 2011) reflecting a diversity of voices (Barnett, 2013). These models depend on leaders operating throughout the organisation. Leadership in this changing environment needs to be less heroic (Bennett & Hempsall, 2010) and more engaged, distributed and agile working through teams rather than hierarchies (Bennis, 1999; Jones, Lefoe, Harvey, & Ryland, 2012; Marshall & Flutey, 2017).

Leadership in this conception can be demonstrated by the most junior staff through their energy and engagement in the daily operational challenges and their being empowered to suggest and provoke change based on their experience. Middle managers need to do more than balance budgets and enforce policy. They need to be responsive to the idea of change, regardless of the source. They must synthesise the broader strategic messages with detailed operational realities into a coherent narrative that enables their team and stimulates ongoing change from other managers. Senior leaders need to give the organisation a collective sense of direction and energy that builds and sustains confidence and success.

This book explores the idea of continuous change and organisational agility sustained by an ongoing process of sense-making—a deeper understanding of the nature of a particular organisation's context and challenges. Technology can then be seen as providing a lens for re-evaluating and exploring the organisations activities as well as offering new ideas or possibilities. Technology provides opportunities that enable the organisation to mould itself through a process of catalysis of changes, responding positively to context rather than being transformed in a generic and decontextualised manner by the technology. Change activities provide a means for continuous engagement with the roles and purposes of the institution and position it for the future in a form defined by its core values, rather than being determined and controlled by partisan external interests and simplistic use of buzzwords such as 'innovation', 'excellence' and 'transformation'.

1.2 The Fallacy of Innovation and Transformational Thinking in the Pursuit of Excellence

> Any sufficiently advanced technology is indistinguishable from magic (Clarke, 1973, p. 21).

Technologically enabled change has revolutionised the range of jobs available to us, our ability to travel, our entertainment options, the comfort of our home lives. Noted computer scientist Alan Kay, father of the window-based user interface, commenting on the way that people tend to treat new things very differently to pre-existing ones observed 'technology is only for people who are born before it was invented' (Tapscott, 1998, p. 38). Most active leaders in higher education have seen an explosion in new digital computing and communications technologies

during their careers and consequently are forced to continually re-evaluate the ordinary tools and routines of their lives.

Information and communication technologies are perhaps the area that has seen the most dramatic change in the lives of many people. The creation of the Internet is remarkable both in terms of its pervasive impact on global life but also in the almost complete absence of anything in the science fiction literature of the early to mid-twentieth century predicting such an important development. We may not have flying cars (yet), but we do have access to a vast array of information and communication tools, from virtually anywhere and at a relatively low cost.

Most adults use telephones without considering the complex technological infrastructure that enables telecommunications. Few regard it as in any way unnatural or significant that our voices are being translated through a series of electrical and optical signals over many thousands of kilometres. Many of us have seen telephony evolve to support international direct dialling, wireless mobility, the transmission of images and video. Few stop to wonder at the technological marvel that enables us to contact people in other countries immediately and at an ever-decreasing cost. The cellular phone is perhaps the first technology that can be said to have a universal impact on the human experience. Poor African fisherman uses their phones as fluently and confidently as prosperous merchant bankers as both work to improve their financial outcomes.

A natural response to such technological wealth is imagining that it must drive fundamental change in the experience of anything it touches. New technologies are typically described as solutions that will revolutionise and transform industries. Technology is positioned as an inevitable trigger of change, providing cheaper options for existing activities, making possible new activities and redefining entire industries in ways that make a variety of modern services cheap and ubiquitous. This sense of continuous change and re-invention is captured by twentieth century economist Joseph Schumpeter (1976) with his concept of 'creative destruction' which he describes as a process that 'incessantly revolutionises the economic structure from within, incessantly destroying the old one, incessantly creating a new one' (p. 83). A key feature of his conception is that it describes the evolution of capitalist systems over time.

Ever since the early 70s, there has been the expectation of a fundamental shift to the 'post-industrial society' (Bell, 1976) defined by the rise of information technologies. US politician Newt Gingrich (2013) provides a recent example of the unrealistic framing of the extent and type of change over the last four decades:

> … those changes that seem like science fiction, however, are just the earliest stages of the world we could one day know. In many areas we have only vague but exciting indications of what is yet to come. We know as little about the future as someone living in the world of candles and horses knew about the age of television and passenger planes.
>
> The change that is coming won't be simply more of the change we have seen in the last generation. It will be something else entirely – a change of kind, not just a change of degree.
>
> *We are talking about a fundamental transformation of what is possible*, [italics added] what we can accomplish and what it will cost.

> The scale of this transformation makes it a watershed. For it to happen, we must reorganise how we think and act, how we structure organizations, how we organize activities, the very questions we ask, and the metrics we establish (p. 16).

This belief in the 'technological sublime' (Kasson, 1999) has long been a feature of society as it experiences the impact of industrial technology:

> … writers [in the late nineteenth century] expressed a seemingly unbounded enthusiasm for the machine age, so much so that one gets the impression that heavier and heavier doses of technology are being prescribed for the solution of societal ills. Inspired by their contacts with the great inventions of the age, writers and artists often purposefully endowed steamboats, railway locomotives, machinery and other inanimate objects with life-like qualities in order to cultivate emotions of wonderment, awe, magic, and at times, even dread in their audiences (Smith, 1995, p. 8).

Technologically enabled industrialisation over the last three centuries has seen dramatic improvements in the quality of life for many, and it is not unreasonable to imagine ways in which technology might support change in future experience of education. It is not hard to find predications of technological transformation in the educational literature over the past century (Cuban, 1986; Lewis, Marginson, & Snyder, 2005; Watters, 2014a), but invariably these predictions have not been matched with dramatic change. Many universities have invested substantially in technology, but the experience of being a student remains very familiar to, even defined by the expectations of, those educated prior to the invention of the personal computer and the World Wide Web.

Education, particularly when mischaracterised as the transmission of content, has repeatedly been one innovative technology away from radical transformation. The first Internet bubble saw analysts from Merrill Lynch touting for investment with predictions of annual growth rates exceeding 50% (Moe & Blodget, 2000). Others analysts mentioned the existence of a mystical 'internet time' redefining reality:

> Education is about to change. Fundamentally. Why? Because almost everything we know about education is up for grabs: the way it is funded, designed, managed, and even delivered. Around the world, wholesale efforts at education reform are already underway; and… these changes are taking place in 'Internet time.' (Bachman, 2000, p. 2)

More recently, a second burst of growth in technology investment and the repackaging of old ideas in new 'MOOC' clothing (see Sect. 11.2) has seen a repeat of this belief in technological magic:

> [MOOCs] are the most important education technology in 200 years (Regalado, 2012, n.p.)

> I think we found the magic formula (Sebastian Thun, quoted by Gingrich, 2013, p. 46)

> Digital technologies will transform the way education is delivered, supported and accessed, and the way value is created in higher education and related industries (Bokor, 2012, p. 9).

As with the first Internet bubble (see Chap. 9), vendors such as Pearson are aware of the business opportunities and describe the impact of technology as a relentless series of innovations requiring a radical transformation of the university and higher education (Barber, Donnelly, & Rivzi, 2013).

This repeated framing of technology in unrealistic and uninformed ways is not without its critics. The compulsive enthusiasm for technology is described as technopositivism (Njenga & Fourie, 2010) and can be seen as an example of a pro-innovation bias or the presumption that innovation is automatically a positive benefit for organisations (Kimberly, 1981; Abrahamson, 1991). Morozov (2013) describes the idea that technology can solve all problems as 'technological solutionism', essentially reframing Rousseau's arguments for simplicity as a necessary human condition (Rousseau, 1750/1964). He suggests that an overdependence on technology as a response to all problems compromises human values and capability.

Pegrum (2009) identifies three logical fallacies identifiable in transformational thinking. *Technological determinism* is the belief that technologies act on society independently on the basis of their intrinsic features. *Social determinism* is the opposite fallacy, assuming that social mechanisms completely determine the impact of technology. Lessig (2006) shows that in reality, technologies embody in their 'code' or formulation, a range of social norms, constraints and expectations, which act to influence the evolution of society.

At one extreme, technological solutionism is conflated with neoliberal market ideologies in an argument for the operation of technologically mediated free markets but without any sense of social context or role for government in building collective outcomes (Vedder, 2004; Wissema, 2009; Wu, 2010). Many of these ideas come from the USA which is unsurprising given the historical framing of their system of higher education predominantly as a market-driven and decentralised collection of institutions (Rosenberg, 2003). Starr (2011) points out that much of the modern social and technological fabric reflects substantial investment and guidance from government acting to create an infrastructure and platform capable of supporting many uses, not just those with a direct commercial benefit.

Thirdly, and in line with Allan Kay's observation noted above, Pegrum (2009) identifies the fallacy of *exceptionalism*, which assumes technologies are inherently distinctive and always dominated by their identity as such. This last fallacy is argued persuasively against by Norman (1998), who suggests the measure of success in the evolution of a technology is the extent that its technological nature becomes 'invisible', leaving only the functionality and value it provides to our lives.

Transformational thinking is one facet of a range of behaviours that Alvesson (2013) describes as 'grandiosity' reflecting the organisational equivalent of celebrity culture through the relentless pursuit of positional advantages measured by poorly defined ideas of 'innovation' and 'excellence'. The fallacy of this pursuit is that by lacking substance it acts to prevent substantive improvement:

> The point is not that no one knows what excellence is but that everyone has his or her own idea of what it is. And once excellence has been generally accepted as an organising principle, there is no need to argue about differing definitions. Everyone is excellent, in their own way, and everyone has more of a stake in being left alone to be excellent than in intervening in the administrative process (Readings, 1996, pp. 32–33).

Selwyn (2012, p. 214) laments that the educational technology community 'has long been an area full of "hucksters," evangelists, consultants and visionaries who are keen to tout their personal interpretations of what technology can 'do' for education'. More recently, he has simply described these transformational narratives as 'bullshit' (Selwyn, 2015).

The anger of Selwyn's language reflects the frustration that transformational thinking has created flawed ideas like the 'Digital Native' (see Chap. 10), implying the ability to use technology effectively is limited to young people and university education must thus be completely reinvented to remain relevant to the new technological natives. This positioning of technology as a force that inherently disrupts, innovates, transforms or otherwise drives excellence in learning and teaching is ultimately exclusionary. It creates a perception that incremental and reflective changes made by individuals have no value or significance and perpetuates the growth of the celebrity academic over the more nuanced conception of teachers as scholars (Boyer, 1990).

The exclusionary narrative created by transformational thinking alienates many within academia. It prevents a positive engagement with the genuine enhancements technology provides higher education. Prioritising transformation fails to recognise the way organisational and individual tenacity and resilience are built through a process of incremental change, with both failure and success contributing to a valued outcome. Acting within a wider culture of marketing-driven 'grandiosity thinking' and the pursuit of prestige without substance (Alvesson, 2013), transformation thinking creates a Manichean model that simplistically promotes technological change as innovation or nothing expressed in the argument that universities must transform or fail (Carey, 2015; Christensen, Horn, & Johnson, 2008; Christensen & Eyring, 2011; Ernst & Young, 2012; Zemsky, 2009).

This book explores this tangled space, describing the ways technology contributes to evolving effective systems of higher education. The key thesis is technology, rather than radically transforming the experience of learning, helps us make sense of what learning can be in a modern world. An important consequence of this approach is it avoids value-laden explorations of whether particular models or educational experiences are intrinsically better or worse than others. In this book, words like 'traditional' or 'legacy' are describing a place in time and are not a commentary on the relevance, utility or importance of a particular model. Resist the tendency to regard new technological approaches or inventions as inherently 'modern' and 'innovative' simply as a result of their novelty. The chapters that follow do not advocate technological utopianism but explore the tools available to help institutions engage with change informed and catalysed by technology. The ultimate goal is sustaining the university as a valued institution of society (Waks, 2007; Acemoglu and Robinson, 2012).

1.3 Sense-Making: Using Technology as a Trigger for Finding Organisational Meaning

Sense-making is the process by which complex situations are explored, tested, understood and meaning developed. Without abstract and simplified models of reality, we are quickly overwhelmed by the details. McLaughlin et al. (1999, p. 2) note '… the value of technology has to be built by users over time as they make sense of it and embed it in their local settings'. The rapid growth in volume, dynamism and complexity of Internet-based tools and information has resulted in what some call 'information overload'. This has triggered a variety of sense-making responses. Some reject the overload and a call for a simpler world (Toffler, 1965, 1970; Carr, 2010; Silver, 2012; Rushkoff, 2013). Others respond by using technology to create cognitive tools that can manage the complexity and assist our brains in making sense of it. From this perspective, Google's various search and information management tools are sense-making affordances almost essential to modern life.

Organisations are overwhelmed by the complexity of modern information and communication technologies and need to recognise the role tools and systems play in managing that complexity. Sense-making activities at every level of the organisation can help identify ways in which technology can contribute meaningfully to the achievement of organisational goals and help sustain a positive organisational culture.

The organisational understanding of sense-making is dominated by the work of Karl Weick. Sense-making is characterised by Weick (1995, p. 17) as having seven properties:

- Sense-making is social in nature;
- Sense-making is grounded in identity construction;
- Sense-making is retrospective;
- Sense-making is enactive of sensible environments;
- Sense-making is ongoing;
- Sense-making is focused on and by extracted cues; and
- Sense-making is driven by plausibility rather than accuracy.

1.3.1 Sense-Making Is Social in Nature

The social nature of human existence means individual sense-making responds to the wider social context, the meanings constructed by others and the intersection of meanings influencing individual and collective experience. Collective and social engagement in sense-making underpins much of Weick's model of sense-making in organisations. Sense-making is undertaken by individuals, but it also happens within an organisational context. Shared engagement by people in an organisation generates collective understanding and meaning for the organisation as a whole.

An important part of understanding the role of sense-making in the context of technological innovation is the realisation that a technology typically does not have a simple, single use. Technologies present themselves differently to different people, or even differently to the same person in different contexts. Any non-trivial technological system will inevitably stimulate a variety of perceptions when introduced to an organisation. Using sense-making helps frame the analysis of technology more widely than purely technical affordances and helps avoid an overly rational and deterministic view of organisational behaviours and experience.

Many universities first see a new technology when engaged with by individual faculty or students. Academic culture encourages the idea that early adopters of technology develop ideas to the point where they are recognised and used more widely (Rogers, 2003; Moore, 2006). While there may be some truth to this idea, sense-making by subsequent users following these early adopters can dramatically change the nature of the technologically enabled change experienced by an organisation (Griffith, 1999). The complex interactions of different technologies, combined with the diverse contexts and interests of the university community, inevitably mean that something seen and understood in one way by an early adopter proliferates into a myriad of different meanings when used by others.

In the organisational context, sense-making is influenced by the intersection of technology with its environment. This includes the uses for which it is promoted, the roles different participants have or seek in the organisation and the wider economic and political landscape the organisation is situated within. Organisational change processes, strategy activities and the measures used to quantify the activities, systems and organisation as a whole all act upon the experience of sense-making.

Organisational sense-making can be collegial, a means of building collective will and engagement, or it can be destructive, with disparate interpretations conflicting and preventing progress. Weick is clear that sense-making is sustained and enabled by communication, by individuals sharing their understanding and supporting a mutual development of meaning (Weick, 1995, 2009). Interaction exposes the participants to the different cognitive frames (Kaplan, 2008) being used by others to interpret common experiences or knowledge. It helps test the validity of their own frame, stimulating creativity and an awareness of the potential for complacency or stasis.

Leadership is essential to the process of organisational sense-making. Weick (2009) describes a concept he calls ‘heedful interrelating’ (p. 57), leaders helping participants re-engage in sense-making with a collective perspective balancing their own position while seeing others do likewise.

1.3.2 Sense-Making Is Grounded in Identity Construction

Sense-making recognises people have a set of identities they use to frame their understanding of self and their relationships with groups of other people.

Sense-making as an activity is inevitably influenced by these constructed identities and the actions taken to enhance them both individually and collectively. People use different models of meaning to position themselves socially and politically within their organisation, building and maintaining actual or perceived status (Cornelissen, 2012).

Academia is strongly driven by the construction of individual academic identities and reputations within groups of academic peers. Those reputations are associated with that of their institution. Any attempt to make sense of academic organisations, including the impact of technological innovation, must respond to that individual imperative as well as to any organisational defensive routines (Argyris, 1990) enacted as policies or to actions preventing threats to the prestige of particular groups within the organisation.

Similarly, the perception of qualifications as positional goods (see Sect. 6.1) is framed by the role the university plays in identity construction by students. As will be seen in the examination of the Virtual University (Chap. 9) and the MOOC (Sect. 11.2), changes to the nature of university qualifications are subject to considerable resistance from students and other stakeholders fearing disruption to established mechanisms for developing personal reputations.

1.3.3 Sense-Making Is Retrospective

Retrospection is emphasised in sense-making. Weick (1995) proposes that future events can be understood but only as a result of considering them as if they have already happened. The sense-making approach is inherently reflective, studying the consequence of what has occurred in order to attach meaning to the current state of being. Much of this book is framed by a retrospective engagement with the forces acting on universities and the influence technology has on the consequences of that action.

Scenarios (see Chap. 20) provide a structure for the retrospective exploration of organisational narratives (Fenton & Langley, 2011). They enable both individual sense-making and the expression of collective understanding through scenario case studies and the development of strategies responding to themes and meanings extracted from the different scenarios. The detailed scenarios in Chap. 20 and the other scenario capsules throughout this book provide examples of how stories can help individuals identify salient features of new technologies and innovations and start extracting meaning from these applicable to the specific individual and organisational contexts. The value is not in the creating or writing of such narratives, it is in the experience of discussion and communication that occurs as groups create them. Sense-making as an organisational process requires collaboration. Strategies, scenarios or plans created without engagement in a communicative process are less likely to generate meaning and influence change.

1.3.4 Sense-Making Is Enactive of Sensible Environments

Enacting sensible environments poses the idea that actions are commonly undertaken in response to imperfect understanding but consequently rationalised or discovered to be true on the basis of experience of the outcomes. More simply, we act in order to think. Weick's (1995) intention is to help those engaging in sense-making avoid an overdependence on purely rational, external or deterministic models. In academic terms, this approach is consistent with socially constructed pedagogies where the learning experience is created by participants and subsequently interpreted and reflected upon.

By examining the ways individuals in the organisation understand prior experiences, such as technology innovations, it is possible that new ways to use technologies will become apparent without needing to disrupt existing meanings and associated value. This interpretive and analytic approach to change has a number of potential advantages in the context of a university. It respects the diversity and complexity, the myriad stakeholders and the different purposes the university serves in society (Chap. 4).

When universities engage with innovative new forms of delivery, such as the OERUniversity or by implementing MOOCs (see Sect. 11.2), they are enacting a new educational environment and shaping wider conceptions of the role higher education plays in modern society. By avoiding crisis, transformation and disruption, sense-making sustains existing activities and outcomes of the organisation while still enabling necessary and useful change. A sense-making perspective, undertaken collegially and across the entire university, is compatible with the values of academic freedom and collectivism that define the university. It is a perspective that helps reinforce that shared sense of identity and meaning that are integral to successful educational organisations (see Chap. 14).

1.3.5 Sense-Making Is Ongoing

Sense-making is ongoing in that the experience of individuals continually evolves. Making meaning of an event is subject to flux and change as new information is discovered and new experiences occur. This property emphasises the need to continuously re-engage with the context of an organisation, the importance of understanding the dynamic nature of the world, the fragility of static models of organisational existence. Organisationally, the ongoing nature of sense-making respects the reactive nature of organisational decision-making (Weick, 1999). Many important decisions in the life of an organisation are by necessity reactive, responding to black and grey swans (see Sect. 19.1).

A risk associated with sense-making is that a very strong relationship between particular activities and a specific technology can generate a barrier to further consideration of that technology's affordances and its use in other contexts. The

history of technology is filled with examples of how new technologies, such as the telephone or personal computer, were initially framed by earlier technologies, such as the telegraph or mainframe computer (Gleick, 2011). The evolution of modern smartphones (powerful mobile computing and communication devices) from the telephone illustrates this point well. Many people are completely unaware that voice communication on their phone is increasingly no different to the electronic networking used by computers and the associated set of communication tools provide a far richer set of features than merely talking. Consequently, they are surprised—and sense-making is triggered—when new devices are marketed in different ways by vendors, thus redefining expectations and meanings associated with the devices.

The central point is there is no single correct way to use a given technology within an organisation. Technological change is not inevitable in its impact, something to be explored more deeply throughout this book. Neither the failure, nor indeed the success, of a specific use of a given technology is reason to stop examining the potential ways that particular technology can be used to improve individual or organisational outcomes.

The literature makes the distinction between explorative and exploitative phases of technology use in organisations (March, 1991). Traditionally, new technologies are explored by a small group of early adopters (Rogers, 2003) who identify ways in which the technology may have value to the organisation. Wider deployment and adoption follows and sees features of the technology exploited and integrated into key systems and processes. Particularly with important processes, systems and technologies, this exploration and exploitation is framed by formal projects with a defined project management process and measureable outcomes. The rapid pace of change in technology makes it apparent to many that these rigid processes may no longer be meaningful. Sense-making suggests that it was never so, but the rate of change has finally provided a cue to the value of intermingled exploration and exploitation. Modern organisations need to consider how the behaviours of exploitation can be integrated within the processes of exploration if they are to rapidly assess opportunities offered by new and evolving technologies.

1.3.6 Sense-Making Is Focused on and by Extracted Cues

Cues extracted from the world are the points where individuals notice the need to re-engage with their models of meaning. Sense-making as an explicit activity happens when individuals perceive they no longer understand what they are experiencing and need to address that lack of meaning.

Griffith (1999) identified the idea that new technologies inevitably present themselves to users with a set of features, what Norman (2002) calls affordances '… the perceived and actual properties of the thing, primarily those fundamental properties that determine just how the thing could possibly be used' (p. 9). The affordances of any technology are a combination of those intended by the

implementers and those perceived by users or created by their use in context. Sense-making is not automatically triggered by the introduction of new technologies or innovations. Individuals have to notice the affordances of the technology as cues that trigger sense-making activities.

A natural response to sense-making cues triggered by technology is to develop simplifying analogies; to relate the affordances to those of existing systems or activities; to make the new technology fit within existing models of the world. This common set of individual behaviours is described as the response repertoire (Mead, 1974; Weick, 1979). Intensely self-referential systems, such as universities, tend to strongly resist changes imposed from the external environment, such as by technological developments. Individuals within such systems often only accept cues when they are reformulated and reconstructed within the organisation (Luhmann, 1995). The extent to which this occurs greatly influences the use of the technology and the extent to which it disrupts existing activities. These natural responses can also lead to sense-making generating a culture of denial or avoidance if there is not a robust culture of self-evaluation and leadership aware of the risks of complacency.

Griffith (1999) describes technology affordances as falling on two continua. The first distinguishes features that are concrete, direct consequences of the technology from those that are abstract influences or indirect consequences of its use, individually or collectively. A concrete feature of email is the ability to send a message. An abstract feature is the way email has encouraged a culture of continual availability and responsiveness. The second continuum is the distinction between core and tangential features. Core features are essential to the existence of the technology, such as the ability of email to send messages. Tangential features support the core but have little value independently; the email address book feature, for example.

Features that are concrete and core are more likely to trigger sense-making. Receptiveness of people to a technology is apt to depend on these features rather than those that are abstract and tangential. Technologies are most meaningful to people when there is an alignment between the core and concrete affordances and their perception of an existing problem (Henfridsson, 1999). When the sense-making process of different stakeholders generates compatible interpretations of the value of a technology, a process described as a ‘double interact’ (Weick, 1979, p. 33) occurs. The result is a much greater realisation of the importance of the technology to the organisation, a synergistic process of adoption. One implication of the double interact is technology introduced simultaneously to interrelated organisational activities or functions is more likely to be adopted, particularly if it does not threaten the values or identities of those groups.

1.3.7 Sense-Making Is Driven by Plausibility Rather Than Accuracy

The final sense-making property, plausibility, is the mechanism that responds to complexity and ambiguity. Sense-making is often triggered in what Weick (1995, p. 92) describes as 'ambiguous situations' after McCaskey (1982). Ambiguous situations are characterised by multiple interpretations and a resistance to comprehension driven by information gathering, i.e. wicked problems. The ability of sense-making approaches to work productively within ambiguous situations is its major advantage over structured management approaches. Rather than seeking some hypothetical perfection when making decisions, most people settle on a plausible course of action and move on. Dithering is widely recognised as unproductive, and many leaders recognise the value of making a 'good enough' decision quickly in the majority of situations.

The complexity of universities and the diverse range of stakeholder viewpoints are respected by the plausibility property of sense-making. The process is not intended to identify 'truth', and there is no correct or accurate result from sense-making. Meanings are inherently personal and collective organisational implications and identity will always represent compromises or discordances with the individual sense. This avoidance of certainty respects the complexity of the organisational challenge facing higher education, particularly when understood in the frame of the wicked problem (see below). The idea is organisational strategies for technological innovation and change need only be plausible, rather than empirically and absolutely accurate or true. This also respects the limits of managerial and leadership infallibility and the reality that technology is defined by its rapid change and redefinition of the possible.

The seven sense-making properties act to inform our comprehension of sense-making, sensitising our minds to the experience of sense-making both individually and organisationally. They are not a checklist that must be complied with but are emphasised or are more actively present at different times. Sense-making does not refer to products or artefacts such as strategies, plans or scenarios. It is the process. It arises from the interplay of action and interpretation (Weick, 1995). By adopting a sense-making approach to technological innovation in education, the focus is on understanding the nature of the individual and organisational experiences of a technology rather than the vendor or innovators intention for that technology. The sense-making process connects the abstract potential with the concrete experiences and reality of the enacted technology.

1.3.8 Sense-Giving

Sense-making is complemented by the concept of sense-giving (Gioia & Chittipeddi, 1991). Sense-giving is an intentional attempt to change how other

people think. Weick (2009, p. 142) defines sense-giving as 'a sense-making variant undertaken to create meanings for a target audience'. The framing of other people's ideas is essential to leadership and underpins the concept of sense-giving, particularly when expressed through organisational planning and strategising (see Chap. 19). Sense-giving is not the creation of a vision or a strategy. It is the process of awakening in others the frame that is subsequently expressed in the collective development of these artefacts of sense-making. Sense-giving may be the attempt to share a particular meaning held by a leader. It may involve the introduction of ambiguity, the creation of cues or the enactment of specific activities intended to stimulate sense-making in particular ways.

Sense-giving is seen in the idea of shaping strategies (Hagel, Brown, & Davison, 2008) where a strategic narrative is used to influence the wider organisational environment in ways that stimulate other organisations to act. Shaping strategies are apparent in the ways universities like MIT and Harvard have influenced the perception of online learning with their experiments in large-scale open courses (Sect. 11.2).

Sense-giving and sense-making encapsulate the ideas of persuasion and influence that commonly characterise the leadership of universities and can be seen as a model for understanding many of the challenges and experiences of institutional leadership (Smerek, 2009). Smerek (2009, 2011) identifies five different sense-giving modes engaged in by institutional leaders. The first is *Priority Setting*, where the leader (normally after a collective process of analysis and sense-making) fixes the boundaries of attention and reduces the number of options for action to a manageable set that can be acted upon coherently. The second strategy is *Framing*, where the leader creates a general perspective or framework used to guide sense-making. The third mode is *Creating an Inspiring Future* for the organisation, telling the story or creating a compelling scenario or narrative for the future supporting the sense-making property of retrospection. The *Construction of Crises* is an obvious strategy to stimulate a change in thinking and persuade reluctant people to engage in sense-making which also runs the risk of damaging positive aspects of the organisational culture. The final mode of sense-giving is that of *Re-labelling and Re-organising*, using language and terminology to help create a new understanding of the roles particular activities may play and/or their relationships to other aspects of the organisation. These sense-giving modes represent choices of leadership style and function (see Chap. 21) but also represent elements of change strategies that can be adopted in a complex organisation.

It should be acknowledged that framed within the model of sense-making, this book is itself an artefact of sense-giving. It describes the role innovation and technology can play in developing organisational and leadership conceptions of the meaning and purposes of higher education. As with all sense-making, this process generates different outcomes for different institutions and outcome that is essential if universities are to remain diverse and vigorous in their support of education and able to challenge the limited models presented by stakeholders with vested interests.

1.4 Scenarios as Tools for Sense-Making and Sense-Giving

Throughout the book, a series of scenarios are described and developed, providing examples, context and illustration of the themes being expounded. These are based on real institutions whose identities are protected for reasons of commercial sensitivity and in compliance with ethical approvals. These cases are not only drawn from universities but include relevant examples from other types of educational organisation. Often smaller and more focused, these institutions commonly operate under a much tighter set of constraints, needing to be responsive to very specific requirements while lacking the resources and security of large publicly funded universities. These constraints provide clarity to the organisational context which means the consequences and impact of change, strategy and leadership are more obviously apparent. These case studies and scenarios illustrate ways change can occur and where opportunities for re-examining organisational activities and outcomes may be possible but harder to notice in large and complex universities.

Just a Few Minutes into the Future…
Matiu is completing his undergraduate degree in computer science this year. He spent the last four years working as a programmer while studying in the evenings and weekends. His employer supports a variety of small specialist manufacturing companies using a combination of robots, embedded systems and custom business software to design products that are manufactured utilising a combination of locally and internationally sourced components. Many of the products depend on locally customised parts, modelled in software and created using a mix of three-dimensional printers and robotic tools that make physical objects from a variety of materials.

Matiu writes software under the supervision of qualified engineers and is enrolled in a one-year degree programme. The curriculum is designed to integrate and extend his independent learning and assure he is sufficiently educated to be awarded a bachelor's degree. Once qualified, he can start to work more independently and supervise less experienced staff himself.

Much of the material Matiu uses in his studies is freely available online with lectures, detailed learning materials and assessment activities all available from a variety of free and open online courses. During his personal study, Matiu is able to participate in a vast international learning community of over 10 million students. All but a very few countries are represented. As a result, he has participated in volunteer group projects to create several open-source software tools. He came to the university with a portfolio of applied experience, including software and project management.

His final year is focusing on integrating this experience and filling in some of the gaps arising from missing certain, to him less interesting, aspects of computer science in his own projects and study. This is achieved through review of case studies and individually designed and supervised projects. Matiu is enrolled in a mix of courses. Some are delivered by the university, and others are accredited courses provided by other institutions and recognised as part of his undergraduate qualification. A model of his academic performance is available to him at any time. This shows which areas he needs to focus on to achieve his degree and is used to provide detailed formative feedback. The model is continually updated to reflect Matiu's work.

Matiu meets regularly with students and staff in a mix of public and individual seminars and supervision sessions. During the week, students are encouraged to spend time informally with other students and staff, broadening their experience with a wide variety of seminars and symposia held on campus. The majority of the time is spent in analytical and cognitive skills development as much of the information and content is provided via augmented reality overlays linked to personalised intelligent agents.

Matiu wears a variety of technologies during his day: smart glasses, a wrist unit; and a small tablet connected by a personal network, providing him with a context-sensitive feed of information supported by a Web of intelligent software agents. These agents monitor his actions and environment, dynamically providing him with real-time information on people, events and anything he may be hearing or seeing.

Social media continue to dominate our lives, and Matiu is no exception. His glasses continually provide him with updates on his wife and young child, and on his extensive group of local and online friends. His tablet provides a high-resolution and high-contrast display allowing him to view video, read extensive text and make notes. Integration between glasses and tablet permits a user interface based on voice control and where Matiu looks.

Matiu does not explicitly search for information. He uses software agents to monitor areas of interest in his personal and academic spheres of interest. Detailed summaries are continuously updated and revised reflecting developments internationally. A few dedicated texts are still useful for the complex areas of his study, but much of the content he accesses is dynamically revised to reflect his current interests and needs, informed by his personal feedback model.

Elsewhere…

Greg is in the final year of study for his Master's in Management. Employed by the Ministry of Economic Progress, he is part of the new, economically focused wave of public sector employees. Greg is completing his second degree while in full employment as part of a partnership arrangement the university has with the government. Greg got his job as a result of his experience as an intern during the final third year of his Honours degree in Management. He benefited from the contacts he made with senior,

researching academics in his classes as an Honours student, unlike his peers in the standard degree stream who were taught by adjunct tutors. Unpaid placements with a number of public organisations during his second and final year of undergraduate degree study gave him a wealth of practical experience, an opportunity to make important contacts, and fulfilled the public service requirement of his student loan contract ensuring he was able to continue borrowing for his fees and living costs.

Public sector employees attend video lectures at their desks during the working day and supplement these with evening and weekend sessions. Face-to-face sessions are held in the downtown spaces rented by the university as part of its urban campus. As a public sector employee, Greg attends sessions with other students from the public sector, held at his office and facilitated by a tutor employed by the university in collaborative arrangement with the Ministry. This allows the students to engage with each other on projects directly related to their work with fewer issues regarding confidentiality. His master's thesis project involves the development of policy options for the government on asset sales and is supervised by both university staff and a senior Ministry colleague.

Greg supplements his individual Internet information subscriptions to the Harvard Business Review, Forbes, The Economist, and a general news package with a public sector management information resource licence and a set of texts supplied by the university. These, combined with the extensive array of journal subscriptions maintained by the university, help Greg maintain his knowledge and inform his thesis work.

All of this material, including the video lectures, access to administrative facilities and online collaboration tools, is accessed through his tablet computer. Urban high-speed wireless networking means this device is simply a display supported by a continuous network connection. All content and software is stored online. Devices themselves have an embedded operating system with minimal features designed to ensure licence compliance and identity management.

These two student experiences describe a world just a little into the future. The first imagines a world of education infused with technology embracing an open model of qualifications. The second is a model of education dominated by employment and economic outcomes framed by tight financial constraints. Scenarios like this are not meant to predict the future but stimulate the imagination and provoke leaders and strategists into thinking about a tomorrow that is not merely a reproduction of yesterday.

New technologies have the potential to do more than accelerate the pace and change the quality of what we do currently. They potentially allow us to re-engage with our personal and organisational goals, redefine the nature of the experience of learning and allow higher education to specialise, diversify and evolve into new forms. Scenarios are presented as a means of exploring possible future trends in

higher education (Chap. 20) but should not be regarded as predictions. They are a sense-giving tool used to facilitate imagination.

1.5 Framing Technologically Catalysed Change in Higher Education as a Wicked Problem

An advantage of using scenarios as a tool for sense-making is the ability to acknowledge the conflict and ambiguity characterising change in complex organisations. In any educational organisation, the demands and expectations of various stakeholders are like a Gordian knot with many strands. An individual strand cannot be untangled without all of the others simultaneously retangling—and you only have two hands. Strategically, this situation is recognised as a paradox, where different and mutually contradictory elements are apparently simultaneously true (Martin, 2007). This type of challenge is also described as a 'wicked problem' (Buchan, 2012; Conklin, 2005; Rittel, 1972; Rittel & Webber, 1973). The problem of planning and managing organised complexity is described as 'wicked' not out of legal, moral or ethical concerns but because of the paradoxes inherent in an interconnected set of mutually dependent and independently irresolvable challenges.

Wicked problems commonly exhibit a range of features that challenge leaders, planners and strategists when seeking rational, orderly and planned solutions to their organisational problems. A wicked problem is by nature ambiguous, complicated and cybernetic (Birnbaum, 1988). It has strongly interconnected elements linked to related wicked problems. Changes to problem elements cascade throughout apparently unrelated systems in a complex Web of feedback loops. The wicked problem either contains within itself a set of mutually dependent problems or is connected to others such that resolving any one problem requires resolving them all. The paradox is that solving one problem often makes another problem unsolvable in ways that invalidate the solution of the first problem.

Organisations are often described using biological metaphors, and in this context, resolving wicked problems is similar to the challenge of developing new medicines. Experience shows that simple models fail to predict the range and seriousness of side effects and the consequences of apparently simple interventions.

Ambiguity is a feature of complex service organisations, such as hospitals and universities, occurring 'where the traditional power of the hierarchy is limited, and where goals and technologies are unclear' (Denis, Langley, & Cazale, 1996, p. 673). Historically, ambiguity has been treated as a problem for well-run organisations, needing to be removed through rigorous application of scientific management processes and quality control systems. Others argue that organisations benefit from the ability to operate within ambiguous contexts, using contradictory information as a catalyst for change and an enabler of diversity (Eisenhardt, 2000; Hedberg, Nystrom, & Starbuck, 1976). At a personal level, ambiguity is generally stressful and many individuals, including leaders, find it challenging (Budner, 1962).

As a result of these characteristics, the environment of the wicked problem is dynamic and unpredictable. Experience and personal goals lead people to see

problems uniquely and to value different resolution strategies. Consequently, wicked problems are challenging for organisations with multiple stakeholders, such as higher education. Addressing the problem inevitably introduces conflict as stakeholders with different, often antagonistic and paradoxical, interests interact.

These features combine such that social and political factors, the values and culture of the organisation and its stakeholders become critical to addressing the wicked problem. In contrast, the technological and resource issues of wicked problems, while still significant, are less of a challenge.

Rittel (1972) identified ten properties that distinguish wicked problems from their 'tame' alternatives. Consideration of these suggests the strategic challenge of change in higher education and the role technology plays in future experience of staff and students is a genuinely wicked problem.

1.5.1 Problem Formulation

Tame problems are definitively described in a 'correct' formulation. Wicked problems resist any such attempt to characterise the key elements. In most cases, even agreeing that there is a challenge (other than reputational) facing universities is contested. The first sections of this book summarise the challenges facing higher education and the potential technology plays within these institutions. Simply enumerating these is not a formulation of the specific problem facing any one institution. In reality, any attempt to do so is futile and would be contested by various stakeholders who perceive elements of the university in fundamentally different ways.

1.5.2 Relationship Between Problem and Solution

The formulation of a wicked problem is a statement of a proposed solution to specific aspects of the problem. Unfortunately, many such formulations exist without any inherent way to choose among them (see below). Any response is influenced by the goals and priorities of those proposing the particular solution and will be contested by the diverse stakeholders of any given university (see Chap. 4). Even if all the different stakeholders can be persuaded to treat the problem as important and become involved, their different value systems will lead to such a degree of conflict that any resolution will be an exercise in exhausting the participants. The time required to engage with all stakeholders is such that the dynamic nature of the problem will overtake the participants. Technology is changing rapidly. The political, social and economic space is similarly unpredictable. Inevitably, any formulation reflecting a negotiated consensus of all stakeholders will be invalid for the current situation as it will be hopelessly out of date.

1.5.3 Testability of Potential Solutions

Solutions for tame problems can be stated and reliably tested for validity prior to implementation. Solutions for wicked problems cannot be tested by single criterion measures or systems and are, at best, able to be discriminated in relative terms, although even this will be contested by different stakeholders.

A less than definitive formulation constitutes a potential solution to aspects of the problem. Wicked problems mirror the class of computer science problem described as NP-Hard (see box). It is impossible to know how long it will take to find *any* solution to a wicked problem and having found one there is no way to know if it is the best solution. The real question is: On what basis it can be described as 'good enough'? Solutions to wicked problems are at best testable by comparison with other possible solutions. There is no absolute standard that enables recognition of the 'best' solution. Education falls within this space. We have no way of knowing what the best strategy for educating people is, nor do we know the most efficient and effective way of using the affordances of technology to improve learning outcomes. We are left comparing our experience with that of others using different approaches.

The Travelling Salesman and NP-Hard Problems

Imagine you are an academic given the opportunity to visit other universities in a number of different cities. You have a number of possible ways that you can move between each city—trains, roads, flights—and complete freedom to move between cities in any order you choose. However, your university's expense policy prevents you from visiting any city more than once and requires you to choose the itinerary with the fewest journeys and which has you away from your other responsibilities for the least time. What is the shortest route that sees you visit each city exactly once and then return home?

This problem is known as the travelling salesman problem, and it dates back at least two centuries. The only way to be sure a given plan is the shortest one is to check it against every other possible alternative. While a plan for a small number of cities and alternative routes is achievable, as the number of cities increases, the problem dramatically increases in complexity and becomes harder to solve.

This type of problem interests computer scientists. If a problem grows in complexity to the point where it is uncertain how long it will take to explore every possible solution, then it becomes unclear whether it can ever be solved with the available computing resources. This type of problem is described as non-deterministic polynomial time hard or NP-Hard. Non-deterministic describes the property that each time a solution is attempted a different outcome and set of resources is used and these cannot be predicted in advance of each attempt. The polynomial time aspect refers to the way the problem

spaces grow as more elements, cities for example, are introduced. Linear problems grow in direct proportion; doubling the cities doubles the time. Polynomial times scale exponentially; doubling the number of cities can dramatically increase the time needed to solve the problem.

Many real-world problems are different forms of NP-Hard problems. The travelling salesman is computationally equivalent to the challenge of planning efficient ways of building computer circuits, packing boxes in courier trucks or scheduling rooms for teaching classes.

1.5.4 Finality of Problem Resolution

The concept of closure, definitive transition points marking the completion of a solution or the initiation of a stable system are meaningless in the wicked problem space. This inability to definitively describe success in absolute terms means further change may generate opportunities for additional improvements. The scale of wicked problems and the limited scope of any changes mean that responses simply move the organisation within a vast and nebulous landscape of interrelated wicked problems.

New technologies are constantly becoming available. New pedagogical and organisational strategies are continually identified and advocated. The context for the organisation is dynamic and subject to unpredictable political and economic forces. As we have no way of knowing how well our current approaches to education compare to other possibilities, it is wise to assume that new ideas offer potentially significant advantages which need to be constantly evaluated. Any strategy for the use of technology in higher education, any change implemented, must be seen as temporary at best, a means to move the organisation to a future point where a new strategy will emerge as more effective.

1.5.5 Tractability of Problem Elements

Tractability is the ability of a problem to be described by an exhaustively complete list of activities contributing to its resolution. Wicked problems have no such complete description, and the nature of higher education means it has no bounded set of pedagogical, technological and organisational tools.

A key lesson of sense-making, as opposed to transformational thinking, elaborated throughout this book, is the error of technological solutionism which results in leaders believing they can define a specific pathway with deterministic outcomes able to be predicted in advance. The concept that there is one model of a university,

aligned to a single system of higher education generally applicable in all contexts, cultures and society, is indefensible on logical terms. Yet there is an abundance of evidence (discussed throughout this book) showing many university leaders and politicians are attempting to act as if there is such a single universal model of education or a technologically enabled strategy that completely resolves the challenges facing their institution.

1.5.6 Explanatory Power of Problem Characteristics

The characteristic inability of wicked problems to be definitively described and associated with definitive and reliable solutions arises from the contested nature of expectations between what 'is' and what 'ought to be'. Wicked problems are such that these variances can be interpreted in multiple ways, requiring different solutions. The contested space of performance indicators and quality measures (see Chap. 16) demonstrates the way the choice of measure and scale defines different problems and by implication different solutions, a key characteristic of a wicked problem.

1.5.7 Level of Analysis

It is unclear at what level of detail or abstraction a wicked problem should be addressed. This is connected to the existence of multiple explanations of key problem aspects. Descriptions of wicked problems can be used as descriptions of the symptoms of other wicked problems. Addressing symptoms, rather than causes, leaves a problem unresolved. The choice of quality measures and performance characteristics in higher education represents a choice about the definition of the wicked problem. These choices are easily contested and seen as symptoms of other, interrelated wicked problems of educational change.

1.5.8 Reproducibility of the Problem

In separating solutions from tame problems and the ability to frame them definitively, such problems can be abstracted from the real world to test and compare multiple solutions and their outcomes. Wicked problems are such that any attempt to engage with them changes the problem, creating a completely new problem requiring new solutions.

Educational change and strategy inevitably represent commitments to particular students that cannot be replayed in future. Wicked problems cannot be saved and restarted if the outcome is unpleasant. The choices an organisation makes for its

students and staff, the strategies it pursues and the technologies it uses will inexorably impact on the organisation and its stakeholders in ways that cannot be undone.

1.5.9 Replicability of the Problem

Tame problems are encountered over time in essentially identical form in multiple contexts and therefore can be addressed by consistent processes and techniques. Wicked problems, in contrast, are a unique combination of factors that may initially appear to have superficial similarities to other wicked problems but which respond completely differently when engaged with.

Universities within the same country and system may appear similar but the complex interplay of context, stakeholders and details of the organisation interact to prevent generic solutions acting effectively. The history of quality management techniques applied to higher education (see Chaps. 15 and 16) demonstrate the weakness of such tools in responding to the unique parameters of each university's wicked problems.

1.5.10 Responsibility for Problem Resolution

Wicked problems are neither reproducible nor replicable. The change context and strategic options available in future either represent new wicked problems or reflect the consequences of previous attempts at solutions to old wicked problems. In either case, leaders are accountable for the outcomes at any given time. Morally, they have the responsibility to choose a solution. Not making a choice is not a solution; it is denial of the problem.

The existence of wicked problems means the choice of organisational change strategies needs to reflect a more nuanced understanding than simply demanding compliance with the instructions of managers. It requires recognition of the value transitional interventions play in moving the organisation forward, even if they do not produce radical transformation.

A Wicked Problem…

University NZ-C is a medium-sized New Zealand university with a traditional focus on face-to-face education and an emphasis on research and postgraduate education. The university is financially secure, but in common with all New Zealand tertiary education institutions it faces significant challenges resulting from the current government's decision to change the funding model from one of growth to one where numbers are capped. The university has been engaging with the implications of technology in its

learning and teaching activities, but benchmarking suggests it is well behind international comparators and has struggled to use technology throughout its educational activities (Marshall, 2012b).

Over a decade or so, the university has invested in a range of digital technologies following a very common approach of investing in core central systems, student recordkeeping, a learning management system and infrastructure such as networking and presentation equipment in teaching spaces. Information technology is managed through a central group adopting a commercial approach with an emphasis on standard vendor products and outsourced support model common to many commercial organisations. Use of the Internet by the university is managed by the central IT group with a strong influence from the marketing group who work actively to maintain a coherent brand for the university across all of its services.

The primary learning management system is used by most undergraduate courses with all students encountering its use routinely for at least one course. Usage is limited in most courses to the provision of static content such as lecture slides and important announcements. This passive use of the system as a publishing tool has limited its impact on the design and delivery of courses, and thus, there is no evidence that it has influenced student learning outcomes to any extent.

Despite a substantial investment in physical facilities, including excellent provision of modern technology in the learning spaces, there has been minimal investment in staff development. Few staff receive formal training in the use of technology. Teaching staff are not required to possess teaching qualifications or to have experience in using technology as either a learner or teacher. This lack of meaningful impact of technology on the student experience has been recognised as counterproductive. The university has enacted a strategic goal that students will experience effective pedagogical designs enriched and informed by the widespread use of digital technologies.

As described, this could be any university in any country. Additional elements turn this situation from merely a challenging strategic problem requiring some leadership into a wicked problem. New Zealand universities are managed as independent organisations within a system subject to significant government control. Access to the publicly funded higher education system by New Zealand domestic students is tightly controlled by government policy, the provisions of the 1989 Education Act and subsequent amendments (see Strathdee, 2009; Smyth & Strathdee, 2010 for recent reviews of the policy changes during the last twenty years). Individual institutions negotiate agreements—'investment plans'—with the government agency responsible for funding. These plans establish absolute limits to the number of domestic students that can enrol. There is no option for domestic students to complete studies at full cost as these students would still be eligible for student loans funded by the government. Fees for degrees are set by individual institutions within the constraints of the investment plans, and

universities cannot increase fees more than a small amount defined by the government. Students are able to access government financing to cover these fees for seven full-time years of study, undergraduate and postgraduate, with an undergraduate degree normally taking three years to complete.

In 2014, 30% of New Zealanders aged 25–64 had a degree-level qualification (OECD, 2016a), which compares well with similar countries such as Australia (32%) and the UK (33%) as well as the OECD average of 29%. Unlike many other countries, New Zealand has no policy promoting greater participation in degree-level education beyond a general desire that students attain higher qualifications. Instead, the government has placed a cap on the number of students that may attend any particular institution and has instituted a performance management system (Tertiary Education Commission, 2015, 2016) whereby institutions are penalised if too many students fail courses or fail to complete degrees. These performance measures apply to all students but also apply to specific groups: Maori, Pasifika and students under age 25 entering tertiary study directly from secondary or compulsory study.

A consequence of these policies is institutions face a set of barriers to their use of technology in courses. Student success requirements imposed through the performance measures do not make any provision for students engaging in flexible online courses. A result of this has been the very poor performance of institutions with high proportions of online or distance students. The controls over student fees mean institutions have little flexibility of revenue generation nor do they have opportunities to generate the capital needed for investment in new models of education.

Any change, such as incorporating new pedagogies and technologies, must thus occur with a student body increasingly dominated by school-leavers, without any additional investment of resources and without any, even temporary, impact on student performance. The model chosen must not depend on any increase in the scale of course offerings to domestic students. This only leaves the possibility that new models will allow substantial improvements in student outcomes and/or substantial improvements in the cost and efficiency of educating those students.

Substantial improvement in the quality of the resulting students would be an excellent outcome but one very hard to demonstrate in any meaningful time frame likely to influence organisational outcomes. The current measure of performance, student completion of courses, is already 80–90%. A dramatic improvement, such as halving the number of students failing courses, will see a less than 10% change in the measure and does not result in any improvement in funding or other measures of progress for the institution. The absence of any independent and reliable measure of student performance and qualities also means any actual improvement of this scale will almost

inevitably be treated as evidence of grade inflation and used by competing institutions to claim that quality had in fact declined.

Cost efficiency improvements would certainly be useful, and technology does offer some opportunities; however, it is now widely recognised that dramatic savings are unrealistic and much of the productivity improvements resulting from technology use have proven difficult to quantify (Sect. 5.4).

An additional problem, further contributing to the wickedness of the university's situation, is the capabilities and priorities of the staff. Surveys and other work have demonstrated that academics want to expand their use of social software tools, such as blogs, wikis and virtual worlds. They also want to develop online surveys and a wider range of rich communication and collaboration tools, including podcasting and video conferencing/ collaboration tools. They want to be shown how these tools can be used to enhance their students' outcomes by colleagues who have successfully used them and are clear that while they lack the skills and knowledge needed to use technology effectively they would appreciate being supported in remediating those lacks.

Barriers to addressing these issues are internal and external to the university. Internally, the existing central control structures prevent staff from experimenting with new technologies and have almost completely suppressed any engagement with innovative or new technologies. Externally, the national research performance management process known and the PBRF (Performance-Based Research Fund; Tertiary Education Commission, n.d.) have seen a determined focus placed on academic research performance at the expense of any other facet of their jobs (Stahl, 2015; Waitere, Wright, Tremaine, Brown, & Pausé, 2011). Individual staff are closely managed to ensure they prioritise research activities over teaching and little room is left for the effort needed to engage in innovation.

This lack of engagement with technology innovation means there is very little experience within the university to draw upon. Individual staff joining from other institutions have a range of experiences, but these are experience from a different context, with different systems and students and usually far greater resources, both in support and in the infrastructure for technology-supported education. Those few staff who have the personal skills and resources needed to be independent innovators find themselves operating primarily in isolation with ideas and projects that are unconnected to wider organisational goals. Unable to share their projects and outcomes with their colleagues, almost inevitably these initiatives are discarded when the innovator leaves or is forced to adopt new priorities themselves to maintain their careers.

In the extreme, the formulation of problems as wicked [such as in the university NZ-C case and in the broader problem facing the New Zealand university system

discussed in detail in Marshall (2014b) and New Zealand Productivity Commission (2017)] can be taken as an excuse for inaction and the cynical may regard the busywork of many reorganisations as an attempt to distract critics from the complexity of the challenges facing the university. Cornford (1908) satirically captures this argument for inaction within academia:

> Even a little knowledge of ethical theory will suffice to convince you that all important questions are so complicated, and the results any course of action are so difficult to foresee, that certainty, or even probability, is seldom, if ever, attainable. It follows at once that the only justifiable attitude of mind is suspense of judgment; and this attitude, besides being peculiarly congenial to the academic temperament, has the advantage of being comparatively easy to attain. There remains the duty of persuading others to be equally judicious, and to refrain from plunging into reckless courses which might lead them Heaven knows whither. At this point the arguments for doing nothing come in; for it is a mere theorist's paradox that doing nothing has just as many consequences as doing something. It is obvious that inaction can have no consequences at all (Cornford, 1908, p. 9).

There are, however, ways to positively engage with wicked problems. Although they are typically highly interconnected with feedback loops affecting the wider organisation, there are various leverage points where analysis and ideas for intervention can usefully focus. The ability to recognise and use uncertainty, and to accept the existence of risks, requires leadership with flexibility and courage to engage with the unknown. Leadership strategies need to include contingencies for the unexpected, the ability to cope with ambiguity and conflict among stakeholders, and to act within the wider social and political landscape that constrains the range of possible actions.

1.6 Structure of the Book

Beyond this introduction covering the key concepts of the wicked problem and sense-making used throughout as the primary means of analysis, this book is organised into four main parts. The first (Chaps. 2–6) explores the context and drivers for change in higher education. Many of these forces are external to the university, broad social and political forces that reflect the increasingly global economy and society we participate in. Other forces reflect the variety of stakeholders in the university, their values, perceptions and influence over the organisation and its leadership.

The second part (Chaps. 7–12) focuses on the fifth factor influencing and stimulating change: technology. Technology is positioned as a force that interacts with the others, provoking change and providing both improvements and disruptions to existing activities.

The third part (Chaps. 13–17) analyses organisational change and describes key theories and tools for understanding different ways organisations evolve and adapt in response to internal and external drivers. The fact that quality in higher education

is a disputed space is explored, as are the tools that enable quality improvements to be managed and demonstrated.

The fourth and final part (Chaps. 18–22) describes the role strategy and leadership plays in shaping the future of a university. Strategic planning and sense-giving approaches are presented, along with tools that assist leaders to engage with their organisations in developing and sustaining effective change strategies using technology to enhance the core values and mission of the university.

Finally, it is important to address a significant absence. The modern university is defined by the scholars who work there, and the term is used generously within this book to cover a range of organisational types that offer degree education. Boyer has helped us understand that scholarship can take many forms (Boyer, 1990), but fundamental and applied research remains an essential component of the identity, values and activities of a university. The focus of this analysis is primarily on the learning and teaching work of the university. Adding a similarly rigorous examination of the changing experience of research would make this already complex book unreadable. There is also the reality that the concept of the university is sufficiently blurry that many institutions sitting within its scope, while providing degrees, are not active in research. That said, much of the analysis that follows has strong analogies in the research space and successful universities and their leaders will balance the two sides of the academic identity, recognising that they are not as interdependent as some might believe (Figlio & Schapiro, 2017; Hattie & Marsh, 1996).

Part I
Making Sense of the Context for Change in Higher Education

Chapter 2
Part I Introduction

Abstract The stereotype of the unchanging university is challenged and the major forces influencing the ongoing evolution of universities are identified and summarised. The wider literature on change in universities is reviewed in order to place this work within a landscape of conflicting perspectives and proposed solutions. An extension of the 'iron triangle' linking cost, quality and access is described adding the influences of technology and stakeholders to represent the interacting forces contributing to the wicked problem of university change and stimulating sense-making.

> About 85 institutions in the Western World established by 1520 still exist in recognizable forms, with similar functions and with unbroken histories, including the Catholic Church, the Parliaments of the Isle of Man, of Iceland, and of Great Britain, several Swiss cantons, and … 70 universities (Kerr, 1987, p. 184).

The apparent isolation and seemingly unchanged nature of the university are a common theme oft repeated in many contexts by those seeking to influence the institution, the academics or the position universities hold in society. In presentations on organisational change in higher education, Clark Kerr's quote (along with illuminated images of preachers reading to audiences in pews) is often used as a cynical commentary on the resistance to change by universities and the academic faculty specifically. A different perspective on Kerr's observation is the recognition there are aspects of higher education that are inherently robust. The coherence of institutional identity and purpose over centuries can be seen as reflecting the value these organisations have for society. The quote then becomes a wry recognition and acknowledgement of their value.

Scott (1995) points out that the modern university has, in reality, dramatically changed. Perhaps the most obvious alteration is that women are now dominating student populations in many countries (Vincent-Lancrin, 2008) and are a growing presence at all levels of academia (if perhaps with more scope still to be realised at the senior level). In his analysis of the university sector in the UK, Scott (1995) identified at least twenty different types of organisation. Marginson and Considine

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(2000) recognise five distinct university types in the Australian sector, and Bok (2013) a similar set of major types in the USA. A consideration of the differences between the US Ivy League institutions, technical universities such as MIT, large US state systems, and the diversity of European universities shows that characterisation of the university as a consistent and unchanged monomorphic 'ivory tower' cannot possibly be true (Adelman, 2009).

The re-framing of the role universities play in society; their status; their ability to change to meet the needs of an evolving society, the role technology plays in that change; these are the issues at the heart of this book. Diverse historical experiences and challenging changes in the local context affecting different universities means that normalising concepts such as the 'liberal university', the common project of 'nation building' (Marginson & Considine, 2000, p. 238) or 'producer, protector, and inculcator of an idea of national culture' (Readings, 1996, p. 3) are of limited value in guiding leaders planning for the future of any one university. Each university experiences a unique set of internal and external forces consequent to its history and the current dynamic context it is placed within.

The chapters in the first two parts of this book explore the context for change that faces the modern university and which leaders and strategists must consider when planning for the future. The apparent stability of the current model of higher education typified by the university is, in many respects, illusory. It is a consequence of the natural association of the term 'university' with artefacts of each organisation's existence—such as the physical buildings, the reputation and name of the university, and the qualifications awarded. These historic artefacts cloud the recognition of the wider institutional elements of the university as a system of a modern society. The consequence of that wider social engagement is that the experience of both student and academic in a modern university is very different to that of their peers in the last century, despite the residual trappings of an earlier age.

A key presumption in this book is technology will stimulate new opportunities in higher education and inevitably, some of those opportunities will require organisational change in order to be fully realised. Technology is not, however, the only force acting to change higher education. This quiet evolution of the university experience is the result of a complex network of forces and influences that have been acting over decades to change the nature of the institution. Many of these forces were apparent to scholars and commentators thirty or 40 years ago as natural consequences of the shift from an élite pursuit to a more inclusive model. Marginson and Considine (2000) talk about a fundamental destabilisation of the university, as an institution or sector of society and also organisationally. Barnett (1992, p. 5) noted the changes already apparent in UK higher education more than 20 years ago:

1. A shift from a system enjoyed by the few to a system in which a large proportion of the population participates and in which an even larger proportion of the population now feels it has claims (so giving rise to talk of 'accountability').
2. A shift from a higher education which has been essentially part of the cultural apparatus of society to a higher education which is much more part of the

economic apparatus of society, so relegating its finishing-school aspects as it has become a force of production in its own right.
3. A shift from higher education being a personal and positional good to being more of a wider social good, having general societal value.
4. A shift from higher education being valued for its intrinsic properties to its being an instrumental good, especially for economic survival amidst expanding world markets.
5. A shift from a culture characterised by the formation of personal life-world projects to one dominated by the formation of public and strategic policies, so displacing what we might term the educational project of higher education.

These shifts in the systems and culture of the university are not entirely the result of a planned change imposed either externally or internally on the model of higher education. Nor are they inevitable and natural consequences of development and complexification of the organisation over time. They are, at least in part, the result of decisions made (or not made) by leaders and strategists within individual institutions. Clark (2004) talks about the idea of 'volition', the acts of collective organisational and leadership willpower, the intention to define an organisational identity and to enact that identity despite the pressure from external forces.

> A volition is 'an emergent act of will', in the form of a decision to pursue a certain path of development. It is a judgment that produces commitment. It is a social act: a volition is made in the context of a social setting; what is decided is done in a network of existing impositions and facilitating structures. Especially within institutions - universities in our case - volitions and social conditions interact. And especially in such organised settings, volitions are collective decisions producing collective commitment (Clark, 2004, p. 93).

Shattock (2003) describes the ability to engage in volition behaviour as inherent to nature of successful universities:

> Successful universities … have a 'self directed' autonomy which enables them to establish goals intrinsic to their own ambitions, to establish resource allocation criteria to fit their own aspirations, to resist the automatic bidding culture, to accommodate accountability rules within academic structures that grow out of the management of academic disciplines, modes of teaching, and research environments and to merge state and non-state income streams to match the needs of the institution (p. 181).

Achieving this organisational autonomy, harnessing the collective will of the university in acts of volition, is key to the strategic leadership of a university for the future, particularly as the forces acting on universities change the expectations made of the organisation. These forces act on the organisation, applying stresses that can sustain collective action or weaken it. A possible set for higher education could include (Altbach, Reisberg, & Rumbley, 2009; Bok, 2013; Cunningham et al., 1997; Marginson, & Considine, 2000; Shattock, 2003; Sporn, 1999; Wissema, 2009):

- Demographic and political changes driving the scale and scope of higher education including increasing globalisation in all forms of commerce encompassing the movement of people and ideas and, specifically in this case, education;

- Internal and external stakeholder influences. Many, varied and often in conflict with each other, constantly changing as the place of higher education in society evolves;
- Financial challenges and constraints in terms of access to resources, the diversity of sources of revenue and the changing role of government and its positioning of public funding for organisations and also for individuals;
- The perception of the value of resulting qualifications and the role reputation and models of quality play in shaping the nature of the university;
- Technological innovation of pedagogy and of the organisation itself. The challenge of understanding the contribution technologies can make and realising those opportunities in a complex organisation.

It is important to appreciate that these forces are intrinsically neither 'good' nor 'bad' for the organisation. Nor do they embody a drive for coherent or purposeful change to the nature of higher education, arising as they do from actions taken by individuals and organisations acting in their own interests and contexts. Any attempt to directly engage with the specifics of any one force to change its nature, without reference to the stakeholders influencing it, is almost certainly doomed to fail. These forces can be seen as opportunities for sense-making through organisational self-analysis and reflection, through a critical engagement with the identity of the university, and potentially the enablement of positive change through relationships with the various stakeholders in the evolving university. They can then be harnessed and used by leaders to enhance the volition and strengthen the core identity of the university.

The impact of these forces and the consequent need for ongoing and substantial change in universities has been recognised by wide variety of authors, working both within the system and from the outside. These works describe the university as 'embattled', 'ruined', 'corrupt', 'adrift', 'in crisis' as needing 'reinvention', 'transformation', 'disruption' and above all, 'innovation' if it is to be saved from the forces for change. These analyses fall into several main themes: academic nostalgia for the well-funded period of growth predominantly occurring through the 1960s in the USA and somewhat later in other western nations; pure market arguments aimed at maximising the economic impact of universities and creating a commercially framed higher education system; and a range of nationally framed analyses attempting to influence government policies and investment in higher education systems. The range of perspectives represented in these books illustrates the scope of the wicked problem facing universities and the complex disagreements that reflect the different wicked problem characteristics.

Many academic accounts of the changing university are essentially attempts to document their personal experience of stress and disruption. Their works describe the nature and extent of the changes they have seen but ultimately present no strategy beyond a return to older models with a focus on an élite education (Anderson, 1996; Aronowitz, 2000; Bailey & Freedman, 2011; Brabazon, 2007; Collini, 2012; Hersch & Merrow, 2005; Holmwood, 2011; Readings, 1996) or the provision of additional funding free of government or commercial encumbrances

(Hil, 2012; Kirp, 2003). In many cases, there is a sense of acquiescence to forces beyond the influence of the university and a feeling of inevitable replacement and loss.

At the heart of many analyses is uncertainty about the identity of the university as an institution. Some are strongly influenced by Cardinal Newman's Idea of a university dating from more than 150 years ago (Newman, 1853/1976). Bloom (1987), for example, argues the identity of the university is itself defined by its focus on an élite model cloistered from society and focused on shaping human intellect. Readings (1996) takes a similar position, claiming the university is now 'ruined' and supplanted by a new type of institution aimed at economic and commercial outcomes.

Others, such as Bok (2013), contend that the university is a fundamentally strong institution, diverse in its nature and in the ways it has responded to a variety of stakeholders and interests. Geiger (2011) suggests that US higher education in particular shifts each generation, changing roughly every thirty years to meet the evolving needs of society, and there is some evidence of similar generational shifts in the UK and the Australian systems over the last 50 years.

The humanities are a particular focus of writing in this space concerned that preferential treatment through government-funding policies of science, technology, engineering and mathematics is occurring at the expense of arts, languages and other subjects with less direct links to rapidly growing sectors of the economy (Collini, 2012). Interestingly, many advocates of technological transformation draw their inspiration from examples of mathematics or computer science education without acknowledging the relative ease of automating teaching in those fields in comparison to business and humanities subjects which require a far more nuanced and contextualised pedagogical approach.

Donoghue (2008) argues that the declining status of the humanities is not new. He suggests higher education in the USA has been framed since the late nineteenth century by commercial preferences for education aligned to business requirements and values, rather than cultural and intellectual ones. He suggests that the humanities in universities are threatened by a combination of the oversupply of graduates driven by university and faculty self-interest, and the declining value commercial interests place in education in the humanities. His solution is to encourage sceptical scholarly engagement with the arguments used to justify the shift to a commercial and economic model and to reflect on the reality that the university must change, although not perhaps in a specific way. Bok (2003) contends that humanities scholars must accept some responsibility for the failure of the disciplines to articulate a compelling case for their ongoing importance and relevance to modern society, and the way this may be reflected in a changing university. An example of this counter-narrative is provided by Nixon (2011) who reasons the university's modern function should be defined by the development of human capability, reason and purpose, with the goal of sustaining the civic and cosmopolitan life of society.

The challenge of sustaining the civic values of society is complicated by the question of whose values are being sustained. Some academics regard the

university as historically captured by privilege and inequality, contending that it perpetuates this in contemporary society (Chatterjee & Maira, 2014). Fogel (2012) and Nussbaum (2010) claim that the profit motive underpinning much of the funding shifts apparent in many countries devalues human capabilities and is a short-term strategy that will ultimately damage the wider values and strengths of society. Giroux (2014) writes passionately about the threat of neoliberal ideology to higher education and to society in general. He makes a case for rebellion and widespread activism against political interests working to increase the level of inequality in society. Others argue that Marxist and humanist ideologies lead to a university disconnected from society and consequently corrupt in its influence on students (Kimball, 1990).

Criticisms of intellectual decline in universities are not limited to the humanities or civic values. Both Hacker and Dreifus (2010) and Taylor (2010) claim that self-interest reflected through research and tenure leads academics to abandon their students to unqualified tutors and the solution is to forsake both as a feature of the university. Others argue more persuasively that universities are not generating the level of impact on student learning that has been assumed (Arum & Roksa, 2011; Docherty, 2011; Keeling & Hersh, 2012; Pascarella & Terenzini, 2005), perhaps having lost their way in response to the forces of massification and the drive for efficient generation of qualifications. Arum and Roksa (2011) stimulated substantial debate with their critique on the extent a university education achieved significant learning gains by students. Their analysis argues for a greater focus on curriculum and accountability measures aimed at learning outcomes rather than sheer persistence. Subsequently, they have led a significant project aimed at linking assessment designs explicitly to outcomes (Arum, Roksa, & Cook, 2016).

Keeling and Hersh (2012) argue for a substantial shift in the focus of university education to concentrate systematically on the quality of learning achieved by students. Their solution, similar to that of Hacker and Dreifus (2010) and Taylor (2010), is a dramatic change in the role of academics. They advocate re-prioritising the place of teaching over research, including in tenure processes, and a requirement that students be taught directly by academics, not adjuncts or teaching assistants. Although their plan is radical to US eyes, many elements of it are familiar to Australasian academics; direct contact with academics for all undergraduates is a feature of the current University of Adelaide Small Group Discovery Teaching model (University of Adelaide, 2015).

Alvesson (2013) places higher education within a wider cultural shift, driven by ‘grandiosity’ and superficially plausible ‘illusion tricks’, which risks the integrity of the university by encouraging a destructive cycle of change aimed at building reputation and prestige without any contribution to the substance of the university. He calls recognition of this lack of integrity ‘symbolic pollution’ (Alvesson, & Berg, 1992). It erodes the social capital of the institution, leading to increased distrust (see Sect. 15.1) and, over time, damaging the capability of an organisation to engage in sense-making and sense-giving as the narratives are increasingly untrustworthy. This, in turn, leads to what he terms ‘functional stupidity’ (Alvesson, & Spicer, 2012), narrowing the strategic and operational choices

considered to those that are safe and consistent with a dominant and conservative view of the university. Other than suggesting that some attempt be made to maintain at least some institutional integrity, Alvesson does not provide any specific strategies for addressing the issues he identifies with the evolving university.

Anderson (1996) contends the university is declining as the result of a failure of governance with boards dominated by lawyers and accountants rather than leading intellectuals. His concerns revolve around the shifting role of the academic faculty from intellectual leadership and education to increasing quantities of research. This heightens academic isolation from students who are increasingly taught by a mix of adjuncts and other students. His observations mirror those of others, but his solutions seem implausible and disconnected from the reality of the system. His primary focus is the composition of boards, but other proposals include the abolition of tenure (already vanishing and increasingly irrelevant in US higher education) and a shift in focus from quantity of publications to quality (in practice, this merely shifts the focus of the quantity of publishing onto a smaller set of venues recognised as having high quality).

The relationship between governments and universities forms a major focus for some authors, reflecting the important role the government plays as a funder and regulator of higher education in many countries (Sect. 4.7). Funding is a significant feature of these analyses. Salmi (2009) argues that abundant resources and an engaged and highly supportive government enacting a favourable regulatory environment are essential for the development of world-class universities. Marginson and Considine (2000) document the way shifting governmental priorities and policies have shifted the Australian higher education system to a new form described as the enterprise university, reflecting the move to a mass model of education supported by wider regulatory and economic systems.

The changes in the UK arising from the Browne review (Browne, 2010), which is driving significantly reduced government funding for higher education, are the focus of a number of recent authors (Bailey & Freedman, 2011; Collini, 2012; Docherty, 2011; Holmwood, 2011; McGettigan, 2013; Nixon, 2011). They all contest this shift to a model seen as creating further inequality and forcing universities to adopt increasingly commercial models of operation. Despite considerable outrage and appeals to the wider 'public good', there a few details on how universities can engage with the changing environment in ways that protect their core values while operating in the new political and economic reality.

The policy and regulatory role of government is analysed by Selwyn (2014). He feels that government should act to protect the university from the negative consequences of change through its ability to enact policy and regulation which direct the operation of 'fairer' models. He suggests (while acknowledging that this is utopian in the extreme) that government could regulate to enforce a non-commercial and educationally productive use of technology within a fair education system.

Others argue the role of the public sector in the provision of education is distorting the efficient operation of a more productive higher education system. Those who claim that universities are inefficient, even wasteful, in their expenditure, promote the use of commercial language and models (Bowen, 2013; Martin, 2011;

Vedder, 2004). Bowen (2013) is widely cited for his work on the 'cost disease' facing higher education which maintains existing models of education are inherently unable to be scaled sustainably (see Sect. 5.4).

The solution for some is reforming universities into purely market-driven and commercially minded organisations (Vedder, 2004; Zemsky, 2009; Zemsky, Wegner, & Massy, 2005). Schierenbeck (2013), writing in the context of the return to a zero-fees policy for public higher education in Germany, argues strongly for a minimally regulated market model with substantial increases in tuition at public institutions and removal of any regulatory preferences for public providers over for-profit entities. He suggests accreditation and oversight can be undertaken by a group of competing for-profit companies acting like the financial rating agencies credited with creating the conditions for the 2008 financial crisis (Lewis, 2010). His recipe for a more productive system ultimately hinges on the creation of measures of 'educational impact'. Education is compared to football with the analogy that goals scored can be used to rank football clubs effectively. The non-existence of any such simple unifying measure of value for higher education is treated as a problem for the market to resolve, despite clear evidence that such measures cannot be created (Chap. 16).

The operation of markets in higher education is contested by Marginson (2012b) who suggests such arguments fail to consider the political constraints and other sectoral characteristics that are intrinsic to education and that act against pure markets. Morrow (2006) takes this critique further, suggesting that it reflects 'the simplistic thesis that everything to do with the state is bad (inefficient, paternalistic, undemocratic, oppressive, etc.) and everything to do with unregulated markets is good (efficient, empowering, democratic, liberating, etc.)' (p. xxix).

For-profit models of higher education are promoted by a number of authors, although the US for-profit sector is struggling (Blumenstyk, 2015, January 6) and many of these analyses predate the US government's multipronged crackdown on misconduct in the sector (Field, 2015; Thomason, 2015a). Some authors, such as commercial provider Kaplan's chief executive, Andrew Rosen (Rosen, 2011), disingenuously argue that their business model is superior to that of the public institution, providing cheaper and more relevant education aligned to the needs of adults in particular. Kaplan is highly dependent on US public funds, as is the Apollo Education Group (see Sect. 9.2.1), receiving just under 90% of revenue from that source in 2010 (United States Senate, 2012) and, rather than being inherently superior, appears to have issues with student achievement (Biemiller, 2012).

Commercialisation is commonly identified by those arguing from within the sector as the factor destroying the integrity and value of the university. Many faculty disagree with any change drawn from outside the university or intended to increase the impact of the university on economic outcomes (Aronowitz, 2000; Bok, 2003; Kirp, 2003; Selwyn, 2014). The counter-argument is made by those seeing the university as an instrument of economic growth through engagement with industry and the commercialisation of technologies and research (Fayolle, & Redford, 2014; Wissema, 2009). This economic orientation of the university is

described as 'academic capitalism' (Slaughter, 1990; Slaughter, & Leslie, 1997; Slaughter, & Rhoades, 2004).

The importance of economic efficiency is reflected by the changing nature of the workforce employed by universities to teach (see Sect. 3.2.4). Donoghue (2008) points out that since 1975, US higher education is increasingly undertaken by a casualised workforce, which does not resemble the stereotype of a university academic. Consequently, the discussion about the future of university education is somewhat moot, as a new model already exists hidden behind the residue of the élite university, perpetuated in the popular consciousness by a few highly selective universities with international reputations and brands.

Transformation is a frequent theme running through these analyses. Zemsky (2009) argues that change is dependent on sector-wide transformation requiring an external disruption or intervention. Standard-bearer of the disruptive transformation of education enabled by technology is Christensen (Christensen, Horn, & Johnson, 2008; Christensen, & Eyring, 2011) who is widely cited by others writing in the field (see Sect. 17.3). His arguments assume education is a service analogous to that provided by media companies and consequently able to be transformed by the adoption of technological approaches replacing the classroom and academics with cheap, large-scale online experiences.

Ernst and Young (2012) predict radical transformation of Australian higher education in response to technologically enabled models of distributed organisations and the entry of a disruptive array of new specialist commercial education and service providers. Carey (2015) similarly assumes that technology will dramatically transform higher education as MOOCs (see Sect. 11.2) and similar technological modes of education sweep away universities and replace them with abundant free content and experiences delivered online through a University of Everywhere.

Bowen's (2013) responses to the unsustainable economic constraints affecting higher education reflect the way technology is positioned generically as a single solution, without necessarily engaging with the other forces influencing education, or addressing any plausible response to the obvious issues. His remedies include using MOOCs (see Sect. 11.2) to stimulate commercial solutions capable of supporting outsourcing the verification of student outcomes and for delivering good quality education at scale. He advocates structured 'toolkits' to reuse standardised pedagogical designs and content through an educational equivalent of Google, despite acknowledging previous attempts have failed (Wiley, 2001). He encourages reducing costs without any ideas as to how to achieve this, given the reality of the cost disease and the recognition that expenditure increases are often driven by external factors including regulatory requirements and the expense of modern technology.

Flawed transformation thinking is not limited to those promoting technological solutionism. Those identifying technology as a specific challenge to the identity of the university and who argue against any substantive change to the traditional lecture model of education (Brabazon, 2007; Noble, 2002; Selwyn, 2014) are themselves assuming a transformative power that cannot be shaped positively to the benefit of the university and society.

Bowen's (2013) proposed solutions imply that learning and teaching is not a core capability of the university but something to be outsourced and defined primarily by operational exigencies. Apart from his choice of technological means, much of this mirrors the work of Cooke (1910) who made a similar series of arguments aimed at improving the efficiency of universities more than a century ago.

Questions about what constitutes the core functions of the university are increasingly asked by those concerned with the impact diverse demands make on the university as an institution. Kerr (1963) articulates this diversity in his concept of the 'multiversity', a 'whole series of communities and activities held together by a common name, a common governing board, and related purposes' (p. 1). He recognises the boundaries of the university have become increasingly abstract, reflecting relationships with a wide variety of stakeholders (see Chap. 4) and the range of interests served by different parts of the organisation.

Students are now seeking education and experiences from an increasing diversity of sources, many of which bear little resemblance to the traditional university (Selingo, 2013). Scholarly communities have been recognised as transcending the boundaries of the university for some time, described variously as 'invisible colleges' and communities of practice (Crane, 1972; Hagel, Brown, Mathew, Wool, & Tsu, 2014; Wenger, 1998). There are growing signs of academics moving outside of the university to operate independently as part of the dynamic economy enabled by the Internet (Lanier, 2013; Young, 2015b), suggesting the concept of a university may yet become even more abstract.

The argument for a disaggregation of the university is made strongly by Craig (2015), a venture capitalist advocate and managing director of equity company University Ventures. Craig argues for the creation of a two-tiered system, with the élite enjoying a full service and everyone else paying for a minimal system constructed from the offerings of competing service companies. Elements of his suggested system are already apparent in the changes occurring to the Californian systems as Kerr's plan fails under the pressure of systematic underfunding (Bates, 2012). University Ventures is heavily funded by the German Bertelsmann publishing group (Wiesmann, 2012), which is attempting to establish a strong foothold in higher education similar to that of the Pearson group. The growth of outsourcing as a model for a gradual shift from public education to a hybrid partnership with for-profit interests is a major opportunity for these service companies, one that raises significant questions (Sect. 4.6).

The final major focus of analysis on the changing state of the university is the conception of leadership and the role leaders play in determining the impact change has on the institution. Increasingly, there is awareness that hierarchical models of leadership are failing to cope with the complexity of the challenges facing the university (Bennett & Hempsall, 2010) and that distributed models are needed to build a more agile organisation (Bennis, 1999; Jones, Lefoe, Harvey & Ryland, 2012; Marshall & Flutey, 2017).

An illustration of the role flexible and creative leadership can play is provided by Crow and Dabars (2015). They present a detailed analysis of how Arizona State University has responded to the wider changes facing the university. Their model,

the New American University, is a commitment to directly respond to the implications of the forces acting on the system in order to meet the needs of their state. This approach suggests that rational responses to the wicked problem can be articulated and successfully engaged with over extended periods of time.

Bok (2013) notes that evidence of transformative leadership in higher education is sparse, naming a small handful of institutions who have achieved significant changes to their operations, all primarily within the traditional scope of the university. Universities lauded as transformative models, such as the University of Phoenix or the Open University of the UK, operate within a traditional framework of qualifications and pedagogical structures and both show clear signs of struggling to maintain their models in a rapidly changing world. Bok attributes this lack, not to a failure of leadership within the university, but to the complexity of the challenges facing modern universities. This complexity is driven by the intersection of the forces outlined in this section and the technology outlined in the next. The reality of the wicked problem they create is that radical transformation becomes unrealistic as a criterion for successful leadership.

The analysis of the forces in the chapters of this and the next section does not propose a specific solution (which, as noted in the introduction, is impossible for a wicked problem) but stimulates a process of sense-making and reflection as a starting point for action by university leaders. The interrelationship between these forces is important in making sense of their impact in particular contexts. Daniel, Kanwar and Uvalic-Trumbic (2009) have described this mutual dependency of factors influencing an organisation, specifically the challenge of balancing access, cost and quality, as an 'iron triangle'.

Figure 2.1 illustrates the relationship between these forces, drawing on the iron triangle but also noting the influence of stakeholders and technology. This figure

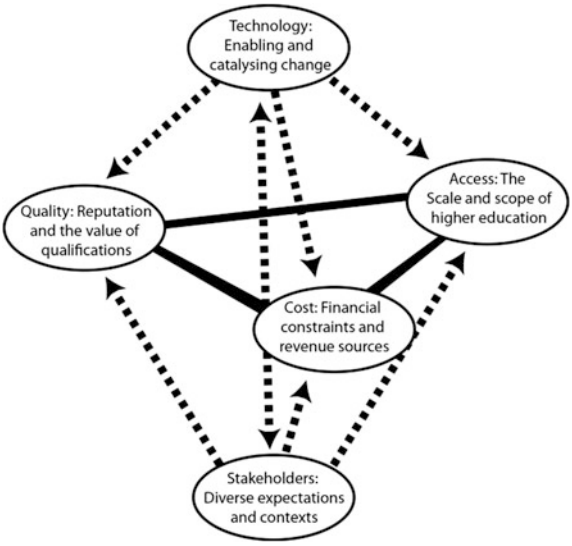

Fig. 2.1 Forces influencing modern educational institutions (modified from Daniel, Kanwar, & Uvalic-Trumbic, 2009)

provides a representation of the interactions that underlie the wicked problem of university change, identifying the primary drivers creating cues for sense-making. Each of the intersections between these forces represents a point of possible engagement with elements of the problem, but also shows where changes will propagate throughout the problem reshaping it further.

Educational quality is treated in Daniel et al.'s model as a single dimension, but it reflects a combination of complex factors, including the value and utility of qualifications, and is very dependent upon the perspectives and interests of specific stakeholders (Chap. 4). This influence is identified by Zemsky (2009) as regulation but also reflects broader social and economic forces acting on the university. Technology sits within the confluence of these forces and acts primarily as a catalyst for change and an enabler of new forms and models of education that reframe the forces.

Bergquist (1995) suggests that different priorities given to access, cost and quality define the perspective taken by organisational leaders. The *elitist* perspective focuses on quality with little concern for access or cost; the *populist* perspective contrasts this by focusing primarily on access, again with little concern for cost or quality. The *beleaguered* perspective is defined by cost with issues of quality and access regarded as lacking urgency. The *expedient* perspective on quality defines quality and access as endpoints on a scale requiring some form of compromise or trade-off. This is contrasted by the, arguably more optimistic, *unified* perspective that sees opportunities to benefit from synergies gained in the improvement of access, cost and quality. All of these are influenced by the choice of stakeholder interests and the impact of technological change on the context of the institution.

One way to escape the constraints of the iron triangle as originally conceived is to change some of the fundamental assumptions about quality, including its relationship to specific qualification models. The open agenda with its political, legal and technology dimensions provides an important illustration of the way the various forces can interact (see Chap. 11). Changing models of information use and ownership, reflecting the low cost of duplicating digital goods and a reaction against commercial intellectual property and ownership driven by scarcity and control, have combined with social and political drivers aimed at increased access and freedom in education. Initially, these ideas resulted in the UK Open University with its goals of removing barriers to access but within a framework otherwise compliant to the existing university system. More recently, a new wave of exploration and sense-making has seen the rise of the MOOC as a means of re-engaging with these ideas. Another possible strategy (see Part II) is to explore ways that change the relationship between the three components by using technology to enable and sustain different pedagogical approaches (Seely Brown & Adler, 2008; Cormier, 2012; Daniel, 2012). As will be seen the wicked nature of this space is reflected in the complex interplay of these forces and the unanticipated outcomes that arise from apparently simple interventions.

The first step to harnessing the forces acting on higher education is taken by understanding something of their nature. In the language of sense-making, these

forces potentially generate cues that trigger an attempt to find new meanings. They can be used in sense-giving strategies to stimulate awareness of the need to change the attitudes and orientation of the organisation. The chapters in this section and the next consider each of these forces in detail, exploring the ways they influence higher education organisations, then conclude by considering how the combined set is influencing the institution of higher education in society.

Chapter 3
The Scale and Scope of Higher Education

Abstract Higher education has grown in scale exponentially throughout the twentieth century generating a wicked problem where success is itself a driver of potential failure for some models of the university. The scope of university education is increasingly global and influenced by political and economic forces of globalisation. Trade in educational services is a significant contributor to the operations of universities and is an important driver of national policies and strategies for economic, political and social growth and influence. The changing place of China is examined, and their growing influence and power are identified. The impact of scale on higher education is described by Trow's model of élite, mass and universal education which is used throughout the book as a sense-giving tool with cues framing the impact of changing access to higher education, the shifting role of faculty and their relationships with students and other stakeholders, changing managerial and leadership structures and models, and the operation of regulatory and funding regimes.

> [I]n European countries as well as in the United States—failure to go on to higher education from secondary school is increasingly considered a mark of some defect of mind or character that has to be explained, justified, or apologized for. (Trow, 2006, p. 253)
>
> It seems to me very unlikely that any advanced industrial society can or will be able to stabilize the numbers going on to some form of higher education any time in the near future. (Trow, 1973, p. 40)

The growth in both the quantity and the diversity of educated people is perhaps one of the defining features of the twentieth century. The number of institutions and students in higher education has grown dramatically throughout the world (see Fig. 3.1). In the USA for example, the number of institutions tripled while student numbers increased 50-fold, a trend that has seen the public colleges grow to enormous size (Goldin & Katz, 2008). Similar expansions of scale have been apparent in most countries. The graph for China includes a substantial decline during the period of the Cultural Revolution but otherwise the lines for all countries reflect a common pattern of exponential growth.

This growth is paralleled by the rising proportion of young people (aged 25–34) with tertiary qualifications. South Korea leads at 69%, closely followed by the UK

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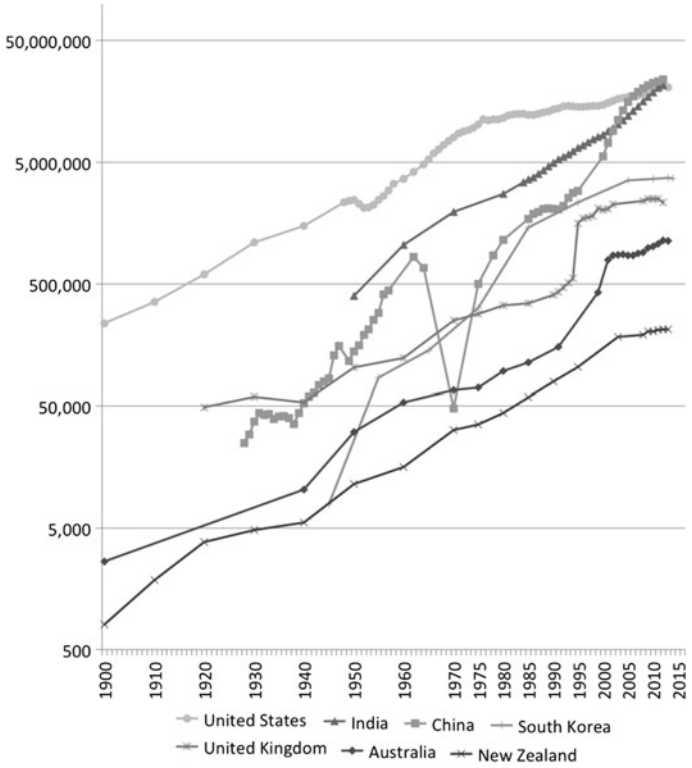

Fig. 3.1 Exponential growth in numbers of students enrolled in higher education 1900–2015

(49%), Australia (48%) and USA (47%), while New Zealand (39%) and China (18%) trail behind (OECD, 2016a). The South Korean experience of near saturation is explored in more detail in Sect. 6.4. The USA may be starting to show signs of saturating the market for some qualifications (Hussar & Bailey, 2016) with indications that the rate of growth in school-leaver enrolments in tertiary education is declining. This is a mixed outcome as the student population is still seeing significant growth in people from minority groups, older students and part-time students, all of whom are recognised as presenting greater challenges to educate.

Despite the dramatic increase in the scale of the system, as far back as 1996, Sir John Daniel observed the university was failing as a model for educating the human race. He estimated a new 50,000-person university would be needed every week for the foreseeable future just to keep up with population growth in countries like China, India and Africa (Daniel, 1996, p. 16). The practical challenges of achieving such an outcome seem insurmountable.

China increased participation in higher education by approximately 5 million students between 1997 and 2007, a growth rate of 30% per annum, and added over

1200 new institutions of higher education (Levin, 2010; Li, Whalley, Zhang, & Zhao, 2011). This reflects an average of 120 new institutions a year, but despite this, only growing the system's capacity to 10,000 new students each week; one-fifth of Sir John's estimate in a country with a large proportion of humanity. To achieve a level of education similar to the OECD average, their system needs to accommodate a further 10 million students based on their current population. The question raised by this rate of growth is whether it occurs at the cost of the quality of instruction given the scarce pool of expertise and experience available to teach in the new institutions, particularly in a high-growth economy desperate for skilled staff in commerce and industry.

Sir John focuses on the developing world but the expectations and political goals for participation in higher education are significant the world over. A number of countries, including the USA (Obama, 2010; Wood, 2012), Australia (Bradley, Noonan, Nugent, & Scales, 2008) and China (Beijing, 2010), in recent years have defined ambitious goals for increased participation in higher education. Many countries are similarly investing in growing the proportion of their adult population with degrees (OECD, 2016a).

A complication over the last decade is the impact of the global financial crisis and the ongoing impact this has on employment patterns and the immediate benefits of a qualification, particularly for younger people. The cost, both directly through fees and indirectly through the expense of servicing debt, is driving a critical examination of the costs and benefits of higher education (Browne, 2010; Pyne, 2014; The Obama White House, 2013). Many governments are rapidly reducing investment and trying to manage the scale of student debt, while still acknowledging the demand for greater access to higher education. Despite the financial challenges, there is strong evidence that qualifications, Bachelor's degrees in particular, are an important means for people to improve their employment options (see Sect. 6.1).

OECD modelling suggests that over the next decade, the number of people aged 25–34 with degrees will nearly double to just over 200 million (OECD, 2012b). The percentage of that age cohort enrolled in tertiary education globally has grown from 18% in 1995 to 33% in 2014 (OECD, 2016a, Table C1. 5). The long-term trend is a steady increase in the proportion of the population educated to degree level, suggesting that within the next decade a third of the adult population of the OECD will possess at least one degree. Similar growth trends are apparent in postgraduate degrees (OECD, 2016a). Increasingly, there is concern that students in some countries are becoming overqualified in purely rational economic terms (this chapter and 4).

Asian countries, less affected by the global downturn due to the scale of their internal economies and rapid improvement in standards of living and societal expectations, show the greatest growth in participation rates over the last decade. China proposes to increase enrolment rate in higher education to 40% by 2020 with the proportion of its population with higher education degrees rising to 20%, or

around 350 million people. This means just under 40 million students engaged annually in higher education study, around 50% of the school-leaver cohort (Beijing, 2010; He, 2017; State Council, 2017). This shift in the structure of the global education landscape sees nearly half of the world's highly educated population living in China, India, Korea and Japan and only a quarter living in the USA and the European Union (Fig. 3.2). This heralds significant changes in the pattern of relationships between different countries as part of the wider landscape of globalisation.

The growth in numbers of younger people in higher education is likely to be complemented by significant growth in the number of older people re-engaging with higher education over their lifetime. This is widely expected as a response to shifting expectations made of employees and the ongoing need to sustain skills and knowledge in the face of new technologies (see Chap. 8). The likely outcome is increased pressure on postgraduate provision, already a high proportion of international students, and a push for flexible models of delivery rather than formalised study.

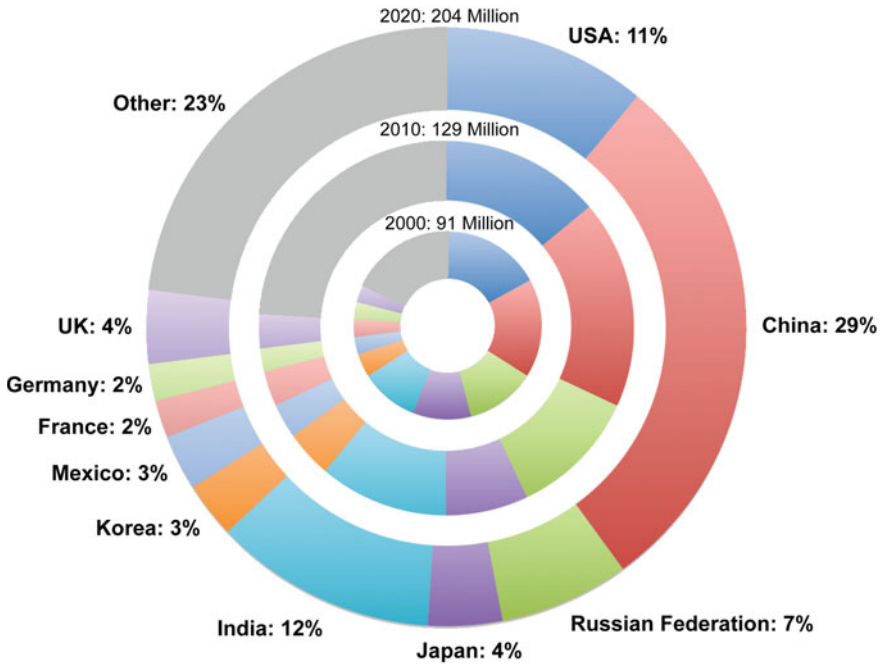

Fig. 3.2 Growth and changing shares of higher education amongst 25–34 year-olds, 2000–2020 (derived from OECD data and modelling: OECD, 2012b)

3.1 Globalisation and International Education

National growth in higher education is influenced by the interconnections in global economies and societies captured by the concept of globalisation. Suárez-Orozco and Qin-Hilliard (2004, p. 14) describe globalisation as 'a set of processes that tend to de-territorialize important economic, social, and cultural practices from their traditional boundaries in nation states'. These processes are actively influencing the perception of the world by many. Some speak of the world being flat (Friedman, 2005), others of the compression of time and space bringing individual and collective horizons closer (Harvey, 1990), and of the sense of overwhelming information and connectivity threatening to overload our cognitive facilities (Carr, 2010; Gleick, 2011). It also sees growing political turmoil in previously stable democracies as demagogues take advantage of stress and disruption to build a mandate for the return to a less-connected society. Academia is not immune to these forces, and faculty are increasingly affected by the stresses and processes of change (Sect. 3.2.4).

The importance of education as an international or globalised form of trade is apparent in its inclusion in the activities of the World Trade Organisation (WTO), particularly its inclusion in the General Agreement on Trade in Services (GATS; World Trade Organisation, 1995). Higher education is included on the list of WTO services (World Trade Organisation, 1991), despite significant criticisms raised by various groups and commentators (Giroux, Ward, Froment, & Eaton, 2001; Knight, 2003; Scherrer, 2005, 2007) concerned that global perspectives and priorities are not balanced with national and local considerations in such agreements. Tilak (2011) reviewed the impact the GATS is having on international higher education, noting the challenging pressure globalised education places on developing countries (Verger, 2009).

The GATS, along with the Trade-Related Aspects of Intellectual Property Rights (TRIPS; World Trade Organisation, 1994b) and General Agreement on Tariffs and Trade (GATT; WTO, 1994a), constitute mandatory and integral components of WTO membership. The extent the GATS impacts on national systems, including higher education, depends on the presence of private education providers and on the process of negotiated progressive liberalisation. These negotiations are proceeding slowly since the GATS came into force as each country is able to pick and choose the extent they make commitments under GATS, while complying with the unconditional obligations relating to equal treatment and transparency. The commencement of the Trump Presidency in 2017 suggests that negotiations are unlikely to conclude in the near term.

The complex balance of local, national and global contexts representing globalised higher education is described by Marginson as 'Glonacal' (Marginson & Rhoades, 2002; Marginson, Kaur, & Sawir, 2011). This describes the way that, in a globalised world, actions taken at a local level have implications and outcomes that affect the national and global relationships and context of the university. Universities have an important role to play in defining the nature of globalisation

through their international and transnational education activities and in their responses to the impact globalisation has on their identity and positioning in the global space.

Knight (2015) describes a range of different internationalisation models, including the *classic* model where the university engages internationally in a range of initiatives while remaining anchored in a national context, the *satellite* model where internationally based facilities extend the reach of the universities' activities into other countries and the *co-founded* model where multiple partners collaborate in the creation of hybrid universities. These are idealised types in practice, and Knight describes a wide variety of models adopted by different universities to address the specific needs of particular contexts. He predicts the likely growth in even more elaborate international collaborations aimed at greater flexibility and recognition of educational achievements by students drawn from multiple institutions.

The demographic shift in the world's educated population will see a significant change in the international structures of higher education as China and India, in particular, continue to expand the scale of their educational infrastructure and look to attract international students themselves. Countries such as China and India currently subsidise the higher education systems in countries such as Australia, the UK, New Zealand and Canada through the lucrative trade in educational services (Martens & Starke, 2008, Rizvi, 2011). In 2014, 18% of all students studying in Australia, New Zealand and the UK were international students paying a substantially higher fee than domestic students (OECD, 2016a). This average figure hides the reality that the level of dependence on international students for individual institutions can be very high. The financial implications for these institutions are significant with international students providing a critical proportion of the revenue of many institutions (Table 3.1). In some Australian universities, nearly half of the student body is internationally sourced. It is notable that universities with very strong reputations, such as the Australian National University and the University of Melbourne, have a very high proportion of their student revenue drawn from international students, 41% in both cases.

The disproportionate state of China's involvement in international education is evident in the OECD analyses that show China currently has well under 1% of the world market for international students (OECD, 2016a), while dominating the provision of students to that market with their nationals accounting for 22% of all international students (OECD, 2016a). The largest proportion of the cohort of Chinese students studying internationally (31%) went to the USA. China's dominance in provision of students to the USA is underscored by the rate of growth in the numbers of students. Numbers rose from just over 50,000 students in 2007 to 235,000 in 2013, even as the US market share of international education has declined. Numbers from India and Korea have remained relatively flat through the same period (Institute of International Education, 2014). The high fees derived from international students and the consequent dependence on the funding subsidies for other institutional activities make any variation a cause for concern (Fischer, 2013).

Table 3.1 International student numbers and revenues for Australian universities derived from 2013 university fiscal year reports

	% International students (%)	% Student revenue from international students (AUS$) (%)
Federation University	48.1	42.6
Australian National University	30.3	41.3
University of Melbourne	28.9	41.2
Macquarie University	26.6	38.0
University of New South Wales	26.6	37.8
RMIT University	45.3	36.6
University of Sydney	23.1	35.8
Monash University	35.9	35.4
University of Queensland	24.1	34.0
University of Adelaide	26.4	32.8
University of Technology Sydney	27.1	31.6
Curtin University	34.7	30.1
Central Queensland University	27.4	29.6
University of Wollongong	38.0	29.3
Murdoch University	43.4	26.6
University of Western Australia	20.0	25.1
Griffith University	20.9	24.4
Swinburne University	32.4	23.4
University of South Australia	23.6	23.0
Deakin University	17.4	22.9
La Trobe University	21.4	22.7
Queensland University of Technology	16.5	22.4
University of Canberra	24.4	21.9
James Cook University	35.1	20.5
Victoria University	31.5	20.2
Edith Cowan University	17.1	19.0
University of Newcastle	16.7	17.1
Charles Darwin University	14.6	16.8
Flinders University	14.9	16.2
University of Tasmania	20.5	14.8
University of Southern Queensland	21.1	14.4
Charles Sturt University	16.1	12.5
Australian Catholic University	11.3	11.1
University of Western Sydney	9.5	10.9
University of the Sunshine Coast	10.3	10.8
Southern Cross University	15.2	10.3
University of New England	6.5	7.0

This reliance on foreign students from a small number of countries is a significant risk to the stability of educational funding in the destination countries. The global numbers of international students (OECD, 2016a) are volatile with boom years such as 2008/2009 (15.8% increase) followed immediately by much slower years (2009/2010: 1.3% increase). In this instance, the cause of the decline was global economic downturn but similar disruptions have resulted from events such as the 2002 severe acute respiratory syndrome (SARS) outbreak (Feast & Bretag, 2005). US institutions recognise the risk that over-dependence on Chinese students represents and would like to attract a more diverse international student population, but this is challenging given the cost and increasingly strict entry requirements (McMurtrie, 2012).

Figure 3.3 illustrates the impact that volatility can have on the number of students choosing to study in a particular country, Australia in this case. The dramatic drop in student numbers evident in 2009, −18% in one year relative to 2008, was driven by a loss of over 30,000 students from India in response to media coverage of treatment of Indian students in Australia (Dunn, Pelleri, & Maeder-Han, 2011). Numbers of Indian students entering Australia still have not recovered to anything like the earlier numbers. It is important to recognise the financial implications of such changes persist over several years as universities lose that student revenue for the entire period of undergraduate and/or postgraduate study.

High numbers of Chinese students are a particular issue with some institutions risking over-saturation, leading to the observation 'If you want to improve your Chinese, go to America, because you'll have many, many classmates from Beijing' (Fischer, 2014). The dominance of specific student populations is not just a question of language and culture; it has academic consequences as well. International student enrolments are disproportionately focused on business and Science, Technology, Engineering and Maths (STEM) subjects delivered in major metropolitan universities (Ruiz, 2014). This suggests revenues are similarly disproportionately earned and introduces the risk this might disrupt the internal management of institutions, particularly if the revenue varies significantly on an annual basis.

The UK provides an interesting example of the collision between different policy concerns affecting international education. The UK has long been a successful provider of education to international students. In 2011, the UK attracted 13% of the total students studying internationally (OECD, 2013, p. 307), putting it in second place behind the USA at 16.5%. The degree UK institutions seek international students has risen to such an extent they are criticised for shifting the organisational focus away from the 'national purpose' they were founded and remain funded for (Scott, 2011). Data for 2012, however, shows the first decline in nearly 30 years (Howson, 2014; Higher Education Statistical Agency, 2014). OECD data displays a significant decline with the UK's share decreasing to 10% in 2013 while the USA has increased its share to 19% (OECD, 2015. p. 356).

This decline appears to reflect in part the cost of degrees, despite the English pound's relative weakness, but mostly appears to result from the anti-immigration policies of the UK government enacted in 2011 (British Council, 2011) which were

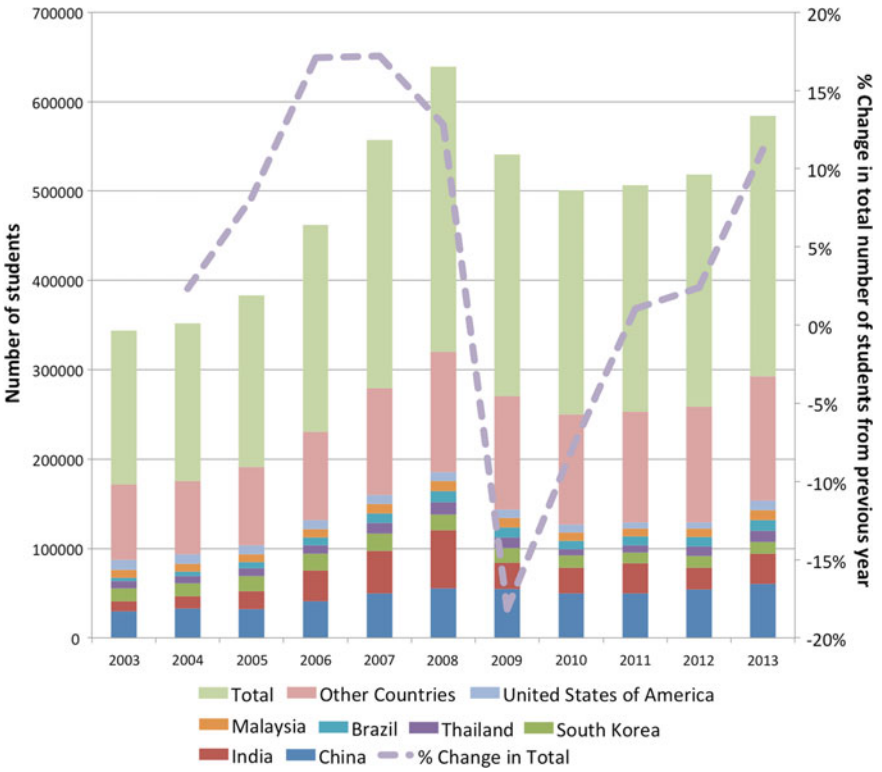

Fig. 3.3 Changing numbers of Australian international students 2003–2013 (derived from Australian Government Department of Immigration and Border Protection, 2010, 2014, Table 2.03)

assessed at the time (Home Office, 2011) as potentially costing the UK economy £3.5 billion over four years. These policies included a troubling focus by the UK Border Agency on the activities of university students and a sense that 'Big Brother' was not only watching but asking tough questions of academics and students about their studies (Jenkins, 2014). Similar political scrutiny of foreign students limits access to study visas and negatively impacts graduate study in the USA (Stuen, Mobarak, & Maskus, 2012). Despite the tension with migration issues, the UK government is still planning on growth of 15–20% over the next five years (Her Majesties' Government, 2013a); a policy driven by the economic benefits as the very first sentence of the policy document is a foreword from the Minister for Universities and Science stating 'There are few sectors of the UK economy with the capacity to grow and generate export earnings as impressive as education' (p. 3).

The decision to leave the European Union, commonly described as Brexit, may produce significant barriers to the ability of students to engage in credit transfer programmes in the UK or enrol as UK students (James, 2016) and is expected to reduce the numbers of European students attending UK universities with the

possibility that international student numbers may drop by a third or more (Marginson, 2017). The rise of nationalist policies and further reductions in immigration is likely to decrease numbers of students and staff drawn from a wide variety of countries, not just those in the EU but others discouraged by the general political and social climate. Similar drops are likely to occur in the USA given the similar anti-immigration and anti-globalisation rhetoric of the Trump Presidency (Fischer, 2017).

Another medium-term shift is likely to occur as China develops its domestic higher education. The Chinese government has engaged in a series of national projects over the past two decades aimed at building a world-class university system capable of meeting its domestic needs (Rhoads, Wang, Shi, & Chang, 2015; He, 2017; State Council, 2017). Recently, this extended to include an aggressive policy of growth in the quality and scale of its international education market, seeking to attract 150,000 students annually by 2020 (Pan, 2013). The Chinese government appears to be following a policy of building educational connections not to make money or subsidise its institutions but to raise its status and position politically and academically through the development of 'soft power' (Nye, 1990, 2004, 2005; Rhoads et al., 2015) and promotion of Chinese culture and language (Wang, 2013).

China is well aware that allowing its top talent to study overseas is a mixed blessing (Mok & Han, 2016; Sheng, Wang, & Jin, 2016). Approximately 90% of the PhD graduates whom major in science and engineering in the USA choose to remain there rather than returning to their home country (Wang, 2012). This sees China not only losing the benefit of their knowledge and skills but wasting the national investment in local undergraduate education which enabled the student to leave for foreign graduate study. There is some evidence that internationally educated Chinese nationals are less welcome in their own country on return, being referred to as 'haidai' (seaweed) reflecting their disconnection from society (Fischer, 2014). There are also issues with students expressing opinions on political and social matters that are at odds with the Chinese government's official positions (McIntire, 2015; Fish, 2017).

China has started the process of investing in selected institutions to make them credibly 'world-class' (Levin, 2010; Rhoads et al., 2015; Wang, 2012; Yang & Welch, 2012). They are actively promoting the use of private providers and online modes as a mechanism to generate further significant growth in the capacity of their system (He, 2017; State Council, 2017). In so doing, the Chinese government acknowledges the dominance of western models for excellence in higher education with the, possibly short-term, risk of appearing weaker (Mohrman, 2013; Wang, 2013). Assuming the Chinese higher education system will continue to be a poor cousin to those of Western nations is almost racist and is certainly naïve. A re-balancing of the distribution and economics of international education seems inevitable with decline in USA dominance likely to mirror the rise of the Chinese system and of those other Asian nations currently seen as sources rather than destinations for international students (Chan, 2013). As Marginson (2004b, p. 111) observes 'The answer to the question "Who will educate China?" is "China".'

The one slightly sour note is the technologically deterministic, even colonialist, view of the Chinese government that the research university model formed in the West is automatically better than anything they might develop from their own cultural values and knowledge (Postiglione, 2015; Rhoads et al., 2015; Smith & Marx, 1995). This problem is not unique to China. It can reduce diversity and have serious economic consequences:

> by making US universities the model of excellence, poorer countries pour their scarce resources into an unattainable and arguably inappropriate goal, enriching one or two universities while impoverishing the rest. In some cases it becomes a justification for having no substantial university at all so that the training of students, especially postgraduates, takes place abroad. (Burawoy, 2011, p. 38)

By adopting the dominant model of the research university as defined by international ranking schemes, China has fallen into the trap of conflating progress with the specific technologies used by others and the associated cultural systems (Mok, 2007), rather than using sense-making approaches to recognise that their own situation might respond more positively to alternative approaches. Postiglione (2015) identifies the Chinese academy, or 'shu yuan', as providing the intellectual foundation for an alternative university model and the governance frameworks of the Hong Kong universities show how collective national goals can be supported within an academic context.

The wider concern is alternative models might be better than the dominant model typified by the top 1% of universities included in the international ranking schemes:

> The point is not that other countries produce more degrees; it is that they just might be producing better degrees, certainly degrees whose reference points in student learning outcomes and meaning is transparent—something that cannot be said for the degrees we award. (Adelman, 2009, p. ix)

Adelman is speaking in relation to the European Bologna process and its influence on improving higher education (see Chap. 6). It is clear that these ideas influence conceptions of higher education globally and inform countries like China as they design and invest in their growing domestic university system. Ironically, in so doing, they may repeat the mistakes made by external providers who have previously attempted to impose culturally misaligned models (Marginson, 2004b). The failure to engage in sense-making processes challenging the norms imported from other contexts lies at the heart of the approach adopted by the Chinese government.

3.2 Élite, Mass and Universal Higher Education

The growing scale of higher education is changing conceptions of the system in fundamental ways. Historically, higher education provided a transition for students from school to adult life. The model is one of intensive engagement in education

followed by entry into a career without, for the vast majority of students, any subsequent engagement in formal degree studies.

Changing models of employment and the ongoing impact of technology now suggest most people will move between several careers in a lifetime (Bialik, 2010; Coelli, Tabasso, & Zakirova, 2012). This will see individuals to re-engage in higher education as they transition to different roles within an industry or as part of a move to new roles in different industries (Frey & Osborne, 2013; Goldin & Katz, 2010; Leontief, 1983). Higher education is undergoing a change in scope, with many adults needing to gain additional qualifications over their life in a series of engagements with educational providers (Jenkins Vignoles, Wolf, & Galindo-Rueda, 2003). Consequently, actual demand for education can easily be four or five times greater than predicted by those modelling education on historical school-leaver patterns.

The growth in access to higher education has seen an increasing focus on equity issues with a political and social shift in emphasis from the recognition of educational excellence to one of enabling student success. The dominant paradigm of historic Western higher education is a heavily subsidised opportunity for academically successful young adults, primarily from wealthy and educated families, to obtain an undergraduate degree in a formalised setting over three to five years. For many students, this has been sufficient to provide an entrée into employment and adult life. Depending on the discipline and profession, a smaller proportion of students enter graduate study either immediately or after a period of employment. Successful graduates form the nucleus of the new generation of leaders of their profession, taking the skills and knowledge they have developed in their studies into academia, commerce or government.

There is evidence that this paradigm is shifting. Universities are expected to support students less suited to traditional models of higher education and ensure their success in timeframes equivalent to those of more prepared peers (Schuetze & Slowey, 2002; Whiteford, Shah, & Nair, 2013). As the proportion of society engaging in higher education grows, universities are facing a population of students less able to devote their time completely to study, intellectually less well prepared or able, and without the personal resources and support that characterise the more élite model of the past (Jaggers, 2011).

The growth in student numbers has seen universities grow to unprecedented size. It is now normal to see universities with student populations numbering in the tens or even hundreds of thousands, operating on a multitude of campuses. A large class can mean thousands of students simultaneously enrolled in single course offering. Academics lecturing to audiences of hundreds of students are now the norm in many universities. Commonly, lectures are offered multiple times and technologies such as video capture and Internet streaming are used to address limitations of space preventing physical attendance by students.

The impact these shifts in scale have on many aspects of education was predicted in the early 1970s. Sociologist Martin Trow is credited with developing a model of understanding the effects on higher education as it evolves and reacts to the growth in scale, scope and importance (Trow, 1973). Trow identified three ‘ideal types’ of

higher education, 'élite', 'mass' and 'universal', not as archetypes or models to shape existing institutions (Brennan, 2004), but as a tool to assist in the analysis of the impact experienced during transitions between them (Trow, 2006).

At one level, Trow's ideal types are defined simply on the basis of demographics. Élite education reflects a model serving a privileged 5–15% of the population, mass education serves a larger proportion, between 30–50%, and universal education serves the population as a whole (Trow, 1974, 2006). Trow's insight was the extent of participation fundamentally changed the nature and purposes of the education provided as a result of sociological changes. These three categories are a useful tool for exploring the social, political and leadership implications for national systems of higher education and for individual institutions.

Élite education, available only to a small proportion of a society, reflects a combination of history and the recognition of privilege. It can be seen as focusing on the 'shaping the mind and character of a ruling class' (Trow, 2006, p. 243) as well as reflecting the 'level of intensity and complexity at which the subject is pursued' (Trow, 1976, p. 355). Institutions such as Harvard, MIT and Oxford typify élite education with their history of providing the 'intense academic relationships' (Trow, 1976, p. 357) that acculturate students as much as they educate them. Historically, Oxford's colleges explicitly recognised this with students segregated on the basis of class and with the wealthiest able to avoid any substantive academic requirements when obtaining their degrees. The purpose of such colleges in the seventeenth and eighteenth century was to improve men (and it was only men) so 'their reason, and fancy, and carriage, be improved by lighter institutions and exercises, that they might become rational and graceful speakers, and be of an acceptable behaviour in their counties' (Ward, 1654, p. 50).

In contrast to élite education, mass education responds to the needs of society for economic and technical advancement by adopting a more skills-based approach (Trow, 2006, p. 243) with systems supporting a more heterogeneous student population. The scope and diversity of the expectations made of mass education institutions are reflected in the range of subjects offered and the curriculum models, which are structurally more flexible than those seen in élite institutions, often arranged in modules. Students are commonly able to switch majors, qualifications and institutions throughout their studies as the structure of mass education enables greater standardisation and interoperability of institutional systems within sectors. Initiatives such as the European Bologna process (Bologna Declaration, 1999; Bergen, 2005) (see Chap. 6) and the alignment of national qualification frameworks to the European qualifications framework (UNESCO, 2015) reflect the awareness of the need for mobility and common expectations that arise through the massification process. The mass model is more reliant when using technology, both as an aid to maintain affordability and in response to the needs and expectations of the students and their employers once the student enters the economy. The economic and political importance of mass educational drives a focus on accountability and other externally applied constraints. This leads to the growth of bureaucratic systems and the management of institutions by professional administrators and leaders who often have minimal experience within higher education.

Universal education builds on the mass education agenda to reflect 'rapid social and technological change' (Trow, 2006, p. 243). The key distinction is providing a system of education open to all students without any barriers other than their own interests and energy. Trow notes, 'Attendance at emerging institutions of higher education designed for universal access is merely another kind of experience not quantitatively different from any other experiences in modern society that give one resources for coping with the problems of contemporary life' (p. 255). In many countries, children now experience universal primary and secondary education and it is seen as a basic right. Although, as with other rights, it is not always consistently respected, and even in the USA, universal high school education was initially criticised as wasteful (Kandel, 1934). Universal education is significantly different from mass education in that it does not bear a direct relationship to employment through qualifications (see Chap. 6) and, by its nature, serves equally all social, class and ethnic groups. Consequently, many of the systems of monitoring and managing the performance of mass education become irrelevant.

Exploration of the nature of each of Trow's ideal types leads to the identification of a number of criteria (Brennan, 2004; Trow, 2006) used to understand them and identify issues that generate conflict between the needs of different stakeholders (see Chap. 4). These include the means by which people are selected to gain access to higher education, including their attitudes and expectations for gaining that access and the homogeneity or otherwise of the student population; the career models of individuals and the structure and timing of their engagement with higher education throughout their lives; the curriculum and form of education experienced by students; the intellectual and collegial nature of the academic community students participate in, including their relationships with their teachers; the leadership and administrative structures and systems of the institution; the relationships between different institutions and the ways boundaries between them are constructed; and the expectations the institution is held to, including the definition of academic standards and the function it plays in other elements of society such as the economy or the political system.

3.2.1 Access to Higher Education

Access to élite education is, by its nature, invariably a privilege restricted to those who demonstrate significant talent or who have the benefit of wealth and social position. Access to élite education historically signifies individual privilege, providing a form of social validation of the individual and their role in a structured sociocultural setting. This can reflect the Confucian virtue of Benevolence or in the Christian tradition, the words of Luke 'For unto whomsoever much is given, of him shall be much required: and to whom men have committed much, of him they will ask the more' (Luke 12:48, King James Version). Wealth and social position dominated access to élite education with a belief that possessing such status was God-given, not earned. 'Those who reach top positions are not encouraged to claim

privileges on the grounds that they deserve them, that they have earned them by their efforts; they should, rather, feel humbly grateful that fate has "called" them to interesting and worthwhile jobs' (Dore, 1976, p. 183). Bourdieu and Passeron (1977) make a less positive interpretation in their critique of French higher education's concealment of systematic inequality:

> Nothing is better designed than the examination to inspire universal recognition of the legitimacy of academic verdicts and of the social hierarchies they legitimate, since it leads the self-eliminated to count themselves among those who fail, while enabling those elected from among a small number of eligible candidates to see in their election the proof of a merit or 'gift' which would have caused them to be preferred to all comers in any circumstances. Only when the examination is seen to have the function of concealing the elimination which takes place without examination, can it be fully understood why so many features of its operation as an overt selecting procedure still obey the logic governing the elimination which it conceals. (p. 162)

Unsurprisingly, students in élite institutions believe their access represents a legitimate consequence of their ability and hard work (Brown, Power, Tholen & Allouch, 2016), a finding consistent with the rationalisations used by the beneficiaries of privilege (Wisman & Smith, 2011).

The retention of value by certain élite institutions whose qualifications are regarded as socially and economically more important, regardless of their educational or utilitarian effectiveness, leads to a form of social congestion or competition for access to these institutions. To illustrate the extent of this congestion, in 2014, the eight elite US Ivy League universities, despite their dominant reputations, graduated less than 20,000 students from a population of 45 million nationally (NCES, 2017). The conflation of this 'selectivity' measure of a university, reflecting the number of people denied access, and the ranking of the university (see Sect. 16.3) further exacerbates the inequality of this model of élite provision.

This level of competition for the coexisting élite institutions weakens the democratic ideal of mass and universal education as students from less privileged backgrounds are competing with those who have a significant cultural and social head start (Bourdieu & Passeron, 1977; Collins, 1979). The modelling of education as either a positional good, subject to such 'congestion', or a material good, able to scale in relation to demand, is discussed in more detail in Sect. 6.1.

Setting aside social desirability, élite education is not attractive to a large proportion of the population even where it is financially plausible. Where access is based on social standing, the experience is dominated by the pre-existing social relationships of the students, and outsiders are acutely conscious of their lack of knowledge of the norms, social graces and contacts. If the élite nature is based on intellectual talents, less able students rapidly find themselves unable to keep up with their peers and participate in many learning activities. The nature of the influences defining élite education means even when students are capable of succeeding intellectually, they are less likely to attend due to their lack of the social connections that facilitate access (Corver, 2010; Hoxby & Avery, 2013).

The expression of fate or divine favour leading to the privilege of an élite education, rather than intellectual talent and hard work, is a fundamental difference between older forms of élite education and the instrumented and structured achievement characterising mass education. The extent of intellectual talent predominating over wealth as an entrée to élite education is a reflection of wider social equity issues within a culture. The awareness of a right to education and the need for it to reflect equality of opportunity and success based on talent and individual application are themselves characteristics of the shift to mass education.

Mass education, as part of the wider shift to a culture of accountability and measurement aligned with formal qualifications, manages access through a system of qualifications. Early success leads to the right to access additional educational experiences. This influences the extent to which that access is subsidised by others or is used to justify access to a restricted set of élite opportunities. In some countries, particularly in Asia and Europe, access is structured through examinations taken during secondary education, which identify talented students and provide them with access to a challenging curriculum culminating in access to the best institutions. While the system as a whole is operating at a mass level, this provides a context for continuation of the élite model within the wider mass system of education.

In other Western countries, mass education operates on a commercial model. Access is based on economic considerations like any other material good, pricing being determined by a combination of perceived quality, scarcity and operational costs (see Chap. 5). Interestingly, if access to élite education is dominated by social position rather than intellectual ability, then the transition to mass education sees the quality of resulting graduates increase, an outcome further reinforced by the shift enabling greater participation by people from historically excluded groups. This inclusion should see society benefit from the creative contributions and innovation stimulated by that increased diversity.

Universal education removes any consideration of prior success in determining access by ignoring the student as an individual participant. Who you are no longer defines access, only your decision to associate yourself with an educational experience. People choose to associate themselves with an education, as needed, either in response to other aspects of their life or purely as a form of entertainment. Accessing education ceases to become important in comparison to what that person does with their new knowledge or skill, or with the outcomes achieved through their engagement with other learners. The growth of ‘just in time’ training as a model of professional development illustrates the ways in which such universal education may be valued in future by both individuals and society in general.

3.2.2 Educational Careers

The differences in access in the three modes are mirrored in the way they influence the structures and processes of individual careers. Both élite and mass education

induct students into adult society and so impact younger people transitioning into their grownup lives. Mass education, with its focus on employment and economic aspects, provides support for professional growth through 'upskilling' and 're-training' undertaken throughout a working life and during transitions to new careers. It is not uncommon in mass education systems, such as that operating in the USA, for people to continue to study while in employment, sometimes with the direct support of their employer who may have an interest in, and control over, their curriculum (Nixon & Helms, 2002; Andresen & Lichtenberger, 2007; Lui-Abel, 2010). The German apprenticeship model with its focus on education for an occupation rather than a specific job illustrates how this model usefully places education within an authentic environment (Deissinger, 2015; Soskice, 1994). Graduates of élite institutions may engage in further formal study or maintain their connection in other ways, including alumni networks and mentoring, undertaken in conjunction with the élite roles they are likely to undertake.

Universal education has little to do with formal career structures or systems. It forms part of the ongoing intellectual activity of individuals, undertaken in response to their own interests or needs. The outcomes of universal education may affect someone's success in their working life but, in the absence of qualifications, the benefits will arise from evidence of competence in the workplace context rather than in a separate educational sense. In this mode, education becomes experiential or transactional, contextualised to an immediate need or integrated into a continuous process of identity construction. While MOOCs (see Sect. 11.2) are an obvious example of universal education, other approaches, such as the French technology educator 42 (Sayare, 2013; Hockenos, 2015), illustrate aspects of the method with rejection of the qualification model and placement of education directly within a workplace.

3.2.3 Curriculum Shifts and the Increasing Scope of Higher Education

The curriculum, and how students experience it, differs substantially in the three modes. It is easy to conflate the élite model with the humanities and liberal arts model of the USA, particularly when considering the recent example of A.C. Grayling's College of the Humanities (Grove, 2015). However, institutions such as MIT and Stanford are élite in character with selection criteria focusing on the STEM subjects and entrepreneurship, respectively.

Modern élite education is typified by structured programmes of study and a focus on building collegiality and relationships through shared, highly intensive, demanding experiences (Brown et al., 2016). The shift to mass and universal education sees that homogeneity dissolve as programmes of study and individual courses become increasingly modular and flexible in structure until, at the fullest extent of universal education, the terms no longer have any meaning. At this point,

education comprises a component of the intellectual life of the society. Oldenberg's (1989) 'third places' that are neither home nor work and provide individuals with a sense of community and engagement much as universal education of children creates important structures for community life oriented around school activities and events.

Mass education is provided in a wide, and increasing, variety of subject areas; from the humanities, social sciences and physical sciences to professions such as law, medicine, engineering, education, architecture and design. Within institutions, the blurring of élite and mass approaches manifests differently in specific subject areas; the humanities, including law, are likely to reflect élite modes and cultures while the sciences and commerce respond to the economic drivers behind the mass mode. The focus on economic utility defining the mass education experience leads to a disproportionate emphasis on applied disciplines and the development of a technically skilled workforce able to sustain industry and commerce. Under universal models of education, the curriculum becomes increasingly irrelevant, more likely to reflect a continuous negotiation between experienced learners and novices (Marshall, 2013b).

3.2.4 Relationships with Academic Faculty

Students participate in an academic community that changes in parallel with the different curriculum models. Élite education is heavily dependent on strong relationships and a collegial community involving students and teachers. These are developed during study and maintained subsequently through alumni activities and personal relationships sustained on an individual basis. This collegiality is less apparent in mass education although there can be a strong sense of shared values, particularly with respect to the value of education and the benefits to society (see Chap. 14).

The growth in scale and the culture of economic rationalism and accountability dominating the mass education context leads to the development of a commercial consumer culture. Students are treated as paying customers or clients, and the teaching staff are managed as a resource rather than a community (Eagle & Brennan, 2007; Finney & Finney, 2010; Gappa, Austin, & Trice, 2007). This generates significant issues. Treating students purely as customers and operating on a commercial basis to minimise costs and maximise profits, particularly those derived from public subsidies of higher education, results in significant restrictions and oversight of providers (Tierney & Hentschke, 2007) driven by government concerns over the social and political costs of poor-quality education.

Using commercial sensibilities and priorities to manage the teaching workforce in mass education drives significant changes. Part-time, contract and adjunct teaching staff are now a substantial proportion of the academic workforce in many countries. Over half of Australian academics (Percy et al., 2008; May, Strachan, Broadbent, & Peetz, 2011) and 35% of those in the UK (Higher Education

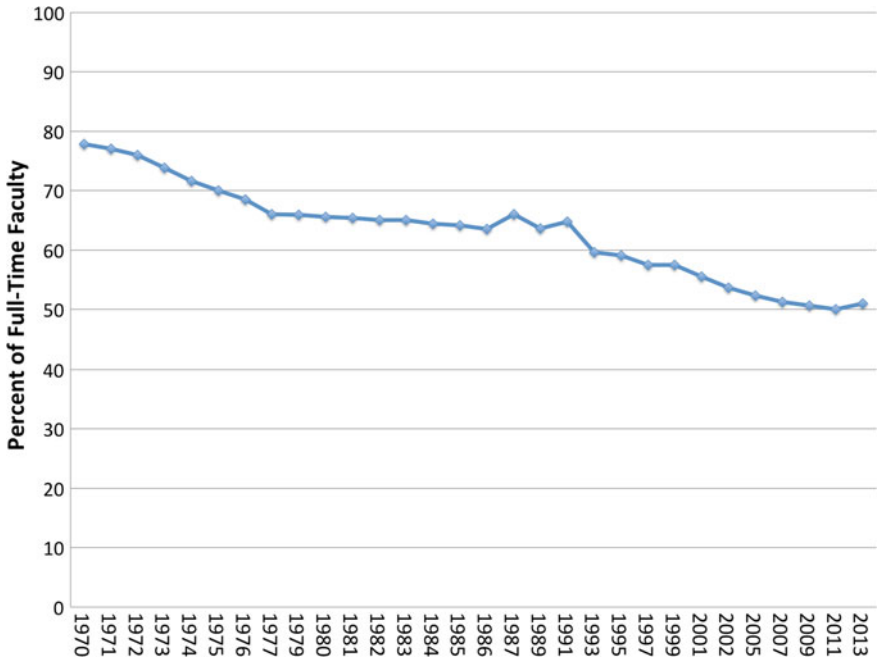

Fig. 3.4 Proportion of full-time faculty in US degree-granting institutions 1970–2013 (derived from United States Department of Education, 2015, Table 315.10)

Statistical Agency, 2013) are on non-permanent or casual teaching contracts. The USA has seen full-time faculty in degree-granting institutions decline from 78% in 1970 to 50% in 2011 (see Fig. 3.4). This decline in permanence is associated with a decline in the status and protections of academia. Less than half, 48.5%, of these full-time staff are in tenured or tenure-track positions, and this decline is also apparent in the proportion of US institutions with tenure systems which have fallen from 62% in 1993 to 48% in 2013 (United States Department of Education, 2015, Table 316.81).

The decline apparent in Fig. 3.4 illustrates the impact the wider environment is having on the casualisation and, in Trow's (1994) words, 'deprofessionalisation' (p. 15) of the academic community. On the surface, using part-time or flexibly employed staff has potential benefits to the university with the opportunity for professional staff to engage in a variety of ways, bringing a different set of skills and perspectives to higher education. Employment flexibility is helpful to under-represented groups and staff with family obligations making full-time employment challenging. These are some of the reasons cited in Australia in the Dawkins Green Paper (Dawkins, 1987), which outlines the radical changes implemented there in the nineties. Similar justifications have been used to support models of teacher employment in for-profit institutions (Tierney & Hentschke, 2007).

Although some positive outcomes are seen, the overall impact appears to be suppression of academic influence, a growing uncertainty of employment and a sense of 'precariousness' as academic careers intensify and challenge individual ability to cope (Fazackerley, 2013; Gill, 2009; Patton, 2012). Deprofessionalisation has extended to the point where the University of Essex felt it appropriate to offer 'a "non-stipendiary" junior research fellowship in philosophy'. In other words, the university, ranked third in the 2014 UK Research Excellence Framework for the quality of its research in the social sciences, felt it was appropriate to offer a research job that had no salary (Calkin, 2013). Similarly, the University of Durham has been criticised for attempting to gain free teaching labour from its postgraduate students (Mendelsohn, 2013). Blurring the boundaries of the academic workforce with the student population, enabled by technology, means students are taught by people who are very loosely placed within the university as an institution and only peripherally engaged with the experience of academia (Gregg, 2011).

This cost-cutting has a political dimension, and academics are increasingly vulnerable to political interference and control through manipulation of funding sources (Kendzior, 2013). This is far from the predictions of Levine (2000) who, while caught up in the frenzy of the Virtual University (see Chap. 9), predicted a far rosier mythical future for academics in the transition from élite education through mass and universal scales:

> The most renowned faculty members, those able to attract tens of thousands of students in an international marketplace, will become like rock stars. It is only a matter of time before we see the equivalent of an academic William Morris Agency. With a worldwide market in the hundreds of millions of students, a talent agent will be able to bring to a professor a book deal with Random House, a weekly program on PBS, a consulting contract with I.B. M., commercial endorsement opportunities, and a distance-learning course with a for-profit company in a total package of $5-million. (p. 3).

The shift to universal forms of education potentially continues this dissolution of the academic community. Universality sees the establishment of new communities encompassing interest groups drawn from the entire population and the role of experts becoming less apparent except through the creation of resources for people engaging in their own independent learning. Universal education places the obligation for defining an individual's place in society solely and entirely on the individual; through the groups they associate with, the experiences they undertake to educate themselves, and the tools and systems supporting their learning (Downes, 2007). The individual student is responsible for establishing their own communities and defining their place within those groups. Recently, these ideas are apparent in the creation of the Massive Open Online Course, or MOOC (see Sect. 11.2). The concept of the MOOC acts as a strong cue for sense-making. MOOCs are stimulating questions about the value of traditional academic careers and the role of academics as teachers, even as they enable wider access to educational content and communities and increase the scale of the audience for academic knowledge and guidance.

3.2.5 Organisational Implications of the Shift to Mass and Universal Modes

Organisationally, Trow's (1973) three modes describe significant internal and external differences between educational institutions. Élite mode institutions are self-referential. They exist to serve the needs of their own constituency. The shift to mass and universal education imposes upon the organisation the need to respond to external needs and priorities.

The administrative culture and systems of élite institutions reflect the collegial values of the participants with leadership undertaken by senior members of the academic community who are trusted to protect its established values. In this context, relationships and experience within the élite educational system are valued more than managerial qualifications or experience in other contexts. Élite educational institutions are usually led and managed by 'amateurs' selected on the basis of their status and experience within the élite context rather than their administrative qualifications or managerial experience in other environments (Trow, 2006). The transition to mass education sees these relationships disrupted and the adoption of mainstream commercial management approaches to leadership and change, often with the appointment of professional administration staff, many of who have little experience of academia beyond their own studies.

The need to engage with government and other stakeholders, including external funding and accreditation agencies and employers, drives the appointment of leadership teams able to engage effectively in a commercial environment. The importance of external performance and accountability measures, and the scale of operations, leads to the development of standardised management and reporting systems able to provide the data required by these external stakeholders. This systems approach replaces the informal trust networks possible in the élite system. Privilege is replaced with a system of rights that need to be equitably delivered.

Marginson and Considine (2000) use the term 'Enterprise University' to describe an organisation defined by strongly exercised executive control, with many of the institutional systems supplanted by corporate models drawn from commercial and reformed public sector experience. Pseudo-markets are established internally that mirror external pressures on universities, with a contested model adopted for allocation of resources. Analysis of the pattern of shifting governance in university academic boards shows a shift towards executive power and a diminution of academic influence as quality systems are applied (Rowlands, 2013).

In this conception of mass education, quality and accountability are predominantly defined by private sector economic frameworks, mirroring the imposition of performance and accountability measures on the higher education sector. The internal mimicry of these measures is paralleled by a management focus on imitation of organisations identified as having the greatest reputation. This sees institutions concentrating less on their own excellence, distinctiveness and relevance to local communities, and more on simplistic modelling based on the

perceived character of successful businesses and top universities (in the context of MOOCs, see Sect. 11.2, in regard to organisational change, see Sect. 19.3).

Marginson and Considine identify (2000, pp. 9–11) five features defining governance under the Enterprise University that demonstrate its close correspondence to Trow's (1973) predictions of mass higher education:

- Executive power exercised by managers constructing their roles using generic management principles and systems to manage external forces and implement changes internally with 'a will to manage and, in some cases, a freedom to act greater than was once the case'.
- Structural innovations resulting in 'the remaking or replacement of collegial or democratic forms of governance with structures that operationalise executive power and create selective mechanisms for participation, consultation, and internal market research'.
- 'An enhanced flexibility of personnel and resources, of means of communication, and of the very location of power or authority'.
- A 'discernable decline in the role of the academic disciplines in governance'.
- Using devolved models of management linked with explicit performance targets and top-down transferral of responsibility for outcomes to specific managers. 'Targets are powerful constraints which hem in the devolved manager, restraining her/his capacity to innovate or resist'.

Universal education further extends the commoditisation of education with the need to support its scale. This mandates the development of efficient, low-cost administrative systems aimed at supporting separate transactions. The absence of formal qualifications and the universality of access remove the large bureaucracy needed under the mass qualification model, as there is no longer the same imperative to manage accountability or prove outcomes through formal systems.

3.2.6 Coexistence of Élite, Mass and Universal Models

Trow regards the differences between the three archetypes of education as fundamental, reflecting both quantitative and qualitative differences, but is very clear that the complex organisational nature of higher education institutions arise in part from the coexistence of different types within individual institutions:

> the diversification of higher education—of students, studies and institutions—makes it more difficult to identify institutions as centering primarily on élite, mass, or universal access forms of higher education; many institutions provide recognizable forms of all three side by side in the same institution. (Trow, 2006, p. 247)

Élite approaches to education can coexist within institutions operating in one of the other forms. In institutions operating a mass education model for undergraduates, élite aspects may be apparent in postgraduate teaching; or they may occur within specific disciplines or schools such as Medicine or Law. The recent rise of

the xMOOC illustrates how modes of universal education can arise within institutions otherwise identifying themselves as élite (see Sect. 11.2). Elements of élite education can also be experienced by individual students engaging in intrinsically rewarded extension activities, or working in close association with individual academics (Trow, 1976).

This can work both ways, as illustrated by the growth in demand for taught or professional, as opposed to research or academic, master's qualifications showing many characteristics of mass education models. Postgraduate students have the choice of studying for a masters in either an élite (research thesis) or mass (course based) mode. The development of the cMOOC (Sect. 11.2) provides an example of a learning experience arising in the mass context but attempting to recreate many of the pedagogical and cultural characteristics of the élite. The Open University in the UK provides an interesting example of an institution potentially operating in all three modes (see Sect. 11.1.2).

The coexistence of the élite model with the mass and universal models is organisationally most apparent in the reputational measures derived from élite characteristics continuing to dominate the discussion of quality (see Chap. 15). The Shanghai Jiao Tong Academic Ranking of World Universities (see Fig. 3.5) has been dominated by historically élite US and UK institutions since its inception. The top ten rankings have consisted of the same institutions, with only minor changes in relative placings, both in this ranking system and in the others that have operated throughout the twentieth century (Kerr, 1991).

The first institutions from other countries are currently ranked 19th (the Swiss Federal Institute of Technology Zurich, established 1855) and 20th (the University of Tokyo, established 1877), despite being well-established institutions with a long history of excellence. This is attributed to the extended period of time needed to attract top-quality staff and students and build the research infrastructure needed for their work (Levin, 2010). In a modern, globalised world, with mobile professionals and relatively easy movement of students internationally, it is still a little surprising that no attempt has been made to establish a competing high-quality for-profit institution with sufficient capital available to create the best facilities and attract the best people (Martin, 2009).

The ongoing privilege ascribed to the high ranked élite institutions supports the observation that higher education is a competitive space only at the low-quality end (Baumol, Panzar, & Willig, 1982). New entrants are likely to focus on scale of provision at lower cost rather than attempt to enter the essentially closed élite space. China's attempt to do so can be understood as reflecting their preparedness to play a long game with results realised over decades rather than in quarterly stock market reports (Levin, 2010; Mohrman, 2013).

Mass education institutions are less concerned with issues of reputation, as opposed to measures of quality (see Chap. 16), unless it influences their perception of their 'brand' attractiveness to specific student markets, such as international students; despite evidence that such students are not influenced to any substantial

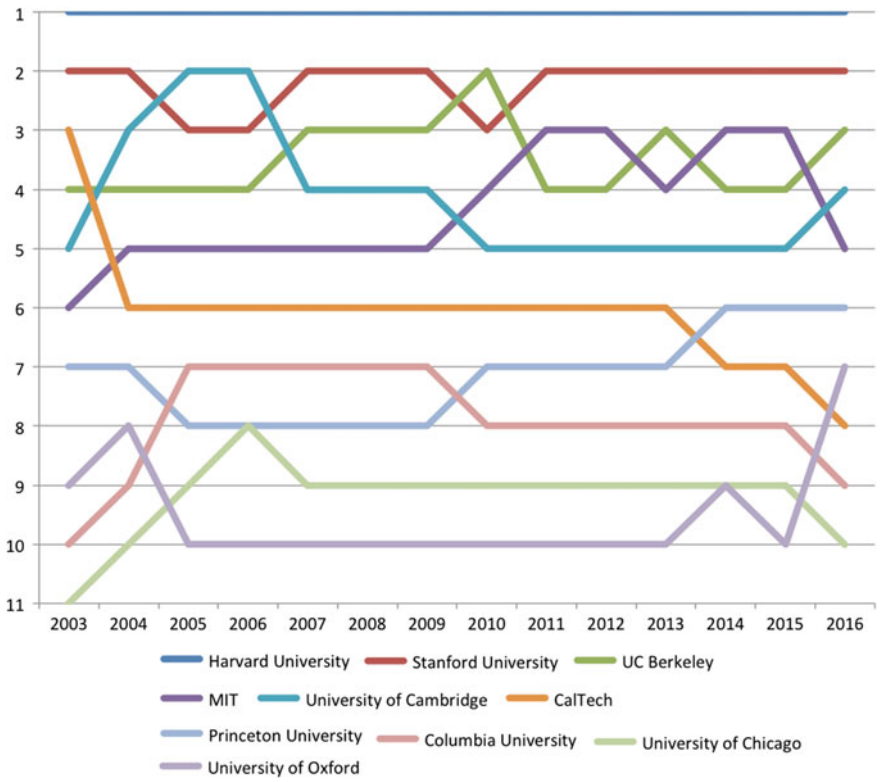

Fig. 3.5 Shanghai Jiao Tong Academic ranking of world universities 2003–2016

extent by rankings (Collins & Park, 2016, Marginson & van der Wende, 2007; Perkins & Neumayer, 2014). Given their invariable dependence on public funds, mass institutions are likely to be seen as equal members of a wider public sector managed as a collective system. This shift from independent identity to collective maintenance within a public infrastructure, culminates under universal education where the complex web of interconnected services and specialist infrastructure providers is subsumed in the minds of most students under an umbrella term such as the 'Internet'. The drive for economic efficiency and streamlined provision enabled by specialist outsourcing providers is apparent in parts of the USA where the transition to a more universal mode is becoming apparent in response to the large number of young people with college associate degrees (Bates, 2012). This shift in the role of commercial organisations shaping higher education under mass and universal modes is explored in Sect. 4.6.

3.2.7 Impact on National Education Systems

Beyond the individual institution, Trow (1973) observes that these three types reflect relationships between elements of systems common to all forms of higher education. Consequently, no one type provides a complete description of any national system of higher education. Despite this complexity, the higher education system of a country operates predominantly in one or other model as a result of the level of participation. Elements of the system may experience significant disruption as the country transitions through successive phases. Within a national system, each individual institution potentially experiences these transitions at different times and may choose to remain predominantly within a single type.

> It must be emphasized that the movement of a system from élite to mass higher education or from a mass to universal higher education does not necessarily mean that the forms and patterns of the prior phase or phases disappear or are transformed. On the contrary, the evidence suggests that each phase survives in some institutions and in parts of others, while the system as a whole evolves to carry the larger numbers of students and the broader, more diverse elements of the next phase. Its newest – and gradually, its most important – institutions have the characteristics of the next phase. So in a mass system, élite institutions may not only survive but flourish, while élite functions continue to be performed within mass institutions. Similarly, both élite and mass institutions survive as, beginning in the United States, nations move toward universal access to higher education. (Trow, 2006, p. 260)

This evolution of systems takes time, and therefore, individuals are liable to experience each of the different forms. Students attaining a bachelor's degree in a mass model institution are likely to undertake postgraduate study reflecting élite models of education and a close relationship with academics and other postgraduates. As part of their working life, they may engage with educational experiences drawing on the universal mode as a form of self-directed, and maybe employer supported, professional development.

The different modes also offer different opportunities to people at different stages of their life. Young people are likely to see education as an important contributor in establishing their adult life. Older people in employment have a more strategic view and those closer to retirement may look to develop a wider range of intellectual and social pursuits.

Distinctions made in different countries between higher, tertiary, further, community and vocational education start to become far less meaningful in the transition to universal education. This suggests the types of outcomes and purposes enabled by institutions and programmes need to be communicated more explicitly than they are at present. Terms such as 'university' or 'degree' may become ambiguous and in need of contextualisation to the point where they will need to be sharply redefined or cease to have any value. Aspects of this shift can already be seen in the activities of the European Bologna process (Chap. 6).

Relationships between institutions and the composition and diversity of national educational sectors or systems are also influenced by the shift through the different

modes. Institutional identity, reputation and autonomy are defining characteristics of the élite model. Institutions actively manage their image externally to attract suitable students and to justify their ongoing distinctive and élite character. Relationships between institutions are defined competitively in both these spheres, with élite institutions actively jostling for position in the international league tables (Sect. 16.3) and competing for the students that define the character of their élite status. The role perception plays in the maintenance of reputation is reflected in the reluctance of élite institutions to participate in large-scale research into effective learning and teaching; such as the National Survey of Student Engagement (NSSE; Kuh, 2001) in the USA (Zemsky, 2009) and its equivalent, the Australasian Survey of Student Engagement (AUSSE) in Australia (Coates, 2010). The outcome of such research might draw attention to aspects of performance where élite universities are not sure of their dominance or where the mode of élite teaching is not reflected in the aspects of engagement and learning being measured.

Underlying these differences are the important political and social expectations arising as a direct response to the scale of the system participating in the intellectual and economic life of a society. Élite education, small-scale and sequestered from the experience of the majority of the population, does not tend to attract more than passing attention from the general public. Small, privately funded élite institutions, while important to the development of specific aspects of national life, are unlikely to be subject to significant political or social attention.

Exceptions, such as the disruption of much of the USA system during the 1960s (Kerr, 2003), often arise as a consequence of wider transition to mass education or from other social turmoils, rather than widespread public interest in the élite educational experience. The transition to mass education and change to a system deeply and extensively integrated into the economy results in significant stresses and challenges as a result of the attention the scale and cost of mass education attracts. Schuller (1995) characterises the problems apparent in UK higher education at that time as arising 'from a system which has become mass in its size but which remains élite in its values' (p. 23) losing the sense of 'intimacy' experienced by many academics in their own education (Scott, 1995). It is interesting to consider the impact a changing experience of faculty education under a mass system will have on academic norms as systems grow and start to transition to a universal scale.

The influence mass education has on individual lives, through systems of qualification and employment and substantial subsidies from the public purse, makes political engagement and conflict inevitable. Quality and academic standards become questions of wider debate, rather than being left to the academic community, as other stakeholder's interests become more dominant than under élite models (see Chap. 4, Fig. 9). Universal education continues this trend and is more a political movement than an educational one, drawing on ideas that are similarly apparent in the open movement (see Chap. 11) with social agendas shaping the experience:

> The aim of universal access is toward the equality of group achievement rather than an equality of individual opportunity, and efforts are made to achieve a social, class, ethnic, and racial distribution in higher education reflecting that of the population at large. (Trow, 2006, p. 259)

In the transition between mass and universal forms, ideas such as the 'networked university' are being explored. These propose a stronger, more explicit form of collaboration and partnership than seen previously. Networked organisation models are inspired by the examples of Web 2.0 (O'Reilly, 2005) communities on the Internet who have crowdsourced the creation of significant intellectual resources such as the Linux software ecosystem and the Wikipedia online encyclopaedia (see Chap. 12).

The networked university is apparent in the evolution of the California State university system with increasing dependence on external partners (Bates, 2012). Geographically distributed campuses operating in a network are common in the USA and are seen in the operation of institutions such as the University of the South Pacific (Devi, 2006), University of Highlands and Islands in Scotland (Newlands & Parker, 1997) and Open Universities Australia (Crock, Baker, & Turner-Walker, 2013). They have also operated historically in smaller countries, the University of New Zealand for example. Modern communication technologies provide a means for re-imagining such organisational networks, allowing concentrations of expertise in different places while sharing access across the entire network.

Another example of the coexistence of different modes is seen in the Master Plan for Higher Education in California (California Liaison Committee, 1960). This plan was developed in response to the realisation the state could not afford to fund large-scale higher education in a purely competitive market and some form of structure was needed to maximise the efficient and economic operation of a complex sector. The resulting plan created a hierarchy of community and state colleges operating in a mass mode and a small number of élite universities. These are still in operation today and influence many other USA state higher education systems, although with some evidence that the model needs revitalisation (Marginson, 2016). Students with a record of excellence in the school system can enter university directly; weaker students can transition through two-year associate degrees to four-year degrees on the basis of merit. State funding, including the use of targeted scholarships and financial aid, is intended to address issues of equity, although this is less successful as significant disparities in educational success remain in California for minority groups. Recent issues with the state budget see changes in the availability of doctoral programmes aimed at reducing the cost of higher education to the state. There are also concerns from some quarters about the perceived privatisation of the system through incremental outsourcing and the perennial disquiet about suppression of dissent on campuses (Godrej, 2014).

The potential coexistence of élite, mass and universal modes within individual organisations raises questions about the extent that engagement in elements of each is acknowledged and valued by the leadership such that the different modes actively contribute to the strategic and operational goals of the organisation. This is necessary if the mixed character is to be respected by institutional systems and

preserved when changes driven by the dominant national or external phase are enacted. Élite characteristics can easily be threatened from within by the passion of those holding strongly egalitarian or unitarian views and by 'technocratic rationalism that also espouses comprehensive reform and planning' (Trow, 1976, p. 357), which might be strongly promoted by external stakeholders, such as governments.

3.3 Conclusion

The insight Trow (2006) provides is recognising the greatest issues for organisations and countries arise at the transitions between phases and as a consequence of an

> increasing permeability of boundaries of all kinds—between institutions and the surrounding societies; between departments and disciplines, as both teaching and research become more interdisciplinary; between universities and private business and industry; and between formal education and the informal learning that goes on in a learning society, which depends on the constant accretion of new knowledge (p. 276).

From a sense-making perspective, Trow's insights and framework provide an important narrative that helps explain the confluence of forces and changes experienced within individual institutions and across systems. The arising complexity is a problem of success, not a consequence of failure. Successful systems naturally grow unless they are deliberately constrained, and preventing such growth can be politically and socially challenging. The relationship between the success of higher education and the complexity of managing the implications of that success generates a wicked problem interconnected to the other forces outlined in Fig. 2.1 earlier.

A particular challenge arises from the way different phases privilege different stakeholders (see Chap. 4, Fig. 4.10). The mass education phase reflects the priorities of government and employer interests, while the universal phase attracts the interest of the 'mass public' (Trow, 2006, p. 258). Different stakeholder groups understand each of the issues differently, and their response to the transition reflects their sense of how the changes are influencing those issues they regard as priorities and the ways the new permeability exposes higher education to their involvement or threatens their control. Success represented as growth in the scale or scope of a university's operations may well represent a threat or failure to some stakeholders.

The implications of Trow's model in explaining the role and limitations of technological change in higher education are also significant. Technology is an effective mechanism for growing the scale of an activity. Increased use of technology, such as the MOOC, does not cause the social and political changes associated with universal education. Instead, it accelerates them, catalysing a process in a way that can seem out of control. Rather than providing a solution, the wicked nature of the relationship means that technology acts to redefine the problem, rather than resolve it.

Management of the interests of different stakeholders and allocation of the limited financial and other resources of a nation for higher education requires recognition of where the value and contribution of Trow's different archetypes need to be sustained. The German system (see Chap. 5) is an example of how management of access to qualifications can be used to sustain an equitable and affordable mix of models. In contrast, the Korean example (see Sect. 6.4) shows the impact of transition from mass towards universal education and the consequent impact this has on individual and social perceptions of the value of qualifications.

Chapter 4
Internal and External Stakeholders in Higher Education

Abstract There are many stakeholders in higher education including students; alumni; donors; parents; other institutions or providers; accrediting agencies; vendors and suppliers; employers; taxpayers; non-government organisations; government; and academic faculty, both individually and collectively in disciplinary groups and as members of other organisations such as unions and advocacy bodies. Stakeholder salience is used as a framework to examine the contested nature of the engagement of these stakeholders in universities, particularly with regard to Trow's modes of higher education. The complex interplay of stakeholder perceptions, values and priorities on the universities' activities with regard to cost, quality, access and technology are a further justification for a sense-making approach by leaders, one that is responsive to the wicked problem facing the university.

> Today the large American university is … a whole series of communities and activities held together by a common name, a common governing board, and related purposes. … it is a new type of institution in the world … it is not really private and it is not really public; it is neither entirely of the world nor entirely apart from it. It is unique. (Kerr, 1963, p. 1)
>
> Higher education's dismal cost control record strongly suggests the academy has serious unresolved principal/agent problems. The higher education principals are students, parents, alumni, donors, and taxpayers, while the agents are faculty members, staff, administrators, and trustees. (Martin, 2011, p. 84)

Education is important. It attracts the attention, influences and interests of different elements of society. The combination of social and economic consequences of higher education attracts a diverse group of stakeholders who have ownership of the system. Stakeholders are understood (Freeman, 1984) as 'any group or individual who can affect or is affected by the achievement of the organisation's objectives' (p. 46). The university has a range of purposes, participants and audiences; all with associated stakeholders either applying pressure for change to better suit their needs or resisting change which disrupts their perception of the university as an institution (Kerr, 1963; Marginson, 2004a).

A large number of higher education stakeholders are identified in the literature (Amaral & Magalhães, 2002; Jongbloed, Enders, & Salerno, 2008; Watty, 2002) including students; alumni; donors; parents; other institutions or providers;

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accrediting agencies; vendors and suppliers; employers; taxpayers; non-government organisations; government; and academic faculty, both individually and collectively in disciplinary groups and as members of other organisations such as unions and advocacy bodies.

Stakeholders in higher education can be described as either internal or external (Amaral & Magalhães, 2002). Internal stakeholders are members of the academic community, 'those who participate in the daily life of institutions' (p. 11). This includes faculty and non-academic (or professional or general) staff, managers, students and the institution itself as an entity expressed through its leadership and formal governance. External stakeholders are 'groups or individuals that have an interest in higher education' (p. 11) but who are not internal stakeholders. External stakeholders include employers; parents; society at large, including non-consumers of education; the government, as represented by its various agencies; and organisations or groups representing collections of such stakeholders, nationally and internationally.

Reflecting on these different stakeholders, it is apparent that substantial changes to the higher education system will be perceived differently by each of them. Perkins (1973) recognised long ago that these conflicting purposes challenge universities, preventing the unsophisticated use of simple measures of performance such as profit or numbers of students graduating (see Sect. 16.1). This problem is more apparent as different education sectors restructure using performance management systems designed to maximise particular outcomes:

> There is no single score of values that can rate the value to society of a university that scores exceptionally highly in teaching and research against one that concentrates on a social inclusion agenda. In a mass higher education system it is important that there should be diversity of mission and that universities should be encouraged (and funded) to play to their strengths and to compete where they are best able to succeed. (Shattock, 2003, p. 4)

Mitchell, Agle and Wood (1997) describe the relative importance, or salience, of stakeholders on the basis of their power, legitimacy and urgency (see Fig. 4.1). Stakeholder power is defined by the ability to impose their will on the relationship, to directly impose actions upon the organisation and to control aspects of the leadership and management. Legitimacy describes the social desirability of the influence the stakeholder has over the relationship, given the particular moral, cultural and social norms the relationship exists within. The model of legitimacy is widely used to understand stakeholder influence but can be misused by political or commercial interests to exclude 'undesirable' or unwelcome influences by defining particular stakeholders as lacking legitimacy (Amaral & Magalhães, 2002). Questions of legitimacy are particularly relevant in the context of higher education given its importance to public life and the contested nature of how it should be governed and accessed. The characterisation of faculty as acting in their own interests in the governance of universities (Martin, 2011) is an example of how de-legitimisation is used to promote competing stakeholder interests. Power and legitimacy can be combined to describe the authority a given stakeholder possesses.

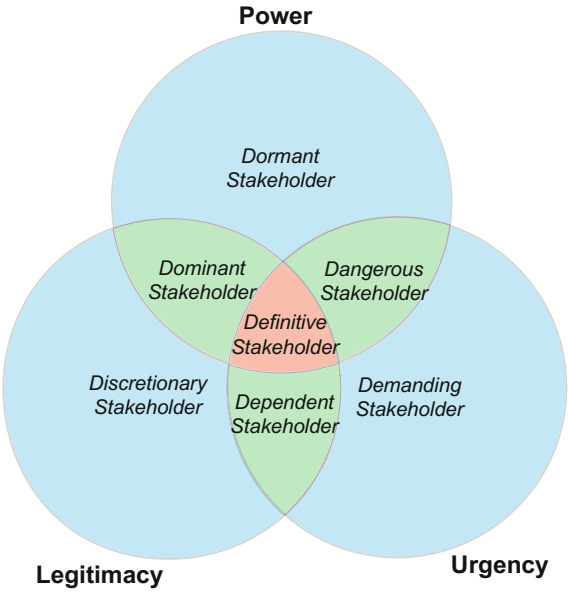

Fig. 4.1 Stakeholder salience relationships. Adapted from (Mitchell et al., 1997)

The third aspect of stakeholder salience, urgency, is a combination of the time-sensitivity of the influence and the criticality of that influence to the stakeholder during key periods of time.

All three of these attributes are sensitive to the specific context of a given organisation and are constantly in flux as the context changes and the organisation responds. They can be passive or actively enacted as behaviours by the stakeholders. Salience is often a social construction rather than an objective reality. It may be contested by different stakeholders with conflict arising from perceptions of relative importance and as a result of broader transitions, such as the move from élite to mass and universal modes.

This shift in salience is the focus of this chapter, illustrating how the various stakeholders are experiencing the forces of change impacting on the power, legitimacy and urgency of their influence over higher education.

4.1 Students, Parents, Alumni and Donors

Students are the most obvious and direct stakeholders in any higher education institution. They depend on the system to deliver significant personal benefits, and they make substantial personal investment in that system. Beyond fees, all students experience large opportunity costs by engaging in formal education as they forego earnings from full-time employment. Students want to be educated but they are very

aware that qualifications are one of the most important outcomes. In the current economic climate, students are sensible to consider the likely employment outcome they will experience. They see their education's value as dominated by the qualification the system awards them, particularly given government focus on the economic outputs of higher education (Mahoney, Park, & Smyth, 2013). Beyond their interest in the resulting qualification, students are also intimately intertwined with the nature of an educational institution.

Kay, Dunne and Hutchinson (2010) suggest that students participate as educational stakeholders in four different and complementary ways: as evaluators; as participants; as partners, co-creators and experts; and as change agents. Sharrock (2000) talks about students as customer, client, citizen and subject. This range of important interests suggests students have a dominant role in defining higher education. However, an initial degree is a purchase that can only be made once and for many people it is acquired at the start of their adult lives, a point in time where they have access to minimal resources, possess relatively little experience on which to base their decisions, and potentially lack the confidence and authority to impose their expectations on institutions.

By definition, a student is someone who lacks experience in a field and many lack the necessary perspective, judgement or discernment to truly evaluate their experience. They may have no real sense of the range of possibilities open to them or the extent of their own intellectual potential:

> students have an even narrower range of alternatives than they are aware of; they suffer from what Karl Marx called the 'damned wantlessness of the poor.' In this case, the poor in experience are very rarely able to tell anybody what might be done. (Trow, 2010, p. 318)

Unlike most commercial or market-driven activities, the purchase of an education is an investment in an individual; the expense of investment is non-transferable. The moral hazard is students are personally responsible for generating the evidence resulting in their grades but are also beneficiaries, at least in the short term, of any inflation in those grades implying a relatively better performance when compared with previous graduates (Bachan, 2015). Students also face the complication of attempting to assess the quality of their education in parallel with their role as participants in and consumers of the experience (Nelson, 1970). Even for experts, institutions or government agencies, the quality of education is difficult, perhaps impossible, to assess while it is being obtained. The full impact and benefit may not become apparent for years. It may do so in unexpected ways, such as through personal relationships, rather than directly from the knowledge, skills or qualification obtained (Pascarella & Terenzini, 2005).

The scale and mode of the system influences the relationship between the student and the institution. Élite educational opportunities affect students through a sense of being selected:

> When enrolment rates are 4% or 5% of the relevant age group, students naturally see themselves as part of a highly privileged minority. Though this does not mean that they are necessarily passive or deferential, it does make them feel—along with their professors and lecturers—that they are part of a small privileged institution with a very clear set of

> common interests embodied in common values, symbols and ceremonies, modes of speech, and lifestyle. All that affirmed the communal identity of the academic institution against the rest of society. (Trow, 2006, p. 262)

This sense of potential and privilege applies as equally to students selected on academic merit into institutions such as MIT as it does to wealthy students paying to attend Ivy League establishments. The important element is the belief the student is a member of a small group of similarly élite people, distinct from normal society and thus able to achieve greatness, be it in science, engineering, the law or business.

Students experience a mass education model as the result of fulfilling standard entry criteria—they have the 'right' to their education and an expectation of entitlement to a professional but not intimate or personalised experience. This sees student engagement and influence shifting to advocacy of consumer rights and a transferal of control to societal or government agencies.

Under a universal model, the student becomes a central stakeholder in their experience. The removal of the institutional and political controls dominating the other models leave students responsible for their own choices and level of engagement in educational experiences, which are, by definition, universally available. Individual preferences and priorities determine the nature of the experiences, and the student is ultimately responsible for assessing the value of any outcomes. That centrality of role does not automatically imply control, just as selecting a particular brand when shopping does not lead to control of the vendor or manufacturer. Even under the universal model, student autonomy and choice are mediated by larger forces determining what choices are possible or made available by others.

After qualifying, students remain stakeholders in educational institutions. As alumni or graduates of the system, they have an interest in sustaining and protecting the value of the qualifications they have achieved. Many institutions recognise this through the role alumni play in governance. There is a substantial ongoing relationship, with alumni commonly providing significant donations and scholarships, and institutions recognising successful alumni with honorary degrees. This latter activity benefits the status of both parties simultaneously. Élite institutions, with their focus on an induction into a privileged community, are particularly aware of and responsive to their alumni. The personal networks alumni participate in are recognised as major benefits of graduation from institutions such as Harvard. An example of the way this influences organisational choices is Harvard using MOOCs developed by the EdX consortium (Coughlan, 2013) to engage with alumni through Small Private Online Courses (SPOCs) which both sustain alumni networks via ongoing contact and professional development, and reinforce the exclusivity and privilege obtained through study at the university.

Parents of students are significant stakeholders in the higher education system through their financial support of students and in their influence over the choices students make when moving from the school system into higher education. Parents who are alumni of élite institutions are more likely to have the resources and aspirations needed to see their child enter an élite institution, and students may

obtain preferential entry through their status as the offspring of alumni or through the influence of their parent's donations (Golden, 2006). In élite institutions where access is based on criteria other than academic ability, parents are likely to be very clear about the reasons for choosing such an option for their children and will have a well-defined sense of what outcomes should follow from successfully graduating.

Many parents are likely to be unsophisticated purchasers, lacking any detailed knowledge or experience of the particular disciplines or institutions their children are attending. In countries with rapid growth in higher education participation rates, many students are the first in their family to attend a university and parents are unable to provide reliable guidance or detailed preparation for the experience. In the USA, parents have historically compensated for their lack of direct influence and experience by supporting students attending a residential college where the institution is expected to provide an extensive range of services and support while acting 'in loco parentis'. Changing economic circumstances and the expectations of students themselves to live less structured lives means this model of traditional US college life describes a rapidly declining proportion of the student population (Pascarella & Terenzini, 2005).

4.2 Academic Faculty

The other traditional major stakeholder in higher education is the academic faculty. Academic work underpins much of what is perceived as the value and purpose of a university. As with students, faculty are participants within the process and similarly beneficiaries of its performance. The reputations and recognition of faculty are included in the international ranking systems used to compare universities. Many governmental performance measures assess the success of faculty in their research work through the obtaining of research funds and the publication of journal articles and books.

Historically, universities were defined by the role played by faculty in institutional governance, and there is evidence that they still have substantial influence, particularly in areas relating to education (Kaplan, 2004). The majority of decisions about the operational and pedagogical structure of teaching are commonly made by faculty, individually or collectively. Faculty decide whether students have demonstrated the qualities expected of graduates and are substantially responsible for the ability of graduating students to meet the expectations of society in general. This leads to the important way in which faculty and student interests align in the general sense but may conflict in the individual, particularly as education shifts to a mass consumer model:

> there is no provision in this conception of 'teaching to expectations' for the possibility that the teacher does not want to meet the students' expectations, but wants rather to modify those expectations, and more broadly, to modify (and enlarge) the student's mind, character, and sensibility. (Trow, 1994, pp. 32–33)

The involvement of faculty in university governance is generally regarded as successful and seen as adding substantially to the contribution universities make to society (Bok, 2013). It is, however, dependent on the ongoing sense of intellectual and social values shared by faculty with other important stakeholders. The academic faculty are, in parallel with the institution of higher education, experiencing dramatic changes in the nature of their role (Eagle & Brennan, 2007; Finney & Finney, 2010; Gappa, Austin, & Trice, 2007). Issues they face include changing expectations from a growing student body, pressure from political groups (Knott, 2016; Zamudio-Suaréz, 2017), teaching workloads, and the workloads associated with the expanded systems of administration and accountability increasingly defining modern universities. They must cope with the changing role technology plays in their discipline as the nature of information use and knowledge creation evolve in response to the development of new information and communication technologies. As with many professionals, this includes the way technology blurs the already highly permeable boundaries between work and other aspects of life for academics (Gregg, 2011).

In many university systems, there is significant discontinuity between the value placed on academic research work and that placed on learning and teaching. Clark (1987) identified this shift nearly thirty years ago:

> The greatest paradox of academic work is that most professors teach most of the time, and large proportions of them teach all the time, but teaching is not the activity most rewarded by the academic profession or valued by the system at large. Trustees and administrators in one sector after another praise teaching, but reward research. The paradox indicates that things are broken and should be fixed. (pp. 98–99)

Thirty years on, promotion to the highest ranks of academia remains dominated by research performance with few institutions recognising substantive teaching excellence as a criterion for promotion to the top academic roles (Cashmore, Cane, & Cane, 2013; Fung & Gordon, 2016). The comparatively low status accorded to faculty focusing on teaching is apparent in the increasing casualisation of university teaching staff (see Sect. 4.2). Priorities for investment apparent in countries seeking greater status and pre-eminence for their educational institutions are being driven by the performance measures dominated by researchers and research activity (Mohrman, 2013).

The homogeneity of the élite institutional academic community is now largely a thing of the past, allowing for some outstanding issues of equity specific to particular countries and their mix of cultures and history of feminism. Consequently, the ability to engage with issues, internally and externally, with a collective collegial voice is weakened. These pressures reflect wider shifts apparent in modern employment with less job security, decreased autonomy, continuous availability and an expectation to increase the hours used for work (Gappa et al., 2007). The move to mass education operated under various modern management models, drawing on Taylorist (Taylor, 1947) and neoliberal theories of work and promoting a commercial model of organisational behaviour, such as New Public Management

(NPM, see Chap. 14) is acting on individual faculty's perception of their careers and the role they play in the collegial operation of the university.

> The unbundling of aspects of faculty work separates faculty into specific groups by function so that fewer people see the whole picture in regard to the institution's overall mission. Some faculty members are segregated from others by institutions' failure to fully welcome and integrate non-tenure track faculty into the intellectual life of their departments or their academic institutions. Today's faculty members' diverse backgrounds can also make the formation of strong relationships more challenging. A vibrant sense of academic community requires opportunities and occasions for faculty members to interact—and time to do so. (Gappa et al., 2007, p. 19)

This shift is reflected in the changing impact and influence academics have on the governance of institutions. The conflict arising in the shift in modes is evident in the negative way faculty involvement in organisational change has been framed in the literature over several decades (Bleak, 2006; Kotler & Murphy, 1981; Martin, 2011; Trowler, 1998; Yarmolinsky, 1975). Faculty are variously charged with being an impediment, overly attached to pre-existing organisational culture and values, resisting adaptation to new ideas and generally an obstacle to innovation and change. Negative stereotyping of faculty is also apparent in the language used by senior leaders. Faculty are often described as a barrier to effective management (Meek & Wood, 1997). Bates (2010, p. 22) quotes one Vice Chancellor as saying 'Universities are like graveyards. When you want to move them, you don't get a lot of help from the people inside'.

Marginson and Considine (2000), in their survey of Australian universities, noted 'without exception the university leaders in our study saw collegial forms of decision-making as an obstacle to managerial rationalities' (p. 11). This use of agency theory (Barney & Ouchi, 1997), re-casting faculty as biased promoters of their own interest to the detriment of the 'owners' of higher education, i.e. the economic interests of employers, is evident in the analysis of Martin (2011, p. 83). He uses the principal agent problem drawn from the analysis of for-profit commercial relationships to position faculty as potentially acting illegitimately in their own interest and consequently being untrustworthy in their influence over higher education. Martin is not alone in treating faculty as having acted in their own interest in shaping the university. Similar arguments are made by a number of other university critics. The introduction to this section of this book summarises the competing perspectives and arguments made by faculty, both for and against major changes to the university and by a variety of others representing different stakeholder perceptions.

The solution for many wanting significant changes in the university to occur without substantive faculty influence is to impose organisational systems that enforce management control through devolved, but strictly defined, processes (Marginson & Considine, 2000). This can ultimately lead to a breakdown in trust and the development of quality systems that, instead of promoting improvement, act to conceal a deterioration in the trust networks that sustain desirable qualities of the system (Klaussner, 2012; Shapiro, 1987) (see Sect. 15.1).

It is important to remain aware that in many cases the leadership of institutions are, or have been, faculty. Many Presidents or Vice Chancellors are quick to identify their disciplinary roots and achievements when establishing their legitimacy after taking up the leadership of a new institution. Despite accusations of 'liberal bias' made of US faculty (Zamudio-Suaréz, 2017), the academic community of any university encompasses a wide diversity of intellectual, political and social perspectives. As stakeholders, faculty are perhaps not as coherent a force as they might be, a trend reinforced under mass models of education with growing numbers of faculty, many of whom draw on expertise obtained in other sectors, such as commerce or other professions, in their scholarly work.

This is not to say that a diversity of experience and knowledge is a bad thing. Students appreciate the opportunity to learn from people drawing on concrete examples derived from a range of contexts. However, there is a risk that faculty from other sectors see their role as transitory, have less interest in engaging with the larger issues of institutional identity and priorities, and are consequently less inclined to argue disciplinary positions with managers and administrators with the same vigour as career scholars.

Finally, faculty are participants in international communities defined by their disciplines and the epistemological and other positions they take within their fields. Many faculties identify their closest peers and collaborators as colleagues at other institutions, often in different countries. Academia is a mobile profession and international perspectives are valued, to the extent they constitute a proportion of the institutional ranking systems (see Sect. 16.3). While faculty are aware of local issues, many remain parochially focused on their own research and teaching, knowing they can leave for another institution if they need to. This exacerbates the institutional focus on research with the benefit that a strong research career provides individual faculty with considerable leverage and choice in their place and conditions of work.

4.3 Managers, Administrators and Professional Staff

The management and administrators of modern mass universities constitute a strong and separate community often operating within what appears to be a parallel organisation to that of the faculty. This separation of responsibilities between faculty and professional staff is readily apparent within institutions but the role of professional staff is less evident in the literature and their impact is such that they are described as 'invisible' (Szekeres, 2004; 2011).

Under élite models, faculty act in managerial and leadership roles but resist being labelled as such, operating instead within the hierarchies of faculties and departments, taking up management and administration temporarily or after a long career in their discipline:

> Faculties and departments have traditionally played a key mediating role within the academic system. They are where the private world of knowledge, whether expressed through teaching or research, and the public world of institutions and systems collide. Departments both embody academic disciplines, by institutionalizing their cognitive codes and value hierarchies, and create the professional structures through which academic careers are realized. Collectively, as has often been pointed out, they form 'invisible colleges', as powerful as the 'visible colleges' of which separately they are constituent parts. Through peer-review networks they establish research agendas and validate curricular innovations, which their parent institutions must follow. (Scott, 1995, p. 159)

In contrast, professional staff, managers and administrators in mass institutions exist in defined positions with their own career paths and communities of practice. The growth of managerial systems and the proliferation of professional managers and administrators are almost diagnostic of the shift to the mass model (see Sect. 3.2), reflecting the demonstrated compliance with externally imposed mainstream management ideologies and accountability systems. These professionals operate in a complex environment, particularly as institutions transition from the élite mode to the mass mode and governance systems change to reflect different priorities.

Historically, two systems of university decision-making operate in parallel. Academic and operational decisions are made separately with reference to an often-conflicting set of priorities and values (Kaplan, 2004; McNay, 1995, 2005; Rowlands, 2013; Szekeres, 2011). A challenge created by this sense of duality is the breakdown in trust leading academics to construct alternative narratives ascribing negative ulterior motives to management and professional decision-making, and vice versa. This mistrust is not helped by academic awareness of the negative perception of their role by senior managers.

Despite this negativity, most managers and administrators are consciously balancing the need to maintain the academic reputation and quality of the institution, negotiating the competing interests of different academic groups, working to help the institution operate efficiently in financial terms and responding to the extensive demands of government and other external stakeholders. These external obligations are a substantial driver of the increased costs of higher education (see Sect. 5.4) and generate further tension within the university as academics observe the increasing scale and cost of the non-academic activities, even as academic salaries and job security are declining in real terms.

The non-academic professional space is itself further divided into a number of organisational functions often forming silos based on functional roles and professions. These different groups, such as library staff, information technology specialists, marketing, legal compliance and student recruitment, see the university from a range of different perspectives and hold different values and priorities. A challenge occurs when professional concerns, such as commercial IT management processes, collide with academic ones, such as academic freedom. Historically, IT groups have been able to exert considerable authority and control over the use of technology by academics and students. This control is being eroded by the ready availability of powerful online tools and mobile devices leading to

conflict as policies and organisational process become disconnected from the reality of academic work.

4.3.1 The Third Space

There is an awareness of the complex nature of university organisations creating what is referred to as a 'third space' of activity where professional and academic staff collaborate on work requiring multiple perspectives and skill sets (Veles & Carter, 2016; Whitchurch, 2008, 2009a, 2009b). The third space is defined as the organisational nexus between academic and operational work. Examples of third space activities include the provision of student learning support offered as an optional service and not linked directly to any one course, or the provision of professional development aimed at improving research or teaching activities. A feature of the work of staff in the third space is the blurring of organisational boundaries. The third space is defined by distributed leadership (Jones & Harvey, 2017), flexibility and agility, and staff working there depend on fluid teams and relationships (Bennis, 1999; Flutey, Smith, & Marshall, forthcoming; Jones et al., 2012; Marshall & Flutey, 2017).

The existence of the third space recognises the shift in focus of university work from purely scholarly activities to incorporating a range of other skills and knowledge. Although the third space is generally constructed as a narrative of professional engagement in activities traditionally controlled by faculty, it also suggests that faculty need to start creating identities in the third space. The traditional sense of the faculty as a member of a distinct tribe (Becher & Trowler, 1989) is challenged by this conception of a faculty acting across organisational and disciplinary boundaries, working collaboratively with other cross-boundary professionals, including other faculty as well as technical and other non-academic peers.

A significant problem in shifting to this conception of a collective organisational engagement is the reluctance of faculty to engage in the operation of the university through managerial and other responsibilities, or at least to characterise them as less personally and professionally significant and rewarding than scholarly activities (Knight & Trowler, 2001; Locke & Bennion, 2013; Parker, 2004).

4.4 Institutions

It may seem unusual to identify the institution itself as a stakeholder but institutions operate within a web of regional and national relationships with other providers in the same sector. The various ranking tables represent the tip of a vast iceberg of connections and interactions undertaken by staff to constantly check and compare aspects of institutional performance.

All institutions of a similar type have a shared interest in the viability of their sector and while they may operate with a degree of real or reputational competition, they also share many interests in common and work collectively to support the entire group. A common manifestation of this shared interest is through the operation of non-governmental accrediting bodies that set collective standards of operation and quality and protect the reputation of the sector and the interests of their students from unscrupulous operators. Such accrediting groups can also provide a barrier to the entry of new providers operating in modes that are different, even threatening, to the established order (Tierney & Hentschke, 2007).

Collective agency is evident in the institutional membership of various representative and collegial organisations such as EDUCAUSE, Australasian Council of Open, Distance and E-Learning (ACODE) and International Council for Distance Education (ICDE). These collegial organisations are used to gain insight and expertise from other institutions, to inform the expectations of institutional norms and to identify strategies to address common issues. Despite the competition for reputation and resources, institutions have a shared interest in sustaining their environment and frequently collaborate to respond to perceived threats from external agencies, or to engage in explorations of new and innovative models.

4.5 Employers

Employers as stakeholders in the university represent the powerful role that a highly educated population plays in the economic state of a country. A major driver of the increase in scale described earlier is the need to provide highly skilled employees to new and growing commercial fields and industries. Employers as stakeholders are diverse. The grouping includes individual businesses planning for current and future needs, industry organisations and professional bodies, and even collective groups focused on the interests of employees and customers.

Employers have become one of the most significant stakeholders in the higher education system as it shifts from a minor element in society to assuming a dominant role in driving economies. Employers benefit from system that replaces many of the historic apprenticeship and training obligations with one where, in human capital theory terms (see Sect. 6.2), individuals and their families invest in education proactively in the hope of it increasing their future employability. Modern systems of higher education give employers the luxury of choice from a pool of potential staff pre-trained at no direct, and minimal indirect, cost to the employer. The creation of internationally recognised systems of qualifications mean that trained staff are, in some ways, no different to any other commodity traded and managed in the globalised economy. The political debate underway in the USA regarding the use of H1 ‘tech’ visas and the impact this is having on salaries and conditions is a case in point (Harkinson, 2013; Peri, Shih, & Sparber, 2013).

The role of employment in economic growth is so intimate that employers have a substantial amount of political power and influence over the shape and priorities of

the higher education system. One standard measure of educational performance applied to institutions in many countries is the employment success of their graduates; a measure driven by governments concerned about short-term unemployment during an economic downturn generating wider political conflict and social disorder. A side effect of this is employers can increasingly dictate aspects of educational programmes through their engagement with receptive government agencies responsible for funding and reporting on institutional performance. Quality management tools, such as the use of employer-determined graduate attributes and surveys (Shah, Grebennihov, & Nair, 2015), increasingly frame the expectations being made of institutions by employers.

The growth in work-integrated learning demonstrates the importance being placed on employability and employer needs (Cooper, Orrell, & Bowden, 2010; Patrick et al., 2008; Smith, 2016). Work-integrated learning goes beyond authentic learning and practice-based learning to ensure significant integration of the curriculum, the content and activities of the course, and the direct ongoing experience of employment (Smith, 2012). This represents an early stage in the evolution of the mass education conception of a formal degree programme towards a form of education much closer to a potentially universal model experienced outside the formal campus.

Employers are not only stakeholders through their employment of graduates. They also have strong direct relationships with universities through collaborative research and through postgraduate study undertaken by their employees. Many universities benefit from a regular exchange of staff and expertise with key industry participants. Applied and industry-based research programmes are a normal part of the modern university. This reflects a trend supported in the USA with the Bayh-Dole Act. This was enacted in 1980 as part of a wider legitimation and normalisation of the relationship between universities and the commercial exploitation of ideas (Mowery, Nelson, Sampat, & Ziedonis, 2004), now normalised internationally as a key role of the university. Industry derived funding of some areas of research has grown to the point where independent researchers without conflicts of interest, able to act as disinterested critics or observers, have become scarce (Kearns, Glantz, & Schmidt, 2015) and journals shifted from requiring no industry funding to merely disclosing the amount.

4.6 Vendors

Other commercial stakeholders are the various vendors and suppliers operating to support the activities of the educational institutions. As large organisations, higher education providers operate within a network of commercial relationships. While these companies provide infrastructure and products such as computers, networks and learning management systems, they also offer a range of services to attract

students operate call centres, generate recruitment leads for targeted marketing and optimise the prominence and impact of university Websites (Blumenstyk, 2006).

Henry and Wheeler (2012) observe that individual universities typically function at a significant operational and strategic disadvantage in their management of these relationships. Many universities depend on a limited range of suppliers with a potential to extract monopoly levels of resources. The situation is aggravated by a trend apparent in the USA, where institutions and systems have lost the ability to operate key business systems independently of vendors (Bates, 2012).

A particularly powerful supplier group is the academic publishing consortia, exemplified by Pearson Education (Fig. 4.2). Pearson is a US$17 billion corporation that has traditionally operated in the publishing industry. As a publisher, Pearson is able to acquire, at very little cost, a vast compendium of educational content through the publication contracts it has with faculty writing textbooks. As with research publications, these contracts are in the favour of the publisher, with the role traditionally seen as one of partnership as these texts were recommended and used to support courses taught by the institutions. The publishing company is very aware that the traditional textbook is dying (Sweney, 2017) and they have made a number of strategic acquisitions over the last decade to reshape their business.

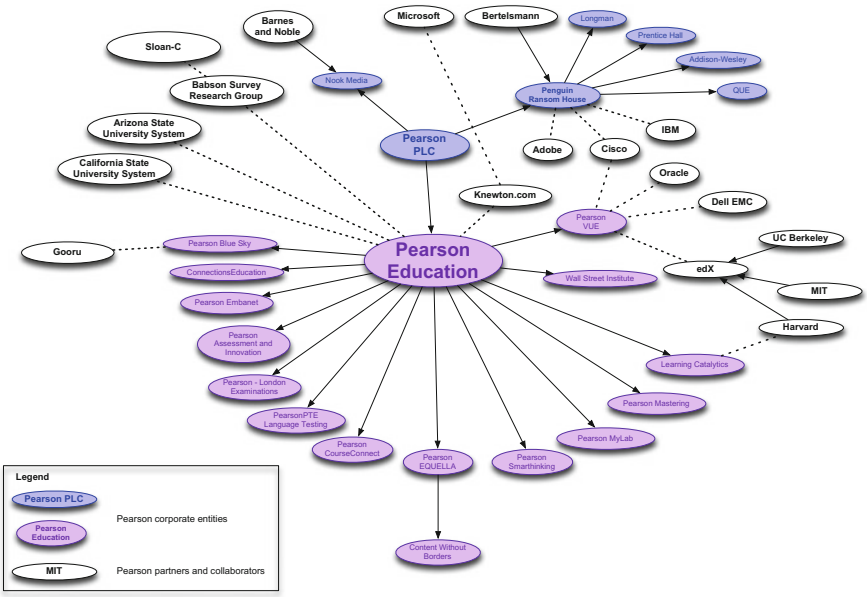

Fig. 4.2 A sample of key organisational relationships in higher education involving Pearson education

Not all of these acquisitions have been successful as stand-alone businesses. The 2007 purchase of eCollege saw Pearson eventually enter the LMS market directly with the LearningStudio and OpenClass products but this business has not succeeded in the highly contested LMS space. From 2018, the products are being withdrawn from the public, although they will continue to be used internally as part of the MyLab and Mastering businesses (Hill, 2016).

The range of activities Pearson is engaging in illustrates the scope of this change, noting that this a sample of the more than 300 subsidiaries reported by Pearson in its SEC filings. Figure 4.2 shows that Pearson has interests well beyond publishing. The range of companies and relationships address virtually every aspect of higher education including connections to institutions to support their operations and connections directly to students, as individuals or on behalf of employer groups or government agencies. These comprise content-based companies such as Project Blue Sky (Pearson, 2012) providing access to open educational resources, MyLab and Mastering courses offered to students and institutions (Pearson, 2017a), Pearson Smarthinking (Pearson, 2017b) providing online tutors, Pearson Embanet offering complete online project management (Pearson, 2017c), Pearson VUE offering online testing and certification in conjunction with a range of corporate partners and through a number of specialist subsidiaries (Pearson, 2017d) and Pearson London Examinations (Pearson, 2017e) offering a range of qualifications directly to students. Essentially, Pearson is a complete provider of every aspect of the business of education at every level.

4.6.1 The Business of Online Programme Management OPM

An interesting question to consider is the long-term consequence of increasing use of the complete course packages provided by commercial publishers, including Pearson, Wiley and Cengage. These are no longer limited to a set of questions and slides complementing a traditional chapter textbook. Universities and students can now purchase access to a portal, operated by the publisher, containing a complete course environment with a range of static and dynamic content including video, simulations and discussion forums. These portals also offer online assessment and feedback tools and can be integrated into university systems to supply information on student activities and grades. In short, so much of the substance of a course that it is not unusual, particularly at introductory levels, to see universities simply repackage this service. The likely direction this will take in the future is not hard to imagine:

Just a Few Minutes into the Future…
Emma is a young student contemplating her first year of university study for a degree in computer science. She's well prepared, having spent the last two years at school taking a range of introductory and general education courses as well as more advanced courses on mathematics and programming. The courses were purchased by her parents for her as part of a programme operated by publishers and promoted through schools.

The publisher operates the portal with the course content, a forum where Emma has engaged with students like herself and tutors employed by the publisher. All of the assessment has been delivered online, with supervised examinations held at her school as part of the collaboration with the school and the publisher. Hard work, particularly during the breaks, has seen Emma complete enough credit to cover the first year of her degree, but at a significant reduction in the cost of attending courses at her local community college. Credit recognition of this work has been an important factor influencing Emma's decision where to study, as has been the opportunity to continue studying flexibly.

To be clear, this is a high-risk business area, particularly given the impact of changing government funding models and uncertain student demand (see Chap. 9). Pearson has been unsuccessful in its high-profile partnerships with Florida State (Thomason, 2015b) and Cal State Online (Bates, 2012; Hill, 2014), reflecting the challenges of attracting students to online degrees and the reductions in state funding affecting the profitability of the business. The failure of the Cal State Online initiative seems to share some of the features leading to the collapse of the UKeU (see Sect. 9.1.6), such as the failure to understand the scale and nature of the business and to gain definitive commitments from the state colleges.

Despite these setbacks, Pearson and other publishers appear to be continuing to pursue a strategy of identifying key components of the educational enterprise vulnerable to external capture and monetisation, including provision of entire packages for universities (Smith, 2016). Companies now exist that specialise in a variety of functions for higher education providers including identifying prospective students, operating marketing programmes, inducting students, administering student information, providing help desk facilities, invigilating assessment activities, collecting and managing assessment information, managing adjunct faculty, and operating networks and other information technology infrastructure including complete learning management and course delivery systems. In short, conducting virtually every aspect of a higher education institution's business short of actually awarding the degrees themselves.

Many of these companies operate in the shadows around academia without necessarily attracting the attention of faculty, students and the wider public. The range and complexity of these business and political relationships can be appreciated by following the threads connecting companies such as Academic

Partnerships with others operating in the rapidly evolving educational technology business ecosystem (Fig. 4.3). Academic Partnerships 'assists universities convert their traditional degree programs and certificates into an online format' (Academic Partnerships, 2015). They work with universities, converting existing programmes into online offerings, providing expert assistance in academic aspects including professional development for staff and coaching for students, marketing, and student retention and completion. One of the success stories they promote is working with Florida International University, a top-ranked US research university and fifth largest school in the USA, to deliver their flagship corporate MBA programme online.

Academic Partnerships list of senior and expert advisors includes Sir John Daniels, Clayton Christensen, Stamenka Uvalic-Trumbic and, until recently, former Florida Governor Jeb Bush (who resigned apparently in preparation for a run at the US Presidency; Macgillis, 2015). This list links political influence from the US Republican Party, the World Bank, UNECSO and the Commonwealth with entrepreneurship and academia. Governor Bush and Academic Partnerships CEO Randy Best co-authored an article (Bush & Best, 2013) actively promoting the place of online education in driving down costs and increasing the scale and competiveness of US higher education in an international market. Given the influence of the Bush family, this type of article must be seen as much a statement of political positioning as it is a promotion of a commercial interest.

Other advisors link Academic Partnerships with international universities such as the University of Melbourne and commercial education companies such as

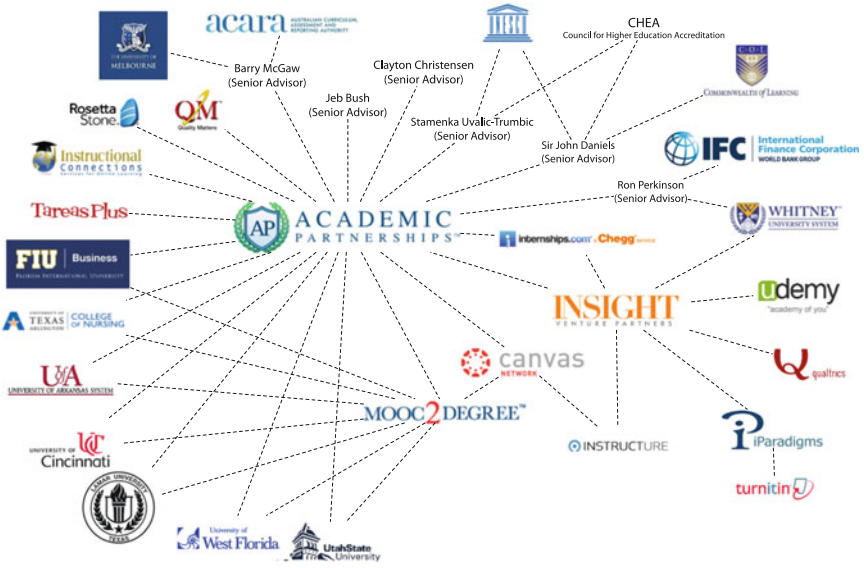

Fig. 4.3 A sample of key organisational relationships in higher education involving Academic Partnerships

Whitney International University System, an online provider of post-secondary education in Latin America. In collaboration with over 40 university partners, Academic Partnerships briefly operated a MOOC system, MOOC2Degree, which offered introductory online courses that were to be credited against accredited qualifications if the student continued the programme of study (Academic Partnerships, 2013; Lewin, 2013; Walsh, 2013).

Academic Partnerships' MOOCs were delivered through the Canvas.net MOOC platform operated by learning management system company Canvas. Other strategic partners include Internships.com providing links into industry placement, RosettaStone, a major language provider, and Instructional Connections, a company providing contract teaching assistants and tutors for online programmes. Academic Partnerships are a major investor in an educational marketplace, TareasPlus, selling video courses created by individual teachers.

Academic Partnerships have venture capital support from Insight Venture Partners, who are represented on the board, and who also have significant investments in MOOC platform Udemy, survey company Qualtrics, plagiarism and online assessment company iParadigms, which operates Turnitin, and other providers such as Whitney International University System. They have a strong interest in the company behind the Canvas LMS, Instructure. These connections are not hands-off funding; modern venture capital businesses are extremely involved with their investments, particularly through their membership of company boards and the use of relationships between investors and key staff.

Even with the failures and false starts, this is a profitable business. Newton (2016) reports that OPM companies can attract 50–80% of the revenue brought in by students, much of it supplied by federal and state funding. The examples of Pearson and Academic Partnerships (and the example of the Global University Alliance discussed in Sect. 9.1.9) show the interconnected nature of a globalised marketplace that has been established in higher education over the last couple of decades. There are many other such networks of interconnected businesses and interests reflecting different regional strengths and relationships. These companies are using the strength of their stakeholder relationship with institutions and the long-term relationship they have with academics and administrators to generate new business opportunities that blur the line of external vendor.

The financial and operational attractions of partnerships with these powerful suppliers are balanced by a strategic consideration of the impact of losing control of those aspects of an institution's business. The example provided earlier of the student wishing to gain credit for her courses purchased directly from the publisher is a relatively obvious concern, other changes are harder to spot. Once a function is outsourced, key staff, institutional knowledge and capability are lost and it can be a very expensive exercise to rebuild and redevelop effective organisational capability while sustaining ongoing operations. In the technology space, where change is so rapid, it seems attractive to pass the challenge over to a specialist company but the risk is the outsourced supplier in a dominant or monopoly position loses the incentive to innovate and can drive costs up without commensurate benefits (Wekullo, 2017). Institutions without any internal expertise and experience

potentially lose the ability to question the status quo, finding it harder to articulate ways by which new technologies can enhance the organisation's strategies and outcomes.

4.7 Government

Government has become a more important stakeholder in higher education over the past century as the scale of higher education grows, its importance to the economy and society become apparent, and the mass education model dominates perceptions of higher education. Much of the expansion in higher education is driven by substantial public investment in both institutions and in financial subsidies for students to help mitigate or defer the direct personal costs of education. The price of that investment is the growing dependence of institutions on the government for funding, and the consequent power gives governments to influence the shape of the system. Governments are increasingly positioning higher education as a private benefit, while retaining significant control over the system through policy settings aimed at driving specific outcomes (Blöndal, Field, & Girouard, 2002).

The political dimension is important. Politicians are motivated by employers and voters to enact policies influencing institutional activities and priorities. Governments are acutely conscious of the need to educate adults failed by existing institutions (HCPAC, 2009), and internationally, there are many countries seeking solutions to the problem of educating a population without the resources or opportunities for university education (Daniel et al., 2009).

Accountability for public funds has become a dominant theme over the last few decades. Many governments are creating performance indicators and other measures of activity, often within a neoliberal free market paradigm dominated by concern over the economic value of an education (Brown, 2011b; Marginson & Considine, 2000) or the transferability of labour (Adelman, 2009). Various quality assurance and improvement systems, drawn from the commercial sphere, have consequently been applied to the sector by governments and their agencies (see Chap. 16). In many countries, the web of government funding arrangements and regulation is combined with legislative power constraining which organisations can offer education to citizens, in what forms, and for which qualifications. These are particularly important in the context of international and transnational provision (see Sect. 3.1) where the role of various legal controls over immigration and educational activities have significant influence (James et al., 2011).

Government stakeholder influence on higher education is not a unified or consistent force, as education intersects with a number of policy domains. Consequently, the interaction of education with government can be like that of other stakeholder groups, reflecting the community of policy influences.

The stakeholder influence of government has major constituencies focused on funding of public education and the achievement of value commensurate to that funding; regulatory functions accrediting providers, ensuring consumers are

protected, and markets for domestic and international education able to function efficiently without the reputational risk of poor providers affecting the system as a whole; labour development functions interested in the maintenance of an effective workforce aligned to the needs of the economy; social functions seeking the maintenance of public order and the cultural life of the community; and economic growth functions looking for innovations and the highly skilled leaders able to drive new areas of industrial and commercial growth.

The variety of good governance models underpinning political systems are also a major influence on the role the government plays as a stakeholder. The differences between the market models followed in the USA and the stronger central oversight of China and European countries can result in significantly different levels of direct and indirect intervention. China (see Chap. 3) is pursuing an aggressive strategy aimed at building a national infrastructure and growing its influence internationally, while Germany (see Chap. 5) is more concerned with issues of social and economic well-being.

The importance of the government as a stakeholder is fundamentally a consequence of the management of risk and trust that only a government can provide in their role as steward of a healthy higher education system (Brown, 2011b). The scale of investment needed to introduce significant change in higher education can arguably only be provided by a government, especially given the need for trust in the resulting education system (see Sect. 15.1). The key point to note is that any new form of education needs to be trusted by a range of stakeholders given the long-term impact it is likely to have. The commitment to a new model is a highly risky undertaking, particularly for students.

4.8 Society

Beyond central governments, society at large, the 'mass public' (Trow, 2006, p. 258) encompassing taxpayers, non-government organisations and communities, are political and social stakeholders in higher education. There is a commonly held belief that a modern society has the affordances of knowledge and culture, including a well-functioning higher education system. This translates into a protective attitude to the existing infrastructure and institutions, operating at an emotional and political level. Institutional councils or boards typically recognise the importance of local communities through places designated for local dignitaries and representatives.

Possession of a local institution of higher education is an important component of a community's infrastructure, no different to a library or town hall. Failure in local elements of higher education is a risky proposition politically, and tends to reinforce the role of the public sector in education. Higher education institutions are often important parts of their local communities, providing significant financial and cultural contributions to the life of the society. Institutions often act as supporters or enablers of non-government organisations who draw on the specialist knowledge and interests of staff and students and may also draw on facilities to support their

activities through meetings and online presences. Most institutions recognise the value of contributing to the wider community, and in many countries, such work is considered an important component of academic life.

4.9 Non-consuming Stakeholders

The university is also defined by decisions on who is not a student. This creates an unusual stakeholder in the institution defined by the negative space of its engagement with society. While often a mechanism in increasing inequality, paradoxically, controlling access to university reduces some forms of inequality if the decisions are made to enhance other positive strategies for educational success. Goldin and Katz (2008) argue too much freedom and flexibility acts against the best interests of students by rewarding those who disengage, instead of strengthening their resolve. In the context of a mass model, the interests of non-consuming stakeholders are likely to be represented by government and NGOs. This can be challenging to institutions if they are required, directly by funding mechanisms or indirectly by social and political pressure, to engage with students who sit outside their default profile.

Engagement with non-consumers is the driving force in Trow's models of higher education. The impact of engagement with a diversity of student needs is apparent in the shift to mass education from the less open model of élite education, although it does need to be acknowledged that many élite institutions are actively encouraging increases in some forms of diversity. In both of these models, the decisions, implicit or explicit, defining the boundary between consumption and non-consumption are consequences of the pedagogical and business models in operation. Not addressing the needs of non-consuming students may represent necessary and useful strategic and operational choices.

Universal education is, by definition, a model aimed at addressing the needs of all people. In this model, non-consumption, other than by personal choice and inclination, suggests a failure of the model. This highlights the significant challenges facing any society providing universal models of education as they must respond to issues of poverty, prior education, intellectual and physical disability, and cultural preferences and expectations to name just a few.

4.10 Stakeholder Salience in Élite, Mass and Universal Education

Taking the Mitchell et al. (1997) model of stakeholder salience discussed in the introduction, it is possible to construct a diagram representing the stakeholder influences for any given institution or sector, or to explore the implications of

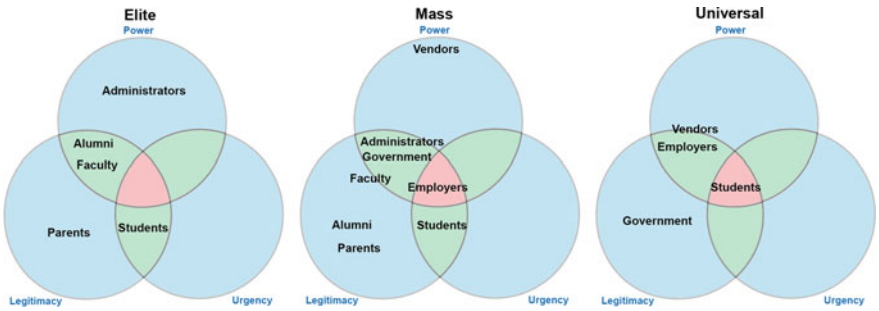

Fig. 4.4 Changing stakeholder salience relationships for élite, mass and universal systems of education

transitions from élite, through mass, to universal education (see Fig. 4.4). Recognition of this dynamic environment provides an opportunity to influence it and respond to the changing salience of different stakeholders (Jongbloed et al., 2008). His explicit understanding of the shift in stakeholder relationships is a key feature of the highly influential model of the multiversity, described and implemented so effectively in California by Clark Kerr (Kerr, 1963; Marginson, 2016; Rothblatt, 2012).

In the élite system, there are comparatively few stakeholders, as the institutions exist to sustain élite social groups distinct and separate to the interests of wider society. All the stakeholders are present through virtue of their legitimacy, with power held by the alumni and academics. Faculty in élite institutions are largely drawn from alumni and exercise their control in a manner intended to preserve and maintain the values of the alumni. Alumni maintain much of their power through funding, with donors wielding significant influence over élite institutions (Golden, 2006). As the goal of élite institutions is entry into a privileged society, alumni also sustain their power through their influence on the subsequent success of students once they complete study and become alumni themselves.

Students and parents have a strong legitimacy in their engagement but little actual power over the model. Their goal is to gain or sustain access to élite society, not to redefine it. Students add the dimension of personal urgency, reflecting the role élite institutions play in the transition to adult life and society for the individual. That said, the deep personal involvement of the student in the outcomes of education may not always work to their benefit as Bourdieu and Passeron (1977) contend:

> …the inheritor of bourgeois privileges must today appeal to the academic certification which attests at once his gifts and his merits. The unnatural idea of culture by birth presupposes and produces blindness to the functions of the educational institution which ensures the profitability of cultural capital and legitimates its transmission by dissimulating the fact that it performs this function. Thus, in a society in which the obtaining of social privileges depends more and more closely on possession of academic credentials, the School does not only have the function of ensuring discreet succession to a bourgeois estate which can no longer be transmitted directly and openly. This privileged instrument of the

> bourgeois sociodicy which confers on the privileged the supreme privilege of not seeing themselves as privileged manages the more easily to convince the disinherited that they owe their scholastic and social destiny to their lack of gifts or merits, because in matters of culture absolute dispossession excludes awareness of being dispossessed. (p. 210)

A notable feature of the élite salience figure is the absence of a central definitive stakeholder. This reflects the focus of the élite system on preserving a culture rather than a specific stakeholder group. Academics under an élite system regard themselves as possessing both power and legitimacy, acting as dominant stakeholders, contrasting that role with administrators who may be cast as dormant stakeholders possessing power without the legitimacy needed to exercise it explicitly. As the system transitions to a mass mode and administrators move to share the dominant stakeholder role, it is not surprising that conflict arises from those resisting the changing salience relationships.

Mass education systems have many more stakeholders, the majority of whom are present through their power; which grows as the scale of the system generates complexity and economic importance. It can be argued that the act of identifying stakeholders is itself evidence of the transition to a mass education model. Many stakeholders are salient only under mass education and using the language and models of stakeholder engagement fits well with the rise of the managerial tools applied under that model. The intimate relationships characterising élite education resist the generalisations of stakeholder definitions; each student, every alumnus and donor, is recognised as an individual and placed by the nature and quality of their relationships with the system. This is a far cry from the aggregations dominating the performance and quality management of modern mass higher education systems.

The influence of employers is strongly felt as education plays a central role in the economic life of a society, with the extent of urgency dependent on the wider financial state of the society, and the extent of legitimacy dependent on cultural expectations. In countries like New Zealand and Australia, employers have significant legitimacy but comparatively less urgency than in the USA and the UK who are recovering from economic downturn and failure prompting student concerns about employability and growing graduate underemployment (Abel, Deitz, & Su, 2014; Viña, 2016). Employers in many European countries may have similar levels of power and urgency but less legitimacy through their focus on purely commercial and economic outcomes in higher education systems. They are dominated by cultural and intellectual priorities in contrast to their higher legitimacy in the vocational sectors where they may be the definitive stakeholder exercising significant salience (Andersen & Van de Werfhorst, 2011; Barone & Van de Werfhorst, 2011; Bol, 2013; Bol & Van de Werfhorst, 2013).

The economic importance of mass education drives the power and legitimacy of the government's involvement. Mass education is heavily dependent on government funding, directly through fee subsidies or indirectly through public funding of institutions and provision of student finance or loans. This control of the purse strings and the need to be responsible stewards of that funding, leads to the high degree of influence and salience the government wields. Selwyn (2014) sees the

government as an important mechanism able to protect the university from the negative consequences of change through its ability enact policy and regulation that direct the operation of 'fairer' models. He suggests the government can regulate to enforce a non-commercial and educationally productive use of technology within a fair education system. He also acknowledges that this is utopian in the extreme. Even if government were interested in interventionist involvement, it is unclear what model of education they would support. Their influence on the other forces described in these chapters is minimal to non-existent, even constrained by legal obligations through the operation of international treaties and trade agreements such as GATS. The government's policy and regulatory position is negotiated with all the other stakeholders in education and more likely to represent a compromised set of priorities, rather than the nebulous public good sought after by some within the sector.

The shift in the position of academics as education transitions through the different modes is apparent in the changing model of employment. The stereotypical representation of the tenured faculty is far from reality for many faculties in the USA with a workforce that is becoming casualised and dominated by staff on short-term contracts (see Sect. 3.2.4). As the status of faculty decline, the power and salience of institutional administrators and professional managers grows (Martin, 2011). This displacement of faculty as dominant stakeholder may implicitly, or explicitly, underlie many of the conflicts visible in higher education. The explicit exertion of faculty control over new technologies in élite institutions (Jasanoff, 2013) can be seen as defending a state of stakeholder salience, while in other institutions, appeals to legitimacy, for example 'academic freedom', may remain the only means faculty have available to influence the institution.

The growth in scale and complexity leads to the increasing salience of two additional stakeholders, institutional administrators or managers and third party vendors. These groups contribute significantly to the disproportionate increases in the cost of higher education (Martin, 2011; Vedder, 2004). The power of administrators in mass education is well understood. The growing legitimacy of their control reflects the attitudinal shift to accountability and bureaucracy inherent to the mass model, reflecting the need to sustain the increasingly complex relationships the university has with its stakeholders (Cabal, 1993).

Vendor power is less apparent. Vendor influence is often subtle and invisible to many other external stakeholders, being exercised through the provision of specific services to the administration or through the disruption and change provoked by new technologies. The web of services and businesses define new norms of organisational activity with much of the decision-making increasingly formed by vendors for their own commercial ends and with institutions often struggling to operate independently.

Notable in the mass education salience pattern shown in Fig. 4.4 is the shift of parents and alumni to a position of reduced saliency as their power is eroded by their subordination to wider economic interests and a decline in the importance of higher education as a manifestation of cultural life. Students retain their salience to a large degree but what the figure does not reflect is the rising diversity of interests

and needs the growing student body has as they transform from participants to clients or even customers. The shift to mass education means the student body becomes less cohesive, less able to assert a collective voice over common interests. As education becomes more oriented towards immediate employment outcomes, students risk losing much of their identity as distinct stakeholders while employers start to act as agents in their stead.

Student influence over mass education is also weakened by their declining influence over the revenues of the university. Rosen (2011) observes that the proportion of revenue derived directly from students represents less than 15% of the funding for public universities. The diversity of funding sources is beneficial to the university in managing financial risk but this means the needs of other stakeholders must increase and those of students decline in their influence over the university and its priorities.

The salience diagram for universal education sees far fewer stakeholders exerting influence. Universal models imply a de-emphasis of the value of qualifications and the absence of barriers to student entry. The power of governments is reduced as their focus shifts from assuring the quality of the qualifications to concerns of generic consumer protection, equity and wider social outcomes arising from the universal experience. Vendors become increasingly significant as education becomes more akin to modern entertainment industries than public service. Students, including the non-consuming potential students falling out of the mass model, move to the centre as dominant stakeholders reflecting their ability to control their own educational experiences and their personal responsibility for the outcomes. The interests of previously important groups, such as employers, shift to being the responsibility of the student rather than the educational institution.

4.11 Conclusion

Identifying and engaging with diverse stakeholders is strongly related to the sense-making properties of social engagement and identity construction. Understanding the stakeholder perspectives influencing the university is essential in the process of sense-making and sense-giving. The shifting patterns of salience act as cues for an ongoing process of identity reconstruction, particularly as stakeholders, directly or indirectly, use their power to enact changes.

Stakeholder self-interest invariably influences the interpretation made of any change narrative and contributes to the wicked nature of the leadership challenge of enacting change. In recognising this, it is important to appreciate the diversity within stakeholder groups. Each of the stakeholder groups identified as discrete entities in this analysis are, in reality, diverse groups with conflicting agendas and varied levels of engagement with and influence over educational institutions. When examining the situation of any one institution, it is essential to examine each of these groups in order to identify and understand the detail and the particular concerns relevant to the institution.

The complexity of interplay between different stakeholder interests leads to the development of 'ecological' models of education (Davis, 2010, 2012) explicitly addressing the dynamic interactions between internal and external stakeholders and systems. It also leads to Barnett's conception of the 'multi-vocal university' (Barnett, 2013) where the interaction of a diversity of voices expressing the perspectives of the multitude of internal and external stakeholders results in a discordant and hesitant collective sense of the university. Sense-giving processes need to engage with these different voices and articulate a narrative reflecting the different perspectives and values diversity brings to the evolving conception of the university if they are to provide a plausible mechanism shifting the elements of the wicked problem.

A particular feature of the shift in stakeholder salience through élite, mass and universal modes is the way it reflects their influence over the financial costs and economic consequences of education. Cost is one of the major factors influencing the perception of the value and quality of education, a theme further explored in Chap. 16. Different stakeholders perceive the economics of education very differently depending on their place within the economic landscape, and this is focus of the next chapter.

Chapter 5
Financial Challenges, Constraints and Consequences of Funding Higher Education

Abstract Framing the wicked problem of university change in economic terms is a common mechanism for leaders facing hard budgetary realities. The cost of higher education and the contribution that it plays to the economic life of society are perhaps the most visible forces acting on the university. This is a contested space with ongoing debate regarding the actual impact of education on individual and national productivity. The drivers of the ever-increasing cost of education are discussed with the criticisms of a principal-agent problem balanced by the recognition of the cost disease affecting university education. The reality of declining public wealth as a constraint on university revenue is explored and the German higher education system used as a case to show the wicked nature of university funding.

> Do you realize that the cost of higher education has risen as fast as the cost of health care? And for the middle-class family, college education for their children is as much of a necessity as is medical care - without it the kids have no future. Such totally uncontrollable expenditures, without any visible improvement in either the content or the quality of education, means that the system is rapidly becoming untenable. Higher education is in deep crisis. (Peter Drucker quoted in Lenzner & Johnson, 1997, p. 127)
>
> A higher education is the single most important investment students can make in their own futures (The Obama White House, 2013).

Economists have historically described higher education as an 'investment in mankind' (Vaizey & Debeauvais, 1961, p. 38). The dramatic changes in the scale and scope of higher education are increasingly redefining the changing calculus of cost and benefit playing out for individuals, institutions and nations. This reflects the consequences of the shift to mass education predicted by Trow and observed by Barnett (1992). Higher education participates in, and is subject to, the economic life of society and is increasingly seen primarily as an instrumental good rather than sustaining cultural and social values. Driving these changes are political theories inspired by the neoliberal philosophy of individual responsibility acted out in a pure market for goods and services (Giroux, 2014; Higgins & Larner, 2017; Larner & Le Heron, 2005; Self, 2000), and in the use of human capital theory (Becker, 1993;

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Fitzsimons, 2015; Gillies, 2015) as a driver for allocating the costs and benefits of education (see Sect. 6.2).

Many argue in favour of the market as a mechanism for sustaining educational systems (Schierenbeck, 2013; Vedder, 2004; Zemsky, 2009; Zemsky, Wegner & Massy, 2005). The counter claims of those who see no educational value in market models (Aronowitz, 2000; Bok, 2003; Kirp, 2003; Morrow 2006; Selwyn, 2014) have been noted in the introduction to this section of the book. More substantively, there is evidence the economics of education are complex and many policy responses flawed as a result of simplistic models and assumptions (Marginson, 2012b; Wolf, 2004).

While growth in the scale and scope of education is increasing costs, there is little evidence of substantial efficiencies developing when more students are educated, or even a perception that the resulting education is leading to greater productivity and improvements in the standard of living. Wolf (2004) illustrates the disconnection between wages, productivity and education by noting the example of the legal profession, associated with education and high wages, but educating more lawyers is unlikely to be a high priority when growing national productivity.

Many are increasingly asking hard questions of a system of education that is apparently failing to deliver the personal economic benefits it gave their parents. Across the globe, many individuals are struggling to turn university educations into successful careers. In part, this is a symptom of the economic challenges facing the USA, the European Union and others but it also seems to reflect a disjunction between the model of employment evolving in Western countries and the traditional models of higher education.

5.1 What Does a Degree Cost?

For individual students, the cost of acquiring a degree has three main components (Archibald & Feldman, 2010). The obvious one is tuition fees, and a student's living costs still need to be covered while studying. These two are the upfront price of higher education and this price can be substantial, particularly in the case of US private education. The final component is the opportunity cost of not being in full-time employment while studying, although this is balanced by any public assistance available, impact on tax paid and the forgoing of any unemployment assistance that might otherwise be received.

OECD analysis of the financial costs and benefits of university education (OECD, 2016a, Table A7.3a and Table A7.3.b) suggests the following rates of return. For men: an average rate of return of between 7% (New Zealand) and 30% (Poland) with an OECD average of 14%. For women: an average rate of return of between 3% (Japan) and 24% (Poland) with an OECD average of 12%.

In practice, the OECD numbers obscure a significant amount of variation in the data. As an example, a New Zealander using the available student financing schemes completes an undergraduate degree with an average student loan of NZ

$16,731 (Source: Ministry of Education, Education Counts, 2014). This covers all their fees and a small proportion of other costs. The student likely foregoes at least NZ$82,524 in earnings during that time (Source: Statistics New Zealand NZ Income Survey http://www.stats.govt.nz/) giving a total cost of NZ$99,255, with lost earnings reflecting 83% of the complete cost to the student.

In comparison, US students pay on average US$16,789 (public) or US$33,716 (private) in fees and other living costs for study at a four-year institution (US Department of Education, 2015 Table 381). Students in the US frequently take more than four years to complete a bachelor's degree; the six-year graduation rate is just under 90% (National Centre for Educational Statistics, 2014). Assuming five years of study, a degree from a public school costs the student US$83,945 and from a private school US$168,580.

This amount is routinely offset by scholarships, discounts and student loans but the majority of students still end up borrowing further (Woo & Soldner, 2013). The average student debt is US$24,700 (Woo & Soldner, 2013, p. 7), which offsets some of the fees but at the cost of a high relative interest rate. Students from so-called 'non-traditional' backgrounds attending for-profit providers borrow significantly more than the average and are more likely to default on their loans (Looney & Yannelis, 2015). Typically, students repay their debt at between 12% (public 4 year) and 16% (private 4 year) of their income while being charged an interest rate of 4.66%, unless they are in default and paying penalty rates (Lorin, 2014), costing a student on average US$28,510. This assumes the student is able to find employment soon after graduating and avoids any default on their loan repayments. Defaulting results in a dramatic increase in the amount owed through the imposition of additional fees and penalty interest rates.

The US median wage for a high school graduate is US$21,569 (Julian & Kominski, 2011), bringing the five-year total cost of obtaining a degree to US $195,600 (public) or US$280,235 (private) with lost wages representing 55 or 39% of the total, respectively. Given the median wage of US$42,783 for a person with a bachelor's degree, representing a premium of US$21,214 per annum, it takes approximately ten years for a student to recover the investment they make in their education. Depending on the field of study, the reputation of the university and the local economy, the resulting qualification may well represent significantly less value than simply investing the fees in a treasury bond (The Economist, 2014).

These cost calculations are probably underestimates, as they cannot account for possible subsidy of the student by parents or partners, or for the use of prior savings which plausibly could at least equal the amount borrowed as a student loan. As Fig. 5.1 shows, the fee charged for a degree has grown rapidly in the US, much faster than the economy generally.

While the exact combination of causal factors can be debated, the cost of education, relative to other components of the economy, continues to increase disproportionately. Other sectors with a dependence on skilled professionals, such as dentistry and legal services, show similar increases in relative cost (Archibald & Feldman, 2010). Substantial increases in fees paid by students are the inevitable consequence. Over the last decade, tuition fees in US universities have risen 35% in

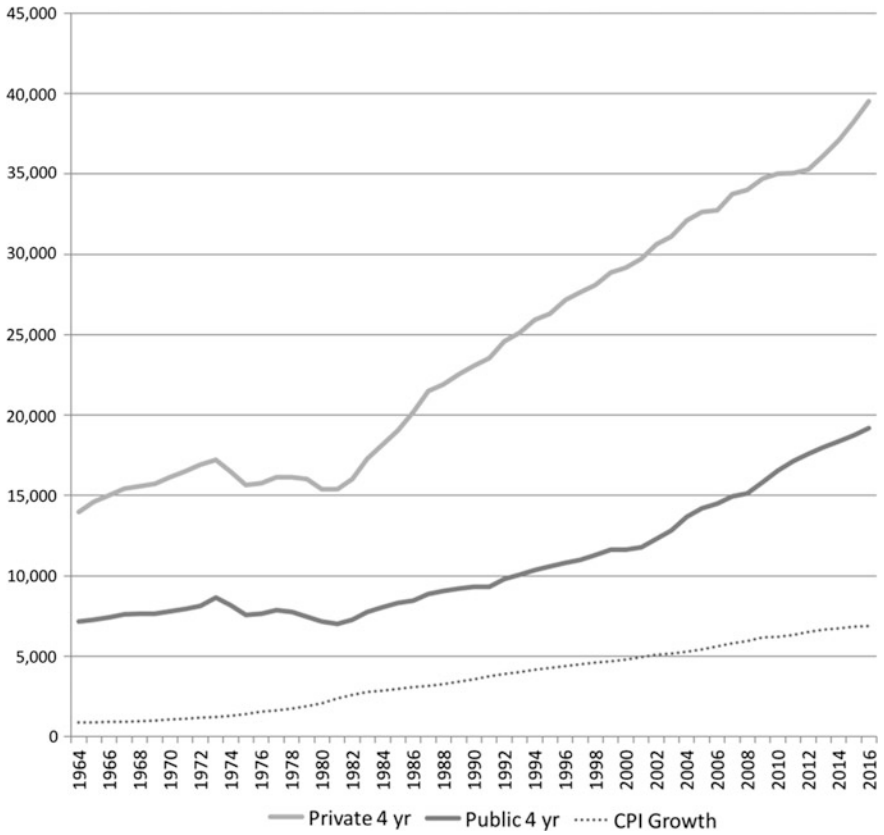

Fig. 5.1 Annual fees (constant 2011 dollars) for attendance at a public or private four-year institution for the period 1969–2011 compared to annual inflation of the consumer price index (United States Department of Education, 2017, Table 330.10; Bureau of Labor Statistics, 2016, Table 24)

inflation-adjusted dollars (Ma, Baum, Pender, & Welch, 2016), substantially faster than many other parts of the economy (Fig. 5.1). In the UK, students pay annual fees of up to UK£9000 at many universities (Sedghi & Shepherd, 2011; Willets, 2010), a dramatic increase in the fees charged prior to 2011.

Studies of student costs while studying in Europe suggest fees represent a very small proportion of costs. Even in the UK, where fees are the highest in Europe, they still comprise less than 20% of the cost of being a student (Orr, Gwosć, & Netz, 2011). These average cost estimates are higher at the upper end of the spectrum where fees can easily be ten times the average amount for students at prestigious or élite institutions, for graduate studies and for students in areas with high living costs. This analysis does not allow for the risk that students default on loan repayments, accruing significant additional fees and penalties, with the

resulting debt often significantly exceeding the original amount borrowed (Austin, 2013; Collinge, 2009).

The German system provides an alternative fee model defined by open entry and an absence of fees. The integration of the German tertiary system within a broader set of policies and supporting systems is fundamental to its successful operation (Euler, 2013). These include recognition that the education system has multiple responsibilities for economic productivity, social cohesion and individual development. It reflects this in the integration of education with a social context, either directly with the relevant industry or indirectly through government-created alternatives for professions needing additional support. Operation of the system is closely managed with codified standards, teaching qualifications and monitoring to ensure quality is sustained. A highly supportive social environment valuing vocational training and associated employment is essential to the ongoing success of the model and constitutes a major difference to the Korean system (see Sect. 6.4).

German Higher Education—A System Without Fees

Germany, with a strong public defence of free higher education, provides a contrast to the models prevalent in the US, UK, Australia and New Zealand. Internationally, Germany is identified as a country defined by the minimal fees charged to students. This ignores the reality of a system challenged by long-standing issues of access and quality, changing in response to the pan-European Bologna process (see Chap. 6), and reacting to the market ideologies dominating higher education in other countries (Münch, 2013; Reihlen & Wenzlaff, 2014).

The German tertiary system is not technically a single structure as each of the Länder, or states, is responsible for their own system with limited powers held by the federal government. In practice, the Länder coordinate their activities to maintain a significant level of coherence (Witte, 2006). This case study is based on the entirety of the German system.

Germany is a wealthy country with a tax system aimed at sustaining social institutions, which partially explains how the minimal fee model is sustained. Germany operates in a mixture of mass and élite modes. Access is managed, rather than the more common open approach used elsewhere, so university participation rates remain comparatively lower than in other European countries (Powell & Solga, 2011). German participation rates in vocational tertiary education by people aged 25–34 are the second highest in the OECD (51%), well above the levels in the UK (18%), Australia (22%) and the OECD average (26%). Degree level study is amongst the lowest at 30%, compared to an OECD average of 42% (OECD, 2016, Table A1.4). This is fundamental to the affordability of a zero-fees system. It ensures scale is managed to prevent unaffordability to society while ensuring the ability to

access higher education is not automatically conflated with opportunities for a good life reflected both in social position and wages.

Academic streaming based on teacher recommendation, ability and motivation begins at around age 10 (Blossfield, Trautwein, & von Maurice, 2013). Students are separated into one of three tracks: Hauptschule, Realschule and Gymnasium. Hauptschule is for the least academically oriented students. Access to university is normally earned by passing the Gymnasium Arbitur exam with limited entry through other pathways (Orr & Hovdhaugen, 2014). Interestingly, many students who have the option to go to university, having passed the Arbitur, or entrance exam, choose instead to enter the apprenticeship pathway (Pilz, 2009).

The German apprenticeship and vocational training system differs from that used in the UK and related systems such as Australia and New Zealand. It has a strong focus on general knowledge, lifelong personal development and holistic education (Berufliche Bildung) rather than the direct employability skills focus of the other systems (Brockmann, Clarke, & Winch, 2008; Rauner, 2006). Students from Hauptschule and Realschule can start apprenticeships at age 16 under what is described as a dual system, reflecting the involvement of employers and schools in providing educational experiences. This system, with its focus on education for an occupation rather than just a specific job, illustrates how mass education can usefully place education within a completely authentic environment (Deissinger, 2015; Soskice, 1994).

The higher education system is highly structured, with significant differences in the selectivity, quality and reputation of the different institutions. These differences are particularly apparent within the last decade (Münch, 2013; Reihlen & Wenzlaff, 2014) as Germany reforms much of its public higher education in line with the same market ideologies influencing countries such as the UK, Australia and New Zealand. The changes to a Bachelors/Masters system aligned through the Bologna process have resulted in controversial changes to how higher education institutions are accredited and in the operation of quality assurance (Witte, 2007, 2008).

A number of structural factors contribute to the success of the German educational system. These include the predominance of bank finance, as opposed to a highly traded share market system, as a source of equity. This allows longer-term planning and investment in industry and commercial employee development, strong unions and local community representation in the governance and regulation of industry (Culpepper, 1999). Such equity creates and sustains an effective apprenticeship system providing good wages and lifestyle, which is socially valued (Pilz, 2009; Soskice, 1994). The existence of this alternative pathway allows the system to manage the scale of higher education more actively than in countries that lack a socially and economically viable alternative. These features have enabled eastern Germany to benefit from the impact of tertiary education in the development

of its population following the re-unification of the country, avoiding the creation of a low-wage market and systemic inequality (Culpepper, 1999).

The value of this system is widely recognised within Germany and is strongly defended by the public against the threats arising from changing international financing of business (Culpepper, 1999) and systemic change under the influence of the Bologna process (Lorenz, 2006; Scherrer, 2005, 2007) (see Chap. 6). As an example of the strength with which this model is defended, in 2007 several German states briefly introduced fees as a means of funding institutions but these were rapidly dismantled following significant public protest (Chapman & Sinning, 2014; Denhart, 2014) and are now only levied in two Länder, Bavaria and Lower Saxony. The system remains highly supported by public funds with only 14% of funding sourced privately, well under the OECD average (30%) and significantly lower than that of Australia (58%), Korea (68%), the UK (43%) and the US (64%) (OECD, 2016, Table B3.1b).

5.2 Wealth, Inequality and Student Debt

A major driver behind the German model is the deliberate use of education to build a healthy society. The relationship between education and broader economic and social well-being is complex. Aaronson and Mazumder (2007) show the post-World War II expansion of higher education generated a period of significantly lower inequality in the US lasting until the 1980s. There is considerable evidence to suggest this improvement was temporary and is being reversed. Economists, including Piketty (2014) and Stiglitz (2015), show a significant and growing trend of inequality in Western societies, seeing wealth concentrated in the hands of a small number of people. This is affecting the affordability of higher education both to governments and to individual students and their families.

The challenges facing families funding education are apparent in the Trends in College Pricing reports, showing all but the top 5% of families have declining incomes for the decade ending 2013 compared to the previous decade (Baum & Ma, 2014). This improved a little with the upturn in the US economy in 2014 and 2015 (Ma et al., 2016). Despite this slight increase, inequality continues to grow with the top 20% growing from six times that of the average of the lowest 20% in 1985 to over twelve times in 2015 (Ma, Baum, Pender, & Welch, p. 29).

Further pressure on individuals results from increases in the price of higher education. Many countries are shifting from subsidising higher education as a ‘public good’ to treating it as part of the normal economy, a private good to be paid for by individuals (Blöndal et al., 2002; Tilak, 2008). Public funding of higher education is in serious decline in many Western countries, the result of government

policies reflecting a belief in the tenets of human capital theory (Becker, 1964) (see Sect. 6.4) and of pressures on public spending created by neoliberal market policies and their influence on taxation and the role of the state as a provider of services (Self, 2000). At best, many universities see their budgets held at constant levels while operational costs rise. This reduction in public support has been apparent for the last couple of decades but recently it is re-emphasized by the impact of the international economic recession driving increased focus on the cost of acquiring a degree in the US (Archibald & Feldman, 2010) and shifts in the funding policies of countries such as the UK (Dearden, Fitzsimons, Goodman, & Kaplan, 2008; Browne, 2010) and New Zealand (Ministry of Education, 2014).

In response to the recession, the UK Treasury recommended a cut in the budget for higher education from UK£7.1 billion in 2010 to UK£4.2 billion in 2014. The majority of this was aimed at teaching costs (Bell, 2013) reflecting a policy desire to shift to a more competitive market model for UK higher education (McGettigan, 2013). These cuts were, in theory, offset by increases in the fees charged to students. The inevitable and substantial decline in student numbers has seen many university's revenues sharply decline (Bolton, 2013). The decline in student numbers will perpetuate societal inequality as less well-off families struggle to afford the upfront cost of these fees and risk the associated debt (Usher, 2006).

The relationship between wider inequalities of wealth distribution and funding public higher education is illustrated in Fig. 5.2. It shows the correlation between funding in the UK and public wealth, as measured by Piketty (2014), over the second half of the twentieth century. This strongly suggests a relationship and, if the predictions of Piketty, Stiglitz (2015) and other economists are correct, indicates public higher education funding will continue to decline in Western countries.

The political dimension of this funding is seen in the late 1970s and early 80s when the policy responses to recession saw significant declines in public spending under the Thatcher government. A similar, politically determined, discontinuity is apparent in 2006/7 reflecting the change in university funding policies (Bell, 2013; McGettigan, 2013). If the decline in public wealth follows the trends suggested by Piketty (2014) and continuing to be seen (Piketty, 2017), with a return to a high degree of inequality and wealth concentration in private hands, there is unlikely to be a return of the high degree of public wealth seen in the period 1950–70. This suggests higher education is unlikely to see a sustained increase in public support other than as a result of a significant shift in political priorities and any sustained increase in university revenue is dependent on charging fees directly of students (Belfield, Britton, Dearden, & van der Erve, 2017).

Students do not normally pay these fees directly of course. Western governments are sensitive to criticism implying access to mass education is inequitable. Scholarships and loan facilities are used in many countries to defer the real cost of education and address social disparities. These are rarely successful in addressing inequality and tend to disproportionately benefit wealthier students (see Chap. 6). Such systems often require insider knowledge to navigate effectively and remain opaque to students from less well-educated or less wealthy contexts.

Fig. 5.2 Comparison of public wealth with funding for higher education in the UK, 1948–2010 (data sourced from Piketty, 2014, Fig. 3.5; Piketty, 2017; BIS, 2010, Fig. 1; and Belfield et al., Fig. 4.1)

The other approach is using debt in the form of student loans to mitigate the direct costs of higher education. Four problems arise this. The first is that debt as a general mechanism for funding reinforces inequality. Students from lower socio-economic groups are reluctant to commit to significant debt and are less able to make long-term financial plans that inform study choices and the management of their personal cash flow. The lack of familial experience with successful investment and the absence of a strong capital base to fall back upon heighten their perception of risk (Usher, 2006).

The second problem is the deferral process. The costs of higher education are real, requiring investment in staff and facilities. Individual families, governments and charitable foundations struggle to sustain the costs of servicing debts arising from the deferral. The problem of supporting debt associated with study dominates government policy around higher education in countries such as New Zealand. A substantial proportion of New Zealand governmental funding for higher education is allocated for loans to students, approximately NZ$1.5 billion in 2002–13 representing 29% of the NZ$5.1 billion spend (Education Counts, 2014).

The third problem is not all students successfully complete their studies, and those that do find it challenging to gain employment relevant to their education. This problem exacerbates the others. The government's justification for investment

is the outcome of higher education is economic growth. More people earning more money in more skilled occupations pay more tax to cover, among other things, the cost of their education. This lost investment is one of the factors driving the increase in accountability and performance frameworks (Chap. 16).

Management of public debt has become a very important political issue throughout the West and education is commonly a significant proportion of public debt. New Zealand, a very small country, has public debt of NZ$15.3 billion arising from student loans (Ministry of Education, 2016). The US has a student debt mountain of more than one trillion US dollars (Moore, 2013). Strategies to manage this debt focus predominantly on the performance of higher education providers. Regulation and accreditation, combined with a variety of performance indicators such as student attainment of qualifications within a defined period, are used to encourage a focus on student success. The problem with this approach is, if successful, all it does is increase the number of graduates. Nothing is done to either increase the value of the resulting qualifications or to change the likely outcome for the student in the employment market. Instead, we see government education policies dominated by the need to manage the risks of debt, rather than emphasising the value an educated population has for the country. The focus on employment earning potential is apparent in strategies pursued by the New Zealand government encouraging prospective students to consider the potential salaries open to people with specific qualifications (Mahoney, Park, & Smyth, 2013).

At the heart of this focus on employment and salaries is the growing realisation that a fourth problem must be resolved. It is necessary to see an actual growth in productivity sufficient to meet the costs of deferral. The implication of the US allowing well over one trillion US dollars to accrue in educational debt is this investment of scarce capital will see a real growth in the US economy greater than this debt and not just from the debt-driven expenditure itself being used in gross domestic product calculations.

5.3 Higher Education and Productivity Growth

By allowing student debt to accrue, the US government and society is gambling that students will collectively generate increases in economic activity or productivity equivalent to their debts. This is not at all apparent, particularly given the high unemployment evident, even amongst highly qualified people, and the high proportion of loans associated with incomplete or low-value qualifications (Looney & Yannelis, 2015). It is possible that increasing education actually impoverishes the country as money is printed by central banks to cover the public debt, consequently devaluing the existing material economy.

The extent of economic disparity in real terms is the difference in the slopes of the cost lines and consumer price index line in Fig. 5.1. Internationally, the problem of realising the potential of education is evident in the challenges experienced in developing regions such as Africa, South America and Asia. In addition to

investing in higher education, developing countries need to evolve and sustain systems of effective macroeconomic management, governance and commercial enterprise; both domestically and internationally, including policies addressing trade and connections with the global movement of capital (Bloom, Canning, & Chan, 2006; López, Vinod, & Wang, 1998).

Measuring the productivity impact of higher education is a tricky process. There are two major considerations, the benefit realised by individuals and the benefit realised by society as a whole through overall economic growth. Wolf (2004) notes that despite a substantial body of research examining economic growth and education across many countries, there is little evidence of education being a major factor:

> The most striking features of these studies is the marked absence of any clear education effects. For something which is supposedly so obvious, and so powerful, a promoter of economic well-being and growth, it is extraordinary how many studies find no relationship between increases in schooling levels and growth. Indeed, some studies, based on extensive data-sets, actually find a negative relationship. (p. 321)

The need to consider a range of contextual factors when exploring the relationship between education and national economies is illustrated in the Korean case (see Sect. 6.4). This illustrates how increasing levels of scale of education can be negatively correlated with overall economic measures, such as GDP growth.

Wolf (2004) criticises the simplistic assumptions made by Becker (1993) and by Denison (1962, 1964) who provide the foundation for modern policies linking education with productivity, broadly described as human capital theory. These consist of the measurement of education as years of formal study and the assumption that this has a causal relationship to improvements in human capability (see Chap. 6) and consequently with rises in productivity and thus individual returns. The problem is the failure of such models to consider the possibility that other factors drive individual success and to reflect on the changing pattern of employment and its relationship to the evolving structure of economies.

5.3.1 Personal Economic Benefit of Higher Education

Historically, a number of different studies have demonstrated the personal economic benefit associated with higher education qualifications, which can be used as a proxy for overall economic growth. The OECD (2016a) notes that degree-educated people enjoy a significant earnings premium over their lifetime, both in terms of higher income and a higher rate of employment compared to people with no tertiary education. US Census data suggests that historically, people with a bachelor's degree earned an additional US$700,000 (2008 dollars) over their lifetime compared to people with high school diplomas (Julian & Kominski, 2011).

Goldin and Katz (2008) identify a consistent demand for highly educated people in the US economy throughout the last century. Since the 1980s, this demand has

grown and generated a significant disparity in wages. They attribute this growth in inequality to a combination of sharp rises in wages for people with technological skills associated with the uptake of computers, globalised markets and outsourcing to low-wage economies. This is combined with the decline in unions and the reduction in minimum wages, and the slowing rate of gain in educational attainment since 1950. Standing (2011) identifies the growth of a new class of society. The 'precariat' is denied job security and excluded from any stable role in society, either through a lack of access to employment relevant to their skills or to opportunities to be trained and educated so they can be employed.

Goldin and Katz (2008) conclude that the most important factor driving the rise in inequality is the ongoing demand for skills aligned to new technologies driving the wider economy. Globalisation and outsourcing are considerably less significant factors influencing earnings. The challenge for individuals is responding to the constant need to reskill as technological change eliminates some jobs and creates new ones with different, usually more complex, skill requirements. The key factor driving up the wages of skilled workers is the relative supply of suitably educated people (Goldin & Katz, 2008), not an increase in the relative rate of demand for skilled workers. The level of demand for skilled people has been consistently growing over the last century but the availability of suitably educated people has failed to keep up over the last four decades.

Figure 5.3 plots the changes in commodity price deflated wages for men in the US over the last 50 years using modelling and data from Acemoglu and Autor (2010) and Rothstein (2016). The figure shows the impact of economic downturn in the early 1970s. Highly qualified people show a greater relative decline in their wages reflecting the oversupply of degree-qualified men (Freeman, 1976), generated in part by Vietnam War policies allowing men to defer military service by attending college. Internet-fuelled economic growth is reflected in the dramatic rise in wages in the mid-1990s, which finally saw college qualified men's wages return to the peak of the early 1970s. Wages have subsequently stabilised with some small movement influenced by the Internet bust in the early 2000s and then in response to the 2008/9 recession. Wage patterns for men with no qualifications or high school diplomas tracked with degrees until the early 1980s. The shift in the economy away from low-skilled work is apparent in the dramatic decline seen in wages for men with high school diplomas who struggle to remain above 1963 levels and in wages for unqualified men, which drop below them.

The wage pattern is paralleled in employment numbers. Most adult learners need a bachelor's degree to realise a substantial change from dependence on benefits or low-wage employment (Engler, 2014). Internationally, the OECD notes people with tertiary degrees are less likely to be unemployed (4.9%) compared to people without even secondary education (12.4%). The unemployment rate grew more than twice as fast for less educated people over the period from 2008 to 2014 (OECD, 2016a). An analysis undertaken by Georgetown University (Carnevale, Jayasundera, & Cheah, 2012) shows that people with full bachelor's degrees are able to weather the recent recession better than those people without such

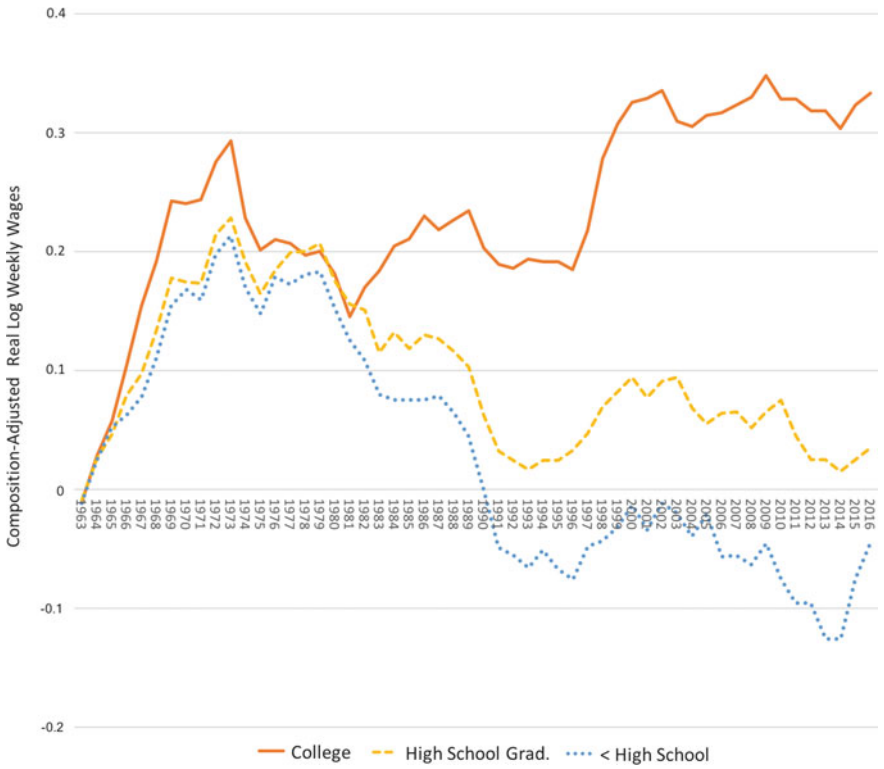

Fig. 5.3 Relative changes in wages (CPS deflated) 1963–2016 for men in the US by qualification. Data sourced from Acemoglu and Autor (2010) and Rothstein (2016)

qualifications. People with degrees took all new jobs in the USA during 2009–2012, while people without degrees remained unemployed at similar levels.

An equivalent impact of qualifications on employment is apparent in other countries. In Finland, the shift from an élite model of education to a mass model in the post-war years has seen growing benefits of a university degree apparent in the returns to students over three generations (Kivinen, Hedman, & Kaipainen, 2007). In New Zealand, students with bachelors' degrees are employed to a higher proportion than those with lower level qualifications. Their median earnings have a premium of nearly 10% over the national median earnings in the first year, rising to 46% over the five years to 2012 (Mahoney et al., 2013; Park, Mahoney, Smart, & Smyth, 2013). Analysis of the effect of qualifications on individual returns for UK students suggests a return of around 50% for students with higher education degrees (Blundell, Dearden, & Sianesi, 2003).

Measures of the impact of education on employment are potentially unreliable, particularly at lower levels. They may simply reflect a correlation with other factors influencing the ability of people to manage their lives sufficiently to maintain a regular pattern of work, such as time management skills, health issues and other

problems arising from social inequality and poverty (Weiss, 1984). They are also influenced by the structure of the economy and its relative dependence on skilled manual work as opposed to cognitive or knowledge work.

Wolf (2004) suggests a strategy for improving the relationship between education and productivity growth is to improve the quality of tertiary, as opposed to higher, education. She notes that many countries are seeing value in creating a range of vocational tertiary qualifications designed to educate people for specific areas of the economy. The UK government green paper 'Building our industrial strategy' (Her Majesties' Government, 2017) reflects the importance of sub-degree tertiary qualifications to growth of the industrial and manufacturing economy.

The OECD (2013) notes countries such as Austria, the Czech Republic, Germany and Luxembourg, with high proportions (>32%) of students in vocational training, experienced lower increases in unemployment during global economic downturn compared to countries such as Greece, Ireland and Spain with less than 25% of young adults in vocational training. This is used to conclude that 'for young people who do not continue into tertiary education, vocational education typically offers better prospects for their employability than general, more academically oriented upper secondary education' (OECD, 2013, p. 14). An alternative explanation is the countries with lower unemployment have economies structured around activities less affected by the downturn and strong vocational education sectors aligned to those employers, as suggested by the German case discussed earlier. Analysis of the impact of vocational qualifications on student outcomes in New Zealand (Engler, 2014) compared to those in Holland (Andersen & Van de Werfhorst, 2010; Barone & Van de Werfhorst, 2011; Bol, 2013; Bol & Van de Werfhorst, 2013) suggest the picture is not as clear-cut as the OECD statements imply. There is a possibility that ongoing investment in technology will see many vocational skills lose value as they are supplanted by technologies (see Chap. 8) including artificial intelligence and robotics (Frey & Osborne, 2013).

5.3.2 National Economic Benefit of Higher Education

Demonstrating the economic value of education to a country as a whole, as opposed to any one person, is a complex process. There are a number of studies demonstrating a benefit to people with degrees through increased earnings. The problem with these studies is, while the benefit to individuals is generally apparent, it does not demonstrate a value to the country beyond increased tax revenue and that only to the extent people are able to find jobs. The economic disruption of the global financial crisis has complicated any analysis of the impact of qualifications and the political context of studies focusing on the input costs of education and the need to minimise public debt are unclear (Earle, 2010b; Coelli et al., 2012).

These analyses are based on historical data and it is unlikely a similarly large benefit still accrues given the changes in the scale and scope of education (see Chap. 3), the consequent issues with qualifications (see Chap. 6), and the impact of

technology on the numbers of skilled employees needed (see Chap. 8). The historically high levels of unemployment for younger people in many countries are concerning as there is a risk they will continue to struggle when competing against newer graduates and technologies when economies start to grow again.

The challenges and complexity of this space can be understood by considering this anecdote:

> A few years ago, we had a very candid discussion with one CEO, and he explained that he knew for over a decade that advances in information technology had rendered many routine information-processing jobs superfluous. At the same time, when profits and revenues are on the rise, it can be hard to eliminate jobs. When the recession came, business as usual obviously was not sustainable, which made it easier to implement a round of painful streamlining and layoffs. As the recession ended and profits and demand returned, **the jobs doing routine work were not restored**. (Brynjolfsson & McAfee, 2014, p. 140, emphasis added)

The social dimension of employment and industry is apparent in the need for an organisation to make decisions with reference to their social consequences. Financial constraints legitimate a rational decision-making process hidden by social inertia when the economy is stronger. This illustrates the problem of using historic data to predict the future impact of qualifications and the way economies grow and evolve. Previous data may not accurately represent the behaviour of organisations when a range of unacknowledged confounding factors influences their decisions.

Skilled people are needed to sustain many high-value industries but simply having suitably qualified people is not sufficient to establish those industries. Established dominant players commonly attract the best graduates internationally, accruing the economic value to the country where the employer is based and leaving other countries with the debt from educating the successful and the unsuccessful students. Modelling undertaken by the New Zealand Ministry of Education indicates salaries for qualified people are constrained by the lack of growth in demand generally in the economy (Earle, 2010a, p. 6). This encourages New Zealanders to seek qualifications and careers that can take them overseas and suggests, purely on an economic basis, that government support for higher education should be reduced.

The potential moral hazard facing educational institutions is evident. The US has debated in recent decades the propriety of the scale of academic Ph.D. programmes in the humanities and the disconnect in the subsequent employment of those graduates in roles reflecting the extent of their expertise and the supposed status of their qualifications (Benton, 2003, 2009, 2010). Young scientists raise similar criticisms, frustrated by the lack of careers in their fields (Du Toit, Willis, O'Brien, & Marshall, 2001) while politicians continue to claim there are shortages in the sciences and engineering. An explanation of these observations, consistent with the high salience of employers under mass education systems (Sect. 4.5), is to cast this oversupply as a mechanism for maintaining a low salary expectation for employees, reducing the operating costs of employers at the detriment of the individual student and the taxpayer who subsidises public higher education—privatising the profit and socialising the cost. Politically motivated critiques are made on this basis of the US

technology H-1B visa programme suggesting that foreign employees are being hired to drive down the local salaries, benefits and working conditions (Harkinson, 2013). However, economic analyses suggest there is no clear evidence of a negative impact on domestic workers' employment (Kerr, 2013; Zavodny, 2003) and such programmes may actually be generating more productivity in countries able to attract skilled employees away from low-wage economies (Peri, Shih, & Sparber, 2013).

5.3.3 *Sustaining the Economic Benefit of Higher Education Over a Lifetime*

Cost-benefit analyses derived from the cost of a single qualification fall down because many people make substantial shifts in their employment over their lifetime. This trend is evident to those reflecting on the development of technological society for decades:

> In the near future, the rate of change will be so high that for humans to be qualified in a single discipline - defining what they are and what they do throughout their life - will be as out-dated as quill and parchment. Knowledge will be changing too fast for that. We will need to reskill ourselves constantly every decade just to keep a job. (Burke, 1996, p. 5)

Justifying the cost of a single set of qualifications is possible, particularly if they are necessary for employment in particular industries. It becomes less clear how many people can afford to sustain multiple sets of qualifications over their working life, particularly in the absence of any government loan support for older people with pre-existing qualifications. It can take ten years just to recover the cost of a basic bachelor's degree, as noted above. The premium for being educated can, at best, cover the cost of three or four qualifications, perhaps fewer if the cost continues to rise on the trajectory shown in Fig. 5.1. The only sensible strategy on a personal level is to gain a bachelor's degree as early as possible, then ensure subsequent degrees drive significant increases in earnings and are subsidised, directly or indirectly, by an employer. The US Census data suggests for men, a professional degree or doctorate can lift lifetime earnings a further one million US dollars. For women, the benefit is significantly less but this is affected by historic discrimination, so actual returns should be greater in the future (Julian & Kominski, 2011).

Beyond the direct financial cost, there is the opportunity cost of individual time and effort. An undergraduate degree normally reflects 3–4000 h of work by a student over a three- or four-year period. Highly motivated people can sustain periods of study while in full employment to obtain qualifications such as an MBA but this comes at a substantial cost to their employers and families and it is certainly not the norm. It also beyond the reach of people in low-wage households and those without the wider support networks and resources required to sustain that level of intense educational focus.

5.4 Higher Education's Cost Disease

The mismatch in Fig. 5.1 between the growth in the fee charged and general CPI growth suggests higher education is increasing in relative cost as it grows in scale. This growth is a consequence of the mismatch between the costs of providing that education and the revenue generated from fees and other subsides. It attracts a range of explanations consistent with the differing stakeholder perspectives having salience under mass education models.

One reason for the growth in the cost to students and their families is simply the reduction in public subsidies. There are also the inevitable increases in costs facing institutions as they attempt to attract, reward and retain a highly educated and internationally mobile workforce while investing in the continuous growth and maintenance of the infrastructure, technological and architectural, needed to support growing student numbers. These costs, in theory, track with changes in the overall economy and even decline if technology can provide the cheaper alternatives it is widely reputed to enable.

Many critics of increasing costs in higher education focus on the role of faculty, who are accused of acting for their own self-interest (Ehrenberg, 2000; Martin, 2011; Vedder, 2004) and simply spending all the available money—the 'revenue theory' of academic costs (Bowen, 1980). Promoters of commercial for-profit models represent faculty as lacking business discipline and consequently prone to wasting money on unnecessary scholarly activities (Carey, 2015; Rosen, 2011; Sperling & Tucker, 1997; Vedder, 2004; Zemsky, 2009; Zemsky, Wegner & Massy, 2005). Crow and Dabars (2015) note organisational capability as a contributing cause but they also identify the impact of reputation and prestige as an influence:

> Costs continue to soar in part because universities often lack sufficient adaptive capacity to innovate and explore alternatives to existing and often obsolete organizational structures, practices, and processes. Universities generally conform to a homogeneous model and lack differentiation. Vast institutional resources are thus devoted to competition with peer institutions in the futile effort to replicate and outperform perceived top-tier schools. (p. 139)

Ehrenberg (2000), Rosen (2011) and Alvession (2013) all identify the relentless pursuit of prestige as a major drive for increasing costs. Many US colleges compete simply on the basis of the luxurious facilities they provide students, including gourmet food, personal services such as massages, recreational facilities resembling commercial holiday parks and architecturally designed buildings and accommodation. Many US colleges invest heavily in athletics to raise the profile of their institution, often at the expense of academic investments (Bok, 2013).

The reputational drivers for cost increases are not limited to seeking prestige. Ehrenberg (2000) suggests ranking systems (see Sect. 16.3) drive increases in cost by using measures associated with spending. In the case of the highly influential US News and World Report rankings (2017), this includes the amount spent on faculty salaries (7% of the weighted score), the number of faculty employed per student and

the associated class sizes (9%), and the amount of money spent per student on a range of services (10%). A quarter of the ranking is directly related to spending, a disincentive to any significant attempt to achieve efficiencies.

Less politicised and polemic explanations of the rising costs of education reflect its nature and its dependence on humans. Service industries, such as health and education, are labour intensive and present challenges for the productivity improvements undertaken in other industries, for example, manufacturing and agriculture, where capital can replace labour. Experience shows most people need human interaction to maintain engagement and motivation in their studies and there are limits to the number of students any faculty member or tutor can engage with. This restricts the size of classes, preventing education from achieving the scale of work as other industries do through capital investments in appropriate technology. The consequential impact on the cost of education has been described as the 'cost disease' (Archibald & Feldman, 2010; Bowen, 2012).

Another major driver for cost increases in higher education flowing from changes under mass models of provision is the regulatory burden imposed by government and accrediting agencies. Reporting and monitoring systems are mandated in many countries as part of the conditions for receiving funding and are constantly updated at great expense to gather and report ever more compliance information.

Technology also bears some responsibility for rising costs as new ways of accessing and engaging with information, such as computers, networks and audio-visual systems, provide better facilities at the cost of a significant increase in the infrastructure needed to meet modern expectations. Instead of decreasing costs (Chap. 12), use of technology has introduced additional costs through requirements to provide accessibility to students with a range of physical capabilities, requirements regarding the management and security of student personal and financial information and requirements to meet a general increase in expectations in the quality of learning materials and experiences.

5.5 Conclusion

This chapter is framed by the financial costs and benefits of higher education, treating it as an economic system. Framing the university in purely economic terms is described as 'academic capitalism' (Slaughter, 1990; Slaughter & Leslie, 1997; Slaughter & Rhoades, 2004). The risk of taking this perspective, like any single framing of a wicked problem, is the implication education can be usefully treated as a commodity and this influences the sense-making processes shaping government policies and organisational change. By framing the wicked problem as an economic one, the solutions are defined in economic terms. Tilak (2008) suggests adopting a commodity approach affects higher education negatively by shifting attention away from broader public good outcomes to a narrow set of commercial priorities, replacing public provision with private provision dominated by a limited range of

immediately profitable subjects, and capturing knowledge production by commercial interests uninterested in criticism of the impact of commercial investment on wider social outcomes.

The economics of higher education are complex and contested. Despite the trillions of dollars invested in education, it is difficult to demonstrate the economic impact this has on society and unclear whether historic outcomes will continue to be realised in the future. The current cost structure is, at best, barely coping with the current models of higher education, despite the exclusion of the majority of the adult population in virtually every country. The idea this model might sustain a larger scale and scope of education on economic grounds is completely implausible. Hout (2012, p. 396) notes 'higher education causes good things to happen' but society faces harsh choices in making good things, such as health care, clean environments and law and order, available. Allowing inequality to continue to build at the expense of public wealth with the effects concealed by increasing levels of indebtedness is only making it harder to maintain existing standards of living as many people in economies stressed by global financial downturn can attest.

The sense-making challenge for university leaders is creating a narrative for the university and its place in wider society, which respects the importance of financial and economic drivers but also respects the role the university plays as an institution of society. The German example provides an important illustration of how national systems of tertiary and higher education can be sustained by careful and ongoing alignment with a strong cultural narrative framing individual and collective identity and by acting to maintain healthy levels of equality. However, it also illustrates the challenge leaders face in translating elements of successful models from one context to another, a common feature of wicked problems.

The wicked consequence of treating education in commodity terms, framed by economic drivers is most apparent when the implications for systems of qualifications are considered, as will be seen in the next chapter.

Chapter 6
Qualifications as a Defining Feature of Higher Education

Abstract The changing place of university qualifications as education grows in scale and is managed to meet the needs of employers and the economy as efficiently as possible is a major feature of the wicked problem of university change. The tension between qualifications as material or positional goods is entangled with the sense of the university as an élite experience and reflects an ongoing race for individual advantage—a winner-takes-all market that is described as the 'diploma disease'. A contributor to the wicked sate of qualifications is the use of human capital theory as part of a neoliberal positioning of education that in practice increases the congestion of student interest in prestigious universities. The Korean higher education system is used as a case study to illustrate the wicked consequences of unmanaged qualification systems and the power that social and cultural forces have on the importance of qualifications and the legitimation of the inequality that arises from the current systems.

> The effects of schooling, the way it alters a man's capacity *and will* to do things, depends not only on what he learns, or the way he learns it, but also on *why* he learns it. That is at the basis of the distinction between schooling which is education, and schooling which is only qualification, a mere process of certificating — or 'credentialling.' (Dore, 1976, p. 8)
>
> Human capital theory and equal opportunity: these are the foundational myths of modern higher education systems. (Marginson, 2016, p. 16)

A university degree is considered an essential qualification for many young people in industrialised and post-industrial nations. Possession of a bachelor's degree is almost essential for employment in a good job as a young person in the USA (Carnevale et al., 2012). Accredited degrees offer many opportunities for those who wish to travel and work internationally, moving from their homes to explore different cultures and bringing that experience back to stimulate further innovation and growth.

Higher education has become a victim of its own early success. Prior to the twentieth century, very few people had the opportunity, or even the need, for formal adult education. People in skilled professions acquired specialist skills and knowledge through a variety of experiential learning models, commonly as apprentices. Employers accepted the need to take unskilled young people as junior

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employees and provide a workplace environment where junior staff learnt from senior colleagues. Much of the economic cost was invisible, borne by the student through the lower wages they earned early in their career and by the employer through the inevitable impact on the work of senior employees and the salaries paid to less productive juniors.

This model remained popular throughout the second half of the twentieth century and is partially responsible for a decline in education in Western economies, Germany being a notable exception. Technology has seen the numbers involved in manufacturing workforces fall and has changed the nature of the work. There are fewer unskilled roles for junior staff to use as starting points. Employers complain about the shortage of suitably skilled staff available for specialist roles but are not training new people to undertake that work. Instead, they expect higher education institutions to teach people much more than the curriculum of liberal arts that defined the university in earlier centuries. The separation of someone's education from the use they might put it to has grown to the point where universities are exploring models of workplace engagement and integration in order to mitigate the perception that students are not well-prepared for adult life on completion of their studies.

The model of investment in education, driven by human capital theory, has shifted to one where the student and the public purse pay the costs of adult education and the employer chooses from a pool of trained potential employees. This works in a time of full employment but with jobs becoming scarcer, many students find themselves educated for specialist jobs that are no longer required and society is left with an investment that is unlikely to be realised. The increased focus on work integration and employability evident in many sectors may seem like a positive response to these issues but barring other structural changes, it merely perpetuates and expands on the corporate welfare aspects of higher education by allowing employers to continue transferring the risks and responsibility for workforce training to the public or individual students (Brynin, 2012).

6.1 Qualifications as Positional Goods

Many students graduate with a wide range of knowledge and skills and are capable of shifting to a new area of work. The challenge is gaining a foothold into employment. A highly significant aspect of higher education is the role qualifications play as social signals of worth. Degrees are, at least in part, signals to others of the desirability of a potential employee (Arrow, 1973; Hussey, 2012; Spence, 1973), much as birds invest in fine plumage to show their desirability as a mate. At the heart of this signalling is the 'positional' nature of educational qualifications (Brown, 2003; Harrod, 1958; Hirsch, 1976) arising from the duality of purpose apparent in educational systems in conflicting absolute and relative dimensions:

> … we can say that the absolute dimension refers to the performance imperatives of individuals, institutions or societies. This highlights the way schools, companies or governments try to meet their goals, by improving the quality of teaching, learning and examination results, through raising productivity and profit margins or through increasing economic growth. While positional imperatives refer to relative performance, to how one stands compared to others within an implicit or explicit hierarchy (Hirsch, 1976). Again, this can refer to individuals, organisations or nations, such as when universities or companies seek to enhance their reputational capital (Brown et al., 2003), or national governments their international economic competitiveness. Scarcity value is an inherent feature of positional goods, such as credentials. (Brown, 2003, p. 144)

When only a small proportion of the workforce of a country possesses degrees, knowing a potential employee has one provides useful information for potential employers. It indicates the possessor is likely to be well educated compared to their peers without degrees; they are probably well motivated and able to learn new tasks. As degree attainment becomes more common, transitioning beyond its economic role to a form of consumption (Murphy, 1993), it loses this ability to strongly signal worth. Employers are forced to become more discerning, to focus their attention on higher degrees, or more specialist degrees.

Hirsch (1976) distinguishes between the material economy, where increased productivity can grow the available supply such that everyone is able to have access to more or better quality goods or services, and the positional economy which 'relates to all aspects of goods, services, work positions, and other social relationships that are either (1) scarce in some absolute or socially imposed sense or (2) subject to congestion or crowding through more extensive use' (p. 27). He draws upon the distinction made much earlier by Harrod (1958) who identifies the distinction between oligarchic wealth, such as prime land for leisure, antiques or works of art, and democratic wealth which is grown through increases in productivity.

Use of the terms 'oligarchic' and 'democratic' highlights the political positioning of his analysis and emphasises the links to the élite model of education. Hirsch's (1976) 'positional' description reflects the realisation that the key factor is the advantage early movers have in certain spaces where initial success provides a form of sustainable advantage used to maintain a dominant position. Much as successive Dukes of Westminster and Earls of Cadogan developed and still own much of London's most expensive and desirable real estate, Microsoft used its early lead to create and sustain dominance in the computing industry for three decades.

> An individual can improve his capacity to acquire scenic property by improving his position in the income and wealth distribution, that is by getting richer vis-á-vis his fellows. The same result will not be achieved if he gets richer along with his fellows, that is, if his income and wealth rise in line with a general increase in average income and wealth in the community. Indeed, as the general level of income rises, acquisition of scenic or other property for leisure use, at the rising relative price, entails progressively increasing sacrifice of other goods. Thus for the early rich, who acquired an effective demand for such property when it was economically a free good, the sacrifice was zero. (Hirsch, 1976, pp. 35–36)

The similar feature in these situations is that through privilege or wealth or skill or luck, an early entrant is able to acquire, at relatively low cost, access to a resource

that over time becomes sought after and the cost to others then rises dramatically. Attractive land for leisure is an obvious example where the available resource is entirely controlled by existing owners who benefit from the rise in value without any effort on their part. Microsoft benefited from its early dominance in the desktop computer operating system business, using that to build an industry structured to make competition by rivals very expensive (Page & Lopatka, 2007). The history of failed competing operating systems is well known. The two major alternatives exist primarily by redefining the market they serve, as Apple did with MacOS and subsequently iOS, or on the basis of subsidies from research, as with unix and linux, etc.

Hirsch (1976) predicts that as individual or family income rises, positional goods attract an increased proportion of that income as demand rises and so the cost rises in real terms. Élite higher education, therefore, can be understood as a form of oligarchic educational wealth, and the deliberate increase in the fees charged by these institutions is a consequence of the value associated with status and the associated scarcity (Edwards, 2012). The inequality of this situation is perpetuated when those who historically benefitted are able to use that positional advantage to influence the outcomes of later generations, as happens in the case of legacy, alumni and donor access to élite universities in the USA (Golden, 2006).

The extent of the scarcity maintained by the most prestigious élite institutions shows in the 2013 statistic that the eight US Ivy League universities, including five of the top universities in the ARWU world rankings (ARWU, 2016), graduated a mere 15,541 students, a fraction of the graduates from any large public university. Harvard went from accepting 85% of students in 1940 to around 6%, reflecting the explosion in applications from a wide range of students eager to associate themselves with Harvard's reputation (Menand, 2011).

The desire of students to gain access to Harvard is understandable when considering that 21% of the top one hundred Fortune 500 companies have CEOs with degrees from Harvard (Smith-Barrow, 2013). Half of the CEOs of those companies have degrees from just seven prestigious élite universities. Similar statistics are reported for senior government roles (Bok, 2013, p. 123). Frank and Cook (1996) describe this situation as a 'winner-takes-all market' reflecting the similarity with other fields such as professional athletics, publishing and acting. In these cases, the competition for a very small number of privileged spots drives a process of selection that ultimately hinges on infinitesimal differences in performance and that can be influenced by contextual factors such as the possession of a degree from an élite university.

Hirsch (1976) distinguishes between 'pure' scarcity of positional goods with availability limited by restricted supply, such as beachfront property, and goods influenced by social scarcity, such as access to university, which are susceptible to crowding as demand grows generating what Collins (2002, p. 26) calls the modern 'era of educational hyperinflation'. Crowding erodes the individual and collective benefit arising from increasing access to higher education, a phenomenon described variously as the 'diploma disease' (Dore, 1976, 1997a) or 'opportunity trap' (Brown, 2003). Dore (1997a, p. 25) describes the disease as the unintended societal

consequence arising from the 'gap between the private cost-benefit calculation of individuals facing certain objective situations, and the social cost-benefit calculation of 'society's wisdom' in creating those objective situations'.

> The paradox of the situation is that the worse the educated unemployment situation gets and the more useless the educational certificates become, the *stronger* [italics in original] grows the pressure for an expansion of educational facilities. If you have set sights — or if your parents have set your sights for you — on a modern sector 'job', and if you find that your junior secondary certificate does not get you one, there is nothing to be done except to press on and try to get a senior secondary certificate, and if that doesn't work to press on to the university. The chances are that this will in fact prove to be a sensible decision. The mechanisms of 'qualification escalation' ensures that once one is in the modern-sector-qualifications range, the higher the educational qualification one gets the better one's chances of getting *some* job. (Dore, 1976, pp. 4–5)

Crowding can be relieved by auctions or screening, such as the use of credentials. In the case of social scarcity, if it is not relieved, it will result in a degradation of perceived quality. Students and educational institutions are not passive players in this situation. Attempting to differentiate themselves, students seek more specialist qualifications, higher degrees and combinations of degrees, essentially decorating themselves with a fine plumage of educational signals in the hope of attracting an employer; which places pressure on institutions to expand offerings in the hope of attracting students (Alpin, Shackleton, & Walsh, 1998; Murphy, 1993). The resulting overeducation is estimated to affect roughly one-third of all graduates in the UK and the USA (Chevalier & Lindley, 2009; Leuven & Oosterbeek, 2011) and has a sizeable and lasting effect on income, particularly for less-advantaged workers (Clark, Joubert, & Maurel, 2014).

Substantial loss occurs if the lack of any significant impact on the quality of work is also matched by a lack of intrinsic benefit to the student arising from their extra education. That is, if the student simply complies with an external expectation to achieve a pass in an examination without valuing the change in their own knowledge and capabilities. This is further complicated by the tendency of people to overestimate their own abilities (Kahneman, 2011), unable to reference any highly reliable measures of either their own capability or the objective impact of any particular educational experience.

Institutions and governments are not innocent parties in the hyperinflation of qualifications, both in terms of their enabling the growing scope of qualifications but also through the repositioning of different forms of education. Alvesson (2013) notes that the re-labelling of vocational providers, or polytechnics, as degree granting reflects a form of credential inflation that devalues the importance of alternative qualifications in supporting productivity.

Dore (1997a) observes that the pathology of diploma disease includes the waste of social resources that can occur if escalating engagement in education in order to obtain a job merely raises the entry cost rather than changing the qualities of the work done by the more educated person, or building their capabilities in some other way valued by society. This valueless inflation of qualifications is apparent in modern workplaces where degrees are needed to gain employment in retail or

factory roles but where the workplace culture prevents any autonomy or initiative in the application of the worker's skills (Sennet, 1998). Brown, Lauder and Ashton (2011, p. 72) dub this trend 'digital Taylorism'. Hirsch (1976) similarly states:

> An 'inflation' of educational credentials of this kind involves social waste in two dimensions. First, it absorbs excess real resources into the screening process: the lengthened obstacle course is unlikely to be the most profitable way of testing for the qualities desired, because its costs are not borne by the employers whose demands give the credentials their cash value. Second, social waste will result from disappointed expectations of individuals and from the frustration they experience in having to settle for employment in jobs in which they cannot make full use of their acquired skills. (p. 51)

Beyond this direct impact on the individual student, there is a risk of pathological bureaucratisation of learning and teaching as the motivating purpose of educational organisations shifts to 'mere qualification earning—ritualistic, tedious, suffused with anxiety and boredom, destructive of curiosity and imagination; in short, anti-educational' (Dore, 1976, p. ix) (see Chap. 16).

6.2 Qualifications as Material Goods—The Myth of Human Capital Theory

This chapter started with a quote from leading education researcher Simon Marginson commenting on the status of the theory of human capital. This theory is evident throughout systems of higher education and commonly used as a basic assumption in the development of national education policy. Simply stated, human capital theory assumes 'all human behavior is based on the economic self-interest of individuals operating within freely competitive markets. Other forms of behavior are excluded or treated as distortions of the model' (Fitzsimons, 2015, p. 1).

Educationally, human capital theory, entwined with the related concept of rational choice theory, states that people invest in their personal capital through educational experiences and receive dividends from that investment in the form of increased wages (Fitzsimons, 2015; Gillies, 2015). The theory draws its strength from observations of the historical relationship between education and earnings discussed previously (see Chap. 5). It is frequently censured for its rigid focus on direct economic outcomes as the basis by which individuals make educational decisions (Gillies, 2015). The expectation that education is rewarded simply in the ways assumed by human capital theory (see Sect. 6.2) is not the only criticism levelled at the theory's description of education. The relationships between educational qualifications and individual capability, and the way these are realised, are also used to critique it. This includes whether, or not, formal education routinely leads to a substantial increase in people's knowledge, skills and capabilities, and the extent to which the realisation of that capability is influenced by non-educational factors.

The extent to which the process of obtaining educational qualifications adds capability to the individual students is difficult to assess. The confounding factors of individual intelligence, family circumstances and the inherent impossibility of quantifying learning complicate the analysis. Construction of robust double-blind studies is both impractical and an ethical nightmare. Despite these challenges, Arum and Roksa (2011), in their widely cited study, *Academically adrift*, are able to show no statistically significant improvement in the cognitive skills of 45% of students completing university study.

Collins (1979) claims there is little evidence of higher education improving capability, except in a narrow set of fields such as medicine, engineering and the sciences. Fields where it can be argued that study constitutes the initial phase of work in domains with an intimate involvement in the education of their practitioners.

> Education is often irrelevant to on-the-job productivity, and is sometimes counterproductive. Specifically vocational training seems to be derived primarily from work experience rather than from formal school training. The actual performance of schools themselves, the nature of the grading system and its lack of relationship to occupational success, and the dominant ethos among students suggest that schooling is very inefficient as a means of training for work. (Collins, 1979, p. 21)

Determining to what extent education itself is responsible for economic benefits from that education, another fundamental assumption of human capital theory, is complicated by the need to account for differences in ability (Blundell et al., 2003; Murnane, Willett, & Levy, 1995) and choices about which areas to study. Earle (2010b) suggests native ability might be responsible for a 10–15% increase in wages independent of any qualification obtained but also demonstrated the significant benefit of higher qualifications. His analysis suggests students with high levels of natural ability, combined with higher qualifications, command very high earnings but his study did not directly examine the effect of the field of employment. It is an open question whether brighter students are encouraged from an early age to seek education and employment in well paid and demanding fields such as medicine or the law, while others are discouraged, creating a selection bias in the data analysed.

Social capital is a strongly confounding factor in the choices students make regarding which qualifications from which institution (see Chap. 3). The impact access to élite institutions has on the evidence used to justify human capital theory is hard to account for, particularly given the range of direct and indirect ways students are involved in their own education (see Chap. 4). Bok (2013) notes:

> … the studies involved rarely control for differences in the levels of ambition that students bring to college, thus leaving open the possibility that the higher earnings of graduates from the most selective colleges reflect a keener desire for success rather than any special benefit from attending the colleges involved. (p. 124)

There is some evidence that students with ability are influenced by the context of their education (Gladwell, 2013; Conley & Onder, 2013). They argue that while students at the top of the graduating class at elite universities are exceptional people

demonstrating their excellence through highly productive careers, students at lower points in the scale are outperformed by those who graduated at the top of less prestigious institutions, despite all the evidence suggesting the elite students are brighter and capable of better work than is apparent. The implication is students who did not lead their class are demotivated to strive for excellence in their subsequent career, while successful students from less prestigious institutions are mentally and emotionally prepared to push themselves subsequently in their employment. However, if an alternative hypothesis is considered, then the complexity in this area is apparent; prestigious institutions not only attract the best and the brightest, they attract, and graduate, wealthy but less competent students unable to subsequently depend on privilege to generate empirically measureable output when working in their own careers.

It is probable that students from educated and wealthy homes receive better advice and guidance on their educational choices. Bourdieu and Passeron (1977) note that the exclusion of students from qualifications can sometimes be self-inflicted with students making choices that are not aligned well to their strengths:

> to give a full account of the selection process which takes place either within the educational system or by reference to the system, we must take into account not only the explicit judgements of the academic tribunal, but also the convictions by default or suspended sentences which the working classes inflict on themselves by eliminating themselves from the outset or by condemning themselves to eventual elimination when they enter the branches which carry the poorest changes of escaping a negative verdict on examination. (p. 157)

Interestingly, Hout (2012) suggests the primary beneficiaries of education are average students who demonstrate significantly better outcomes from education than either weak students, or the extremely adept who tend to define their own success, by creating new industries for example. This suggests policies aimed at addressing educational inequality by increasing access to élite education for highly capable students may be less effective than simply increasing access across the board.

Higher education can plausibly support an increase in individual productivity through exposure to information technologies and tools, developing student skills to engage in cognitive work more effectively. As economies transition from manual work to a focus on cognitive and information work, it can be argued the role of higher education in developing critical thinking and literacy skills is of increasing material value. This constitutes a major assumption underpinning the investment in knowledge economy initiatives (Fitzsimmons, 2015).

An example of the role education plays in supporting more complex work is given by Rosen (2011, p. xxvi) who observes that in 1969 police officers in Washington D.C. only needed a high school diploma to succeed in a highly desirable occupation. It now requires an Associates degree to get an officer's job and bachelor's or master's degrees to get promoted. This is not attributed to inflation but to the complexity of modern police work, technological, sociological and legal, and the need to have officers able to use sophisticated tools effectively to

support the processes of modern policing. Whether this will remain true as technology further develops is an interesting question. The recent announcement of robot police in Dubai is perhaps a little premature (Al Shouk, 2017) but it is not difficult to see the development of autonomous driving technologies leading to a reduction in need for large-scale traffic policing if cars become technologically restricted from breaking speed limits and other laws.

6.3 Systemic Responses to the Growing Complexity of Qualification Systems

The impact of changes in the positional and material value of qualifications has triggered responses from universities and governments. Universities and other providers react to the pressures of qualification crowding by increasing the range of degrees offered to encompass an ever-expanding set of specialisations. This growth introduces a set of problems all of its own. Institutions face the cost of providing infrastructure and systems for a growing number of qualifications without a corresponding increase in the number of students. Each new qualification carries a burden of administrative and regulatory compliance; each requires resources, including teaching facilities and suitably qualified staff. Instead of a few large qualifications taught by staff with broad expertise, institutions have a myriad of qualifications with small numbers of students needing specialist experts as teachers. Differences in the qualifications offered by different institutions and in those offered in different countries become challenging for employers and other institutions to recognise.

This growing complexity and an awareness of the importance of international movement of skilled staff in supporting economic growth, has stimulated government engagement with the policy and regulatory frameworks affecting qualifications. Globalisation of education is addressed in theory through the GATS agreement (World Trade Organisation, 1995) but in practice a mix of technical and political challenges has seen this agreement generate little actual change (see Chap. 3).

The formation of the European Community has provided a more positive environment for international policy evolution. The Lisbon Convention on the Recognition of Qualifications concerning Higher Education in the European Region (Council of Europe, 1997) started a process of policy development recognising the importance to students and society that qualifications be accepted outside of the country that accredited them. The Convention states in its preamble ‘a fair recognition of qualifications is a key element of the right to education and a responsibility of society’ (n.p.). A total of 63 countries are signatories to the Convention, including members of the Council of Europe as well as 10 other countries. Among them are the USA, who have signed but not ratified it, and Australia and New Zealand who both have signed and ratified the Convention.

Accepting that there is a right for recognition in policy means there needs to be systems to enable and support the exercise of that right by graduates. The complex process needed to compare different qualification systems and appropriately align disparate qualifications, which may have identical names but differ widely in scope and significance, requires expert evaluation and agreement on systems of quality assurance (OECD, 2004; UNESCO, 2004).

Engagement with these processes has led to the European Bologna and European Qualification Framework activities (Adelman, 2009; Bologna Declaration, 1999; UNESCO, 2015), which have been influential in informing changes to the Indian (Narayan & Sharma, 2014) and Chinese systems (Beijing, 2010). They have also shaped the work by south east Asian members of the ASEAN group (Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam) to develop a quality framework promoting student study within their group rather than further afield (Olds & Robertson, 2014; Pijano, 2014).

The European Bologna reform process is named after the Italian city that is home to the oldest European university, where European governments agreed to work together to create a common framework for European higher education (Bologna Declaration, 1999). The Bologna declaration states a number of goals. The common focus is the facilitation of efficient movement of people between European countries, both for study and for work. This includes adoption of common terminology, simplification and alignment of national qualification systems and shared mechanisms for quality assurance, accreditation and credit transfer. It is a complex process and still generating ongoing change in European higher education (EHEA, 2015).

The economic implications of mass education are an important driver of the Bologna process, reflected in the common goal 'to create a European space for higher education in order to enhance the employability and mobility of citizens and to increase the international competitiveness of European higher education' (Confederation of EU Rectors' Conferences and the Association of European Universities, 1999, p. 4). The resulting work focuses on streamlining degree structures, introducing credit transfer systems and developing common quality assurance standards and systems (Adelman, 2009; EHEA, 2015). It includes the creation of a common system for communicating educational information, the Europass (The European Parliament and The Council of the European Union, 2004), which facilitates recognition processes through a network of national Europass centres.

Although the Bologna process shifted European higher education in the direction proposed in the initial declaration and by the Lisbon Convention, it also illustrates a problem with the growing scale of education and the focus on degrees as an international currency of education and employment. Focus on a single model is detrimental to alternative approaches, even when they are arguably successful, such as the range of vocational qualifications used in Germany (see Chap. 5). Bologna is criticised for its encouragement of and implicit drive towards a market model for higher education, directed primarily by economic efficiency and without respect for

significant differences in national culture (Giroux et al., 2001; Knight, 2003; Lorenz, 2006; Scherrer, 2005, 2007).

Scott (1995) observes that the focus on standardised qualifications, commonly with collective standards defined by accrediting bodies or industry, influences educational institutions by weakening the traditional role academic departments and disciplines play in setting and controlling core values. The definition of standards in education, as in other industries (Ferguson & Morris, 1993), potentially open existing providers to competition from new entrants, including the very vendors from whom services are purchased (see Sect. 4.6), either through enabling more flexible organisational structures and new models of education or through direct substitution of new offerings by completely new organisations. Parallels can be drawn with the observation that the rush by China to adopt the Western system of higher education as a model of excellence means much of the power to shape the priorities for the system is being placed in the hands of others (see Chap. 3). As well as driving higher education towards the interests of employers and commercial stakeholders, this means alternative models that might be more successful are potentially being overlooked.

Bologna and similar policy initiatives reflect the drivers of mass education with its focus on economic efficiency and accountability. It is less clear what value these activities have as countries transition towards universal tertiary and higher education and formal qualifications decline in significance. This is the focus of the next section.

6.4 The Declining Value of Formal Qualifications

A major feature in the transition from mass education to universal education is the shift in value of formal qualifications. The shift in scale of provision characterising universal education means formal qualifications become a common foundation for adult life, necessary but not sufficient for success and individual well-being (see Chap. 3). Evidence of this shift is apparent in a number of different contexts.

The shift to mass education, with its focus on credentialism and the collection of detailed evidence of student performance in ever-richer ways, sees a growth in bureaucracy and formality of qualifications. Bologna, and other national and international systems, defines more explicitly what a qualification is, while attempting to describe accurately and completely the capabilities of qualified people. All of this due to the pressure from employers to provide cheap and effective labour and from government to demonstrate accountability to a growing range of political and societal outcomes straying far from the intellectual origins of the university.

One of the signs that qualifications in the traditional sense are starting to fail as a mechanism for communicating value is the growth in interest in the general education component of degrees and the development of generic or graduate attributes (Adelman, 2009; Barrie, 2006; Barrie, Hughes, & Smith, 2009; Spronken-Smith

et al., 2013). Institutions are required to articulate a range of outcomes and descriptions of knowledge, capability and skill that are positively influenced by programmes of study. Initiatives such as the Measuring College Learning project (Arum, Roksa, & Cook, 2016) are working to develop common descriptions of the essential competencies and concepts reflecting priorities for student learning in a diverse range of disciplines.

Business schools accredited by the American Association of Collegiate Schools of Business (AACSB) are required to provide detailed evidence of improved student capability, specifically aligned to the graduate attributes identified by institutions for their business qualifications through a process known as 'assurance of learning' (American Association of Collegiate Schools of Business, 2012). Portfolio systems for collecting a range of evidence of student capability are now common, particularly in qualifications strongly aligned to specific professions, and students can complement their qualification with an electronic curriculum vitae structured to show a range of skills in communication, critical and creative thinking, and a range of other attributes potentially of interest to employers (Lorenzo & Ittelson, 2005).

Qualifications are showing their limitations in fast moving, less established industries, such as those evolving from the Internet's expansion into a variety of economic spheres. The dropout culture that resulted in the founding of companies such as Apple and Microsoft is almost mythic in its influence on perceptions of employment in technology companies. Despite the high profile given to announcements by Ernst and Young to disregard degrees when hiring staff (Ernst & Young, 2015), the reality is the vast majority of technology company employees are highly educated, even though technical skills and ability are easily demonstrated directly through engagement in informal activities and these are frequently identified as being effective substitutes for formal qualifications (Poundstone, 2012).

In the transition to universal education, as qualifications become less effective through their ubiquity, a major challenge is how to provide employers and society in general with effective ways to assess individual capabilities and the potential contribution a person can make to collective enterprises. Many areas of work are nebulous and challenging to assess and quantify. The early successes in technological assessment have been in the strongly quantitative areas of maths and computers. It remains unclear whether the vast diversity of human capability can be reliably analysed by computers, short of a 'Singularity' driven by artificial intelligences (Barrat, 2013; Kurzweil, 2005; Vinge, 1993).

Under such pressures, it is hardly surprising that the degree qualification system is looking shaky and institutions and individuals are exploring potential alternatives. One suggested solution is restricting access to expensive education to only the worthiest people, selected on the basis of intellectual competition, as happens in Japan or Germany (see Chap. 5). An extreme view asserts the only solution to the structural challenges and pervasive inequalities of qualifications is to completely abandon any formal qualifications and make their use in employment illegal (Collins, 1979). These positions reflect a rejection of the idea that obtaining a formal education has meaning in the development of human capability for all

people. They also illustrate that the shift to universal education varies significantly in form from country to country.

The Republic of Korea: A Case Study of the Impact of Universal Education on the Value of Qualifications

The Republic of Korea, commonly known as South Korea or just Korea, demonstrates the challenges countries and stakeholders, including governments, students, and employers, face when transitioning to universal models of higher education. Korea leads the world with their level of growth in tertiary education qualification attainment, sitting well above all other countries (Fig. 6.1). The same pace is reflected in higher education with enrolment rates growing from 11.4% in 1980 to 70.7% in 2015, although there has been little substantive change in the last seven years (KEDI, 2015; Yeom, 2016). This growth is supported by a substantial increase in the number of universities, rising from 34 in 1952 to 411 in 2012 (UNESCO, 2014), and the Korean system now reflects a mix of élite, mass and universal higher education (Shin, 2014).

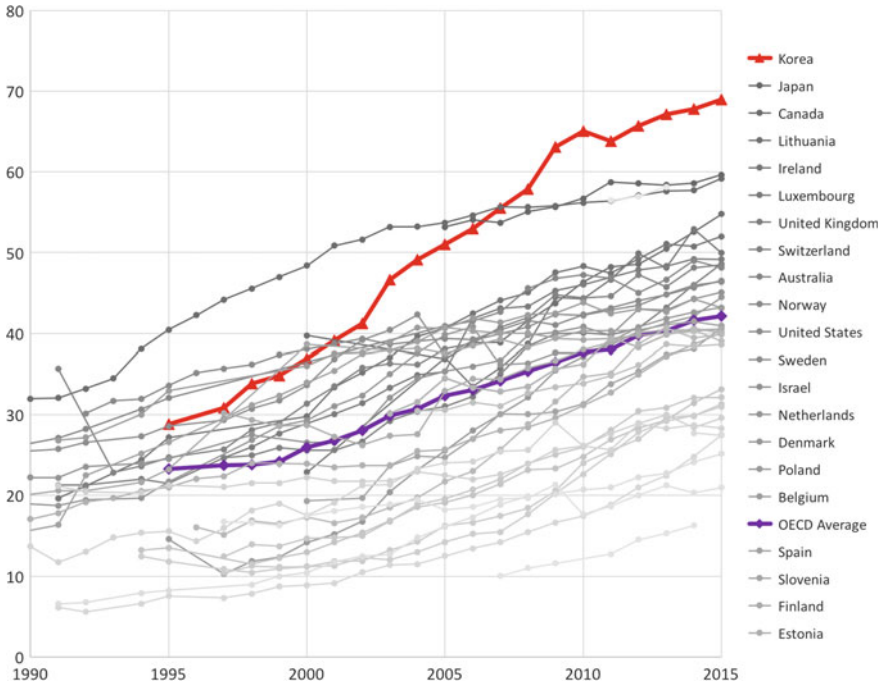

Fig. 6.1 Proportion of the 24–34 aged population with tertiary qualifications (data sourced from OECD, 2017)

This spectacular development reflects a sustained push by the government to grow the scale and scope of education (KEDI, 2015) and the great value Koreans place in education as a means of improving the life of their children (Kim-Renaud, 1991). Families invest a very high proportion, 14%, of their income on preparation for higher education (Kim, cited in Yeom, 2016). The levels of spending on university preparation are such that the government introduced policies aimed at reducing this investment by restricting the academic requirements for entry to higher education (KEDI, 2015). This reflects evidence that such investment is unaffordable and has limited impact on educational outcomes, particularly for lower income households (Kim, 2007).

In addition to the extremely high levels of participation, Korean higher education is funded privately, rather than from public sources, to an unusual extent. Private higher education accounted for 81% of students enrolled in 2010 (UNESCO, 2014), well above the proportion in other OECD countries. A consequence of this dependence on private wealth is the Korean system is struggling to address long-standing issues of inequality, with little evidence of social mobility enabled by education, despite a number of government initiatives aimed at addressing this (Grubb, Sweet, Gallagher, & Tuomi, 2009; Jones, 2013; KEDI, 2015; Mok & Neubauer, 2016).

Korea's top universities are highly selective and, in common with the élite universities in other countries, their graduates enjoy a significant premium in their subsequent employment and wages: 30% higher relative to other graduates (Yeom, 2016). In general, however, graduates in Korea experience a higher rate of unemployment and underemployment, both overall and when compared with less qualified students of the same age (ICEF Monitor, 2014; Jones, 2013; The Economist, 2011; Yeom, 2016).

The underemployment of graduates is attributed to a mismatch in the structure of the economy. Korea is highly dependent on manufacturing for a large proportion of its GDP (Grubb et al., 2009; United Nations, 2017). This illustrates the powerful role positional factors play in the drive towards qualifications and also the flaw in human capital theory as a general description of the behaviours driving educational choices.

Despite the challenges facing Korea, their national strategies remain focused on growing higher education. This includes a deliberate plan to grow international student numbers attracted from neighbouring countries (ICEF Monitor, 2015) and ongoing investment in raising the reputations of its top universities (KEDI, 2015). Investment in research capacity is a priority, both in terms of ongoing support of industry but also in growing the capacity of Korea in the business of knowledge management and services (Jones, 2013; KEDI, 2015).

This example illustrates one possible outcome of a transition to universal levels of higher education, essentially a form of educational and social stagnation, consistent with the wider economic challenges facing Korean society (OECD, 2016b). The data, particularly that considering the impact of education on lower income families (Jones, 2013), suggests the positional characteristics of qualifications dominate the choices available. Wealthy students gain access to an élite system delivering significant benefits, others experience a system largely shifted to a universal model but without the creation of a network of social and economic institutions capable of supporting students in the transition to adult life. The strong family relationships defining Korean society mean the system grew to this scale with comparatively little disruption but these relationships are unlikely to continue to function effectively if underemployment continues, or even worsens in the face of significant technological shifts in manufacturing.

The Korean example is but one of many possible scenarios playing out as national systems transition to include elements of universal tertiary and higher education. A deep-seated conviction that qualifications enable social mobility is allowing the Korean system to stagnate. An alternative scenario is the direction US higher education is taking. Porter (2014) observes that educational inequality is growing in the US with only 30% of Americans becoming more educated than their parents, despite that system not having yet grown beyond mass delivery. This reflects the sense the current system is both unaffordable (Fincher & Katsinas, 2017) and failing to deliver outcomes valued by society. The rapid collapse of large-scale providers of two-year associates degrees, such as the University of Phoenix Online (see Sect. 9.2.1), suggests this lack of confidence.

Another common response is falling into the trap of technological solutionism, assuming new technologies such as MOOCs or digital badges (see Sect. 11.2) provide a replacement for the degree systems of mass education and scale to function effectively in a mass context. MOOCs have been described as ‘the most important education technology in 200 years’ (Regalado, 2012, n.p.). This is the language of radical technocratic utopianism and as such it is not persuasive. Another approach is to see such technologies as mechanisms for exploring the affordances of qualifications, the elements that provide different forms of value to different people.

One observation suggesting universal education models will operate differently to mass models is that many students undertaking MOOCs are completely uninterested in receiving any form of certificate or record. They simply participate for the pleasure or experience of having done so. The initial data on who is completing MOOCs and their motivations for participating suggest that many people see these courses as an opportunity to develop specific skills or explore interests aligning to their existing expertise and current context. The MOOC essentially provides a form

of flexible and responsive vocational education with the value and outcomes determined primarily by the student.

Despite this, many MOOC and digital badge initiatives appear to be trying to reinvent formal qualification systems (see Chap. 11). This reflects the reluctance of some participants to commit completely to a new model. They may instead be trying to make sense of it by recasting back into the familiar model of their own formal education.

The range of possible trajectories national systems could take is explored in Chap. 20 with a variety of scenarios incorporating different qualification models operating at a range of scales from élite to universal. Many of these include a final complicating factor impacting on the growth of qualification systems; how to engage with the educational needs of people who sit completely outside the current systems?

Non-consumers of mass tertiary and higher education, to use the language of Christensen (Christensen, Anthony, & Roth, 2004), are the major beneficiaries of the shift to universal provision. By definition, any system serving an entire population must meet the needs of a diverse group of people with varied intellectual, physical, cultural and personal capabilities, many of whom are not currently well served. As yet there is, despite the noble language in the European declarations, little evidence that the needs of these people are being used to inform national strategies for education and its recognition through qualifications.

6.5 Conclusion

Qualifications provide society with an efficient way of communicating information about the potential capability of a person; what they bring to their employer and their general worthiness as a citizen. Qualifications are also an effective mechanism of facilitating the global movement of people. These are powerful forces acting to maintain at least the façade of qualification systems, acting against sense-making by encouraging the maintenance of stakeholder narratives that suppress the cues for change. These forces contribute to the wicked nature of university change by adding aspects that lie well outside the control of university leaders and that reflect social behaviours rather than educational ones.

Employer interest in qualifications may be a reflection of the social legitimacy they bring to the decision-making processes of employment. The selection of suitable new employees and the promotion of existing ones can be described as a response to their level of qualification. At a purely practical level, qualifications are widely recognised as a socially acceptable way of compiling shortlists from the otherwise unmanageable volume of applicants (Dore, 1976, p. 5). Bourdieu and Passeron (1977) note the distinction between the ‘social function of legitimating class differences behind its technical function of producing qualifications’ (pp. 164–165) and the need to be wary of employers raising minimum qualification levels merely to sustain a social ‘certification effect’ when selecting people for economic benefits.

The positional value of educational qualifications from élite institutions is abundantly clear. The challenge is, as educational systems transition to a mass and then universal state, that those qualifications retaining aspects of the élite 'exclusivity' preserve their value while those perceived to be vocational in nature cease to offer additional positional value, collapsing down to the purely material aspects. Dore (1976) states this quite starkly:

> At least in those countries where education at all levels is largely paid for from public funds, it can be safely assumed that no one voluntarily chooses to get certified as a technician if one has the chance to press on to the top and earn, as a university graduate, several times a technician's salary. (p. 102)

This simplistic perspective illustrates another layer of complexity in understanding qualification systems and the weakness of human capital theory. Dore, falling under the influence of human capital theory, assumes the desire for senior roles, with the associated responsibility and economic benefits, is a universal driver of human behaviour. The Korean case demonstrates that higher education is subject to very strong social drivers associated with people's perception of self-worth and ambitions for their children, even in the face of evidence that these may not be realistic.

It is important to recognise that focusing on direct economic outcomes does not completely capture the value of education to the individual person and the contribution they can make to the cultural and intellectual life of their society. The challenge facing many people is the recognition society gives to those other contributions. An illustration of the way people seek other outcomes from education is seen in the evolution of online educational and social experiences and in the way these are recognised. At the simplest level, the number of 'friends' or 'likes' obtained on social networks, the number of followers on a blog or stream, represent a measure of quantitative value that is important to many people and even has significant monetary value in some cases.

Scholarly collegiality is now complemented by, possibly even sustained by, social networks which are more than merely 'social' in their importance and impact. Elaborate profiles are built on community sites where users accumulate 'karma' from other users in response to their contributions. Users can be recognised as experts in particular fields, displaying meta-information in the form of tags, so their online activity is labelled in meaningful ways. Publishers actively promote 'altmetrics', derived from social media activity, as legitimate evidence of research impact that complements the traditional citation metrics.

Although it will not transform qualifications, technology is providing mechanisms for the creation and communication of information about people that complement their formal qualifications and are valued by many people in the construction of their identity and their social lives. The next section explores in more detail how technology interacts with the forces described in this first section, catalysing change stimulated and driven by these forces.

Part II
Technology

Chapter 7
Part II Introduction

Abstract Technology is the last of the five major forces shaping higher education but technology itself is influenced and moulded by the other four forces. The concept of technological autocatalysis describes the role of technology in stimulating change but the reader is reminded of the fallacy of transformational thinking, and the risk of believing in deterministic technological change.

> Until now a culture has been a mechanical fate for societies, the automatic interiorization of their own technologies (McLuhan, 1962, p. 76).

Technology is the last of the five major forces shaping higher education but technology itself is influenced and moulded by the other four forces. The chapters in this section explore our perceptions of technology. The affordances, its utility and our response to its possible use in our lives are influenced by a rich confluence of experience, political influence and economic interests that actively contribute to the wicked nature of technological change and its impact on the university. The tangible, empirical and functional qualities of a technology are less important than their creators would hope. Sense-making processes, both individually and organisationally, are needed to manage this complexity and use technology effectively.

Just a Few Minutes into the Future…

Matiu stands in the corner listening to the debate raging around him as other students argue their way through a complex algorithmic proof under the guidance of a tutor. His smart glasses are recording so he can review the conversation later, along with the details of the analysis he's scribbling on a smart board with a couple of his peers. Periodically, others in the room mention particular papers and theories. The smart agents monitoring his environment are automatically detecting these, locating the source materials and cataloguing them for review on his tablet. One of these is a close match to the problem at hand, and Matiu's glasses generate an alert drawing his attention to the paper and at his request projecting it onto the smart board so that he can review the content and share it with his colleagues.

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Class finishes and Matiu's system detects that he is no longer concentrating on a task and starts to share a number of deferred messages and notifications with him along with information on the location of nearby friends and colleagues. Realising his lecturer is in the next building getting a cup of coffee, and showing some free time available for student meetings, Matiu sets off to talk over the class with him while his personal agents upload the last hour's work onto the network and integrate the new information from his course into his personal content model.

In the coffee shop, Matiu's lecturer looks on with interest as the key aspects of the problem from the class are projected onto the coffee table and listens to Matiu discuss the paper his agent located while the lecturer's own agents analyse the citation and show its relationship to work he has already seen and used. His system identified Matiu as his student as he walked up in the coffee shop, showing him a summary of his grades and a selection of key points Matiu has made in various class discussions and allowing him to mentally brace himself while welcoming his student by name and inviting him to sit.

A major thesis of this book is transformational thinking, the overemphasis of the impact of technology as transformative, disruptive and innovative, creates a flawed model of engagement with the wicked problem of change in higher education. The previous chapters elaborated upon the complex interplay of growing scale, stakeholder interests, economic and financial change and the role of qualifications in a global market for talent. The following chapters argue that technology acts as a catalyst for these forces and for technological change itself, a process that Diamond (1999, pp. 258–259) terms 'technological autocatalysis'.

Catalysts accelerate change processes; they take existing change activities and amplify their impact. In their simplest form, catalysts enable change to happen rapidly. In the case of technologically catalysed change, technology itself is changed in a self-reinforcing process amplifying and generating exponential change.

Such rapid change is confronting and stressful, for people and for the organisations and society they participate in and depend upon. The natural tendency is to either deny the impact of new approaches, framing them with traditional models that minimise the resulting change, or to use technological solutionism to seek a silver bullet of technology, replacing the complexity of change with a single product or tool. The pragmatic reality of the changes described, in earlier and following chapters, is the unrelenting drive of these forces will overwhelm either approach.

Sense-making provides powerful tools for managing the stress of the dynamic higher education environment. The collapse of the Virtual University provides an example of technological solutionism failing in the absence of a deeper understanding of the nature of education. It also shows how features of the university model have real strengths needing to be enhanced rather than replaced. The concept

of the ‘Digital Native’ is explored using a sense-making lens to understand how a failure to engage with change drives people to harmful narratives creating barriers to learning. Open education demonstrates the complex interplay of the five forces for change and how the shift to universal learning is generating new and interesting ways of engaging with education. Enacting these is an ongoing process of sense-making of the wicked problem of change which illustrates how difficult it can be to shift our mode of thinking away from entrenched models.

Chapter 8
Technology as a Catalyst for Change

Abstract Technology is an inherent feature of human civilisation. The historical impact of technologically catalysed change is explored to identify the factors that continue to stimulate possible changes for the university. The definition of technology is explored, recognising the need to incorporate a mix of technical affordances with the social context and human interaction with those affordances, creating the concept of 'metatechnologies' or technology as a platform. The human challenges affecting sense-making are explored including the impact of rapid and complex supercomplexity on human abilities to cope, resulting in future shock and preventing effective engagement with the wicked problems catalysed by technology. The unpredictable nature of technological development and change reflects the intersection of technology with human concerns and is a key feature of the argument against technological determinism as the primary driver for change in the university.

> The future is here now, it's just unevenly distributed (William Gibson).
>
> An age in rapid transition is one which exists on the frontier between two cultures and between conflicting technologies. Every moment of its consciousness is an act of translation of each of these cultures into the other. Today we live on the frontier between five centuries of mechanism and the new electronics, between the homogenous and the simultaneous. It is painful but fruitful. The sixteenth century Renaissance was an age on the frontier between two thousand years of alphabetic and manuscript culture, on the one hand, and the new mechanism of repeatability and quantification, on the other. It would have been strange, indeed, if the age had not approached the new in terms of what it had learned from the old. (McLuhan, 1962, p. 141)

Technology dominates and defines civilisation. Our commonest taxonomy of civilisation is a recognition of the role different technologies play in human life: the Stone Age, Bronze Age and Iron Age of archaeologists; the industrialised Steam, Oil, and now Silicon Age (Bondyopadhyay, 1998). Technologies are intimately interwoven into the social and political development of modern society. If the extent technological advances change society deterministically is contested by some (Smith & Marx, 1995), it is asserted strongly by others, such as McLuhan (1962) with his description of typographic man.

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Technology is so fundamental to such a diverse range of activities, so well integrated into our understanding, that defining what is and is not technology can be difficult. Arthur (2009, p. 28) defines technology, very broadly, as:

- a means to fulfil a human purpose;
- an assemblage of practices and components;
- the entire collection of devices and engineering practices available to a culture.

The scope of this definition emphasises that naïve association of technology with devices and inventions is too limiting. Technology is a combination of both things and people that reflects the needs and purposes of the users as much as the affordances and features of their tools. We see technology in different ways depending on our experience, preconceptions and needs at any given time, and other people's conceptions may differ significantly. Such an understanding is key to a sense-making conception of any technology. Technology is becoming more complex, more flexible, more open to varied uses; but human society and expectations are also becoming more complex and sophisticated as isolated cultures are exposed to each other and create interdependencies through the processes of globalisation. The impact of technology on any part of society is becoming harder to predict and to manage.

Throughout history, technology and society were simpler and the implications of new ideas more directly apparent. Technologies are used to augment the limitations of human physical strength and intelligence. Domestication of animals, the invention of the plough and the horse collar all augmented our ability to change the world to better suit our needs. The city can be seen as a set of physical technologies enabling high population densities through developments in engineering and architecture, which by concentrating human activity, further stimulates the growth of human knowledge and the development of new technologies.

Language and writing are the technologies predominantly responsible for the systematic coherence of culture inherent to civilised life. They certainly appear essential to the operation of law, order and trade from the earliest times. Language and writing, supported by the development of the book and printing, address the cognitive limitations of our memories and allow transmission of knowledge, geographically and over time. Hammurabi's codification of laws and discovery of diplomatic and trade records throughout the ancient world demonstrate the complex web of written communication underpinning the earliest civilisations. The establishment of libraries at Ninevah and Alexandria is arguably the genesis of the university (Noam, 1995), acting as focal points for scholars to access both repositories of knowledge and the opportunity to collaborate with other scholars.

More recently, the development of steam engines able to pump water from deep mines began the massive technological expansion known as the first industrial revolution; distinguishing the impact of steam and coal from that of oil in the second industrial revolution and, subsequently, the silicon transistor in the third.

The first and second industrial revolutions supported dramatic changes in the human population and social development index by augmenting human and animal

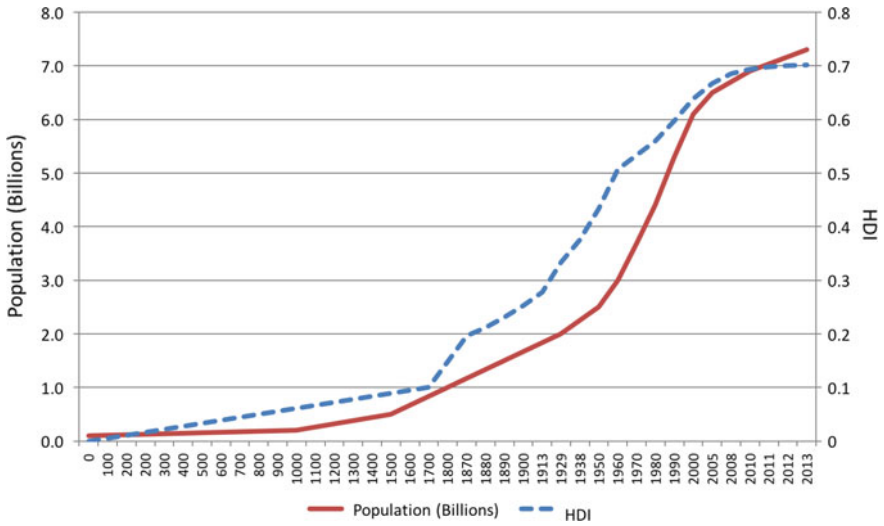

Fig. 8.1 Growth in the human population and human development index (data from de la Escosura, 2010; UNDESA, 2012; United Nations Development Programme, 2014)

muscle power with mechanical power drawing energy from millions of years of stored solar energy in the form of hydrocarbons. The effect of technologies developed during the first and second industrial revolutions are seen in the dramatic growth in the human population (Fig. 8.1). Technological advancement, including the massification of manufacturing and developments in chemistry culminating in chemical fertilisers driving growth in the scale and productivity of agriculture, has made this growth possible. New inventions and their impact on basic needs such as food and hygiene drove a parallel growth in the quality of lives reflected in the development index data, also plotted in Fig. 8.1.

An impressive aspect of Fig. 8.1 is the realisation these improvements in the quality of life have been so pervasively adopted despite the simultaneous and dramatic expansion in the human population. Technology is credited with allowing the wealth of society to grow disproportionately faster than the rate of population expansion, possibly generating 85% of the growth in the US economy from 1890 to 1950 (Solow, 1957; The National Academies, 2007).

8.1 The Social Impact of Technological Change

This growth is not, as Gibson notes in the opening quote, uniformly experienced, nor is it without cost. Social, political and economic changes in the way technology is positioned and utilised repeatedly disrupt society. Successive waves of new technologies see dramatic changes in the skill requirements of the workforce in

different countries. Industrialisation and mass manufacturing first saw many people employed in appalling conditions in factories, followed by mass unemployment of unskilled manual workers when electric motors removed the need for human muscle while increasing the efficiency of remaining workers. Improvements in transportation and communications technology saw much of this semi-skilled work move to countries with cheaper labour triggering further unemployment and a shift to a more skilled workforce supporting a global market.

Technological change in the form of robotics is seeing a further wave of unemployment as skilled manufacturing staff are replaced with robots operated by fewer, even more highly trained, engineers and technicians (Goldin & Katz, 2008). This reflects the broader trend apparent in recent employment as digital technologies replace a growing proportion of jobs falling between low-skilled personal services and roles dependent on highly specialised creativity or knowledge (Aronowitz & DiFazio, 2010; Frey & Osborne, 2013; Levy & Murnane, 2005; Ramage, 2011).

An example is the development of automated driving technologies likely to be taken up first in industries with relatively simple requirements, such as long-distance freight, or in more dangerous environments, such as mines. Initially, high-paid specialist drivers will probably be replaced with low-paid security overseers. Ultimately, remote monitoring will mean all human involvement is centralised. The direct impact is the loss of high-paid driving jobs. The indirect impact is the loss of jobs in the service sectors supporting long-distance drivers. These latter jobs will not be automated; the need for them will simply cease to exist, as there will be no need to feed, entertain or support the robots with facilities en route. Ironically, as noted by Adam Smith in the Wealth of Nations (1776), the overall impact of this change is likely to be a significant growth in the economy as reduced transport costs and increased efficiency increase the movement of goods, although much of this increase will be realised as capital growth in private hands rather than income or public wealth.

This continual expansion of technology into various commercial activities is creating and sustaining pressure for people to be skilled in new systems and ways of working. This influences the wages available for those both with and without the requisite qualifications and experience. Although much of the discussion of declining wages and quality of work is dominated by the impact on the middle class in Western countries, there is a potentially significant risk for developing economies affected by the process of ‘re-shoring’ manufacturing and production capacity back to developed nations who are implementing fully automated factories (UNCTAD, 2016). The United Nations recommends growing domestic demand for goods and services through targeted investment policies aimed at ongoing wage growth, combined with a specific focus on educating the population of developing countries for active participation in digital economies. In the interim, they propose that developing nations receive favourable treatment in trade and tariff policies enacted by developed nations, particularly with respect to labour intensive industries not yet amenable to automation.

The invention of the digital electronic computer and the consequent invention of the computer network is arguably the technology with the second greatest impact on learning after writing itself. The creation and continuing evolution of the Internet, the World Wide Web and the myriad of supporting technologies making vast amounts of information available at very low cost continues to challenge society (Hafner & Lyon, 1996). This access is increasingly independent of place and updated in real time. What was once science fiction is now real and many people connect through mobile devices to the Internet, continuously using the information to assist in their lives and to maintain an active connection to an increasingly international community of peers.

The effects of greater access to information are not uniformly positive. The rise of digital technologies and the associated social and political changes generate a vast array of new challenges, threats and opportunities (Adams & McCrindle, 2008; Gregg, 2011). Ethicists and lawmakers struggle to provide guidance and structure to people engaging with these technologies in their daily lives. Parents and employers struggle to stay in control and react, sometimes with irrationally, when they feel uncertain about what is happening around them. The analysis of the flawed sense-making narrative of Digital Natives (see Chap. 10) describes the way these changes are characterised in the context of educating young people.

A bizarre but perhaps inevitable set of dichotomies are apparent. The technology allowing electronic commerce also threatens people's privacy, physical and financial security. The experience of work is expanding well beyond the formal office, influencing patterns of occupation, employment and social life (Gregg, 2011). Parents fret about the amount of time children spend in front of screens but also invest in software and media marketed to improve their cognition (Wartella & Lauricella, 2014). Video games are often seen as socially destructive (Tear and Nielsen, 2014) but allow the military to redefine its capability through tele-operated systems such as drones (Keebler, Jentsch, & Schuster, 2014; McKinley, MacIntire, & Funke, 2011; Triplett, 2008) and allow medical care to be delivered by remote surgeons (Ou, McGlone, Camm, & Khan, 2013; Schlickum, Hednan, Enochsson, Kjellin, & Felländer-Tsai, 2009). Robots are the classic example of a technology with a major image problem in Western society. Despite their ubiquity in manufacturing, our media still continue to agonise over the apparently inevitable robot facilitated uprising of artificial intelligence (Chen, 2014; Hawking, Russell, Tegmark, & Wilczek, 2014). This strand of distrust and tendency to dystopia is visible in even serious writing on the impact of technology on society (Greenfield, 2004; Gregg, 2011; Postman, 1992; Rushkoff, 2013).

The impact of this explosion in information is so pervasive and the pace of change so rapid, many people struggle to understand the implications and describe being overwhelmed by the opportunities now available to them. Some suspect that the volume and nature of modern information is changing the way people use it and even changing the way our brains engage with knowledge (Carr, 2010; Frein, Jones, & Gerow, 2013; Gleick, 2011; S. Greenfield, 2004; 2014). Others, such as Internet scholar Clay Shirky (quoted in Asay, 2009), make the distinction between 'information overload' and 'filter failure' where our environment, including the

various technologies present, fails to respect the focus and needs of the moment. This is an argument for better technology, able to engage with us in real time and respond to our unspoken needs. These ideas are driving the development of attentive user interfaces (Vertegaal, 2003) and smart information systems or agents using artificial intelligence to filter information effectively on our behalf (Carley, 2002), creating Vannevar Bush's trails without direct human intervention (Bush, 1945; see Chap. 12.1). An important point to emphasise is there is a choice in how sense is made; respond to a technology by dismissing it for its flaws, or engage with how it can be improved to deliver positive outcomes specific to the individual or an organisation.

McLuhan (1962) argues the translation of human ideas between different modes —oral to written, written to visual, visual to digital—enables a greater critical awareness of knowledge. We become more aware of various biases and the way that culture, language and the medium of communication influence our thinking. He describes the process of sense-making with the activities of enaction, social engagement and retrospection occurring in response to the cues generated by the relentless development of new technologies. An example of this is the recent awareness of the systematic biases against women and other groups being identified through the scrutiny of systems developed using machine learning (Crawford, 2016).

The role and impact of new technologies is frequently subjected to processes of sense-making, reflecting the range of social impacts, the influence on people's identity and values, and the extent the technology is easily incorporated into pre-existing world views. Initially used in ways that confirm existing models of the world or to sustain existing social, political and economic structures, technology also provides opportunities to test and re-examine historical 'truths'. McLuhan (1962, pp. 22–23) describes the process:

> Those who experience the first onset of a new technology, whether it be alphabet or radio, respond most emphatically because the new sense ratios set up at once by the technological dilation of eye or ear, present men with a surprising new world, which evokes vigorous new 'closure,' or pattern of interplay, among all the sense together. But the initial shock gradually dissipates as the entire community absorbs the new habit of perception into all its areas of work and association. But the real revolution is in this later and prolonged phase of 'adjustment' of all personal and social life to the new model of perception set up by the new technology.

Brynjolfsson and McAfee (2014) identify the social and economic changes arising from the confluence of the digital computer and telecommunications technology as a second great revolution—the second machine age—which is similarly augmenting the cognitive capabilities of the human race. This potentially offers the opportunity to unlock the stored cognitive capability of much of human race in the same way that earlier industrial revolutions enhanced our physical strength, by creating systems that work with humans to generate knowledge, innovations and culture to enhance human lives. It is possible this latest revolution may start repairing or mitigating some of the damage done by older technologies. Environmentalists, such as Rifkin (2011), see new technologies as a possible

mechanism for alleviating much of the damage done to our environment by unsustainable fossil fuel use; by improving the systems used in industry and manufacturing and by moving more consumption to the virtual space.

This example, reengaging with technology to identify potential positive outcomes, is a form of sense-making but not one often adopted in response to technological change. Unfortunately, many people initially choose to focus on the flaws and worst-case scenarios implied by novel ideas or technologies. Extrapolating just a few of the technological trends visible leads to visions of a future world many find terrifying and destabilising, lacking a clear place for themselves and their families (Greenfield, 2004; Kurzweil, 2005; Postman, 1992; Rushkoff, 2013). Postman (1992) describes the totalitarian technocracy of the 'Technopoly' eliminating influences other than technology on society with culture, human rights and other values displaced by the inevitable technocratic imperative.

Futurist Toffler (1970), who identified in his book *Future Shock* the phenomenon of information overload, suggests a consequence is the development of cognitive 'defence mechanisms' that cope with complexity by seeking confirmation of existing biases and ways of operating. It should be noted that this defensive posture to change is not limited to individuals. Universities are remarkably adept at ensuring technology is only used to sustain, rather than disrupt existing systems and processes.

Barnett (2000) positions change as providing a context where 'the world is radically unknowable' (p. 63) creating a disturbing sense of fragility regarding the nature of the university, its values and their relevance to the modern world as it transitions to include mass and universal education models. This fragility is reflected in the uncertainty regarding the place of the university in the world, the unpredictability of the nature of the changing context and expectations of the university, the counter-intuitive nature of the challenges made to assumptions underpinning the values and activities of the university, and the increasing contestability of the space within which universities operate in relative autonomy under élite models. He frames this challenge, itself a formulation of the wicked problem addressed throughout this book, as 'supercomplexity':

> Supercomplexity … is that form of complexity in which our frameworks for understanding the world are themselves problematic. It is the form of challenge in which our strategies for handling complexity itself are in question. It is a higher order complexity in which we have to find ways of living and even prospering, if we can, in a world in which our very frameworks are continually tested and challenged. This supercomplexity is the world in which we all live. (p. 76)

Negativity seems to be an almost inevitable initial response to new ideas, irrespective of their subsequently demonstrated value, and there is need for leaders to adopt explicit change models and sense-giving approaches that respect and respond to default sense-making behaviours (see Chap. 21). This sceptical response to the novel almost certainly helps avoid wasting resources on fruitless or trivial changes

but does mean that even the very best ideas have their naysayers. Plato's account of the response of Egyptian god Theuth (or Thoth, the ibis headed god of scribes and writing) to the creation of writing by King Thamus illustrates the way even fundamental technologies such as writing can be criticised:

> the parent or inventor of an art is not always the best judge of the utility or inutility of his own inventions to the users of them. And in this instance, you who are the father of letters, from a paternal love of your own children have been led to attribute to them a quality which they cannot have; for this discovery of yours will create forgetfulness in the learners' souls, because they will not use their memories; they will trust to the external written characters and not remember of themselves. The specific which you have discovered is an aid not to memory, but to reminiscence, and you give your disciples not truth, but only the semblance of truth; they will be hearers of many things and will have learned nothing; they will appear to be omniscient and will generally know nothing; they will be tiresome company, having the show of wisdom without the reality. (Plato, 2008, p. 198–199)

This quote nicely captures the disconnect between the innovator and the audience of a new idea, reinforcing the need for a process of sense-making and discovery that may lead to uses for the invention unknown to the inventor. As McLuhan (1962) notes, Plato is himself unaware how his own thinking has been shaped by the technology of the phonetic alphabet and fails to recognise the dangerous nature of writing to the established order of society, a warning implied through the sowing of dragon's teeth (metaphorical letters) that germinate into armed warriors described by the myth of Cadmus (McLuhan, 1959).

Despite the significant role technology plays in changing human society, technology is not in itself 'a virtually autonomous agent of change' (Smith & Marx, 1995, p. xi). There is a tendency in the literature to describe the impact and value of new technologies as inevitable, casting those who don't use the technology 'correctly' as a barrier to be overcome. Using a sense-making lens, this can be repositioned as an essential process of understanding and exploring the nature of the task. The technology provides an opportunity to retest old models and even test the original need for the task in a wider context. Different stakeholders (see Chap. 4) see new technology from slightly different perspectives, recognising similarities, challenges and opportunities for any institution in different ways.

Developing an institutional response to new technology requires recognising how it evolves and understanding the resulting pressure for change, for institutions, for academics and for students. The challenge facing institutional leaders is how to use technology to advance the goals of the organisation. Examples of the millennial virtual university boom and bust (see Chap. 9) demonstrate it is easy to fall into the trap of technological determinism, investing resources in models that seem credible, even inevitable, but ultimately fail the most important measure of success; they do not educate students in the ways and to the scale intended.

8.2 Predicting the Future of Technology in a World of Accelerating Change

> Everything that can be invented has been invented (Charles H. Duell, Commissioner, U.S. Office of Patents, 1899).
>
> The best way to predict the future is to invent it (Alan Kay, computer scientist and inventor of key concepts of windowing user interfaces, 1971).
>
> Just as great geniuses invent their predecessors, practical innovations create their theoretical ancestry (Taleb, 2012, p. 189).

A major contribution to the sense of radical unknowability identified by Barnett (2000) is the unpredictable nature of technological development. Thomas (2001) illustrates the challenge of seeing the near future by identifying all the technological developments missed by US President Roosevelt's National Resource Commission report on the implications of new technologies (see Table 8.1) expected to influence the USA over the next 10–25 years (Inouye & Süsskind, 1977).

Harder than predicting new inventions, is predicting how society, universities and other institutions will change and adapt to the opportunities and affordances of new technologies. Often even experts can offer no assistance in understanding the

Table 8.1 Technologies missed by Roosevelt's 1937 National Resource Commission (adapted from Thomas, 2001)

Technologies not predicted in 1937	
Antibiotics	Magnetic resonance imaging
Atomic clocks	Masers and lasers
Augmented and virtual reality	Monoclonal antibodies
Biotechnology, genomics and molecular genetics	Nanotechnology
Ceramic superconductors	Nuclear fission, fusion and nuclear energy
Contraceptive pill	Personal, laptop and tablet computers
Conversion of natural gas to liquid fuels	Pharmaceuticals
Electron microscopy, single-atom imaging	Protein engineering
Endoscopy	Radar and sonar
Fax machines and mobile phones	Satellite communication
Fibre optics	Scanning electron microscopy
Fuel cells	Smartphones
Giant and colossal magnetoresistance	Spare-part surgery
Global positioning system	Stereoregular polymers (polypropene)
Immunosuppressive drugs	Synchrotron radiation
Internet and World Wide Web	Transistors, integrated circuits and charge-coupled devices (CCDs)
Jet aircraft, rocketry, space travel	Wireless networks
Laser disk, compact disk, CD-ROMs	X-ray tomography

impact of them (Kappelman, 2001). Lord Kelvin's 1899 response to new inventions of his time is typical 'Radio has no future. Heavier-than-air flying machines are impossible. X-rays will prove to be a hoax'. Those involved in the commercialisation of technology are usually poor at understanding its implications. The Western Union telegraph company dismissed the telephone in 1876: 'This telephone has too many shortcomings to be considered as a means of communication. The device is inherently of no value to us'. Computers and the Internet were well and truly misunderstood. Ken Olson, president, chairman and founder of the Digital Electric Corporation, stated in 1977 '[t]here is no reason anyone would want a computer in their home' just before the personal computer exploded as a phenomenon. Bill Gates is famous for claiming in 1981 that '640 kB ought to enough for anybody' and the first version of his book on the future of computers, *The Road Ahead* (Gates, 1995), completely neglected the Internet. Networking expert and researcher Bob Metcalf, responsible for the creation of key technologies fundamental to modern networks, stated in 1995 'I predict the Internet will go spectacularly supernova and in 1996 catastrophically collapse'. Expert media commentators are just as bad at understanding the changes arising from new technologies with the New York Times reporting in 1949 that '[t]he problem with television is that the people must sit and keep their eyes glued on a screen; the average American family hasn't time for it'.

In some cases, these quotes illustrate a simple failure of imagination (e.g. Lord Kelvin). Others reflect an attachment to existing business models or modes of thinking leading experts to defend a position they must realise, perhaps without acknowledging it even to themselves, is ultimately futile. The Western Union quote could plausibly continue by stating '[t]he device is inherently of no value to us' *given our substantial capital investment in a competing and incompatible infrastructure.*

Bill Gates' quote is humorous but probably not true in his mind, even as he said it. A trivial analysis would suggest handling data such as images needs more memory than was available at the time. This is something Gates must have known through direct experience but the commercial reality at the time was that more than 640 kB was simply unaffordable. Apple shipped the 128 kB Macintosh in 1984 knowing more memory was necessary but also having to compromise the product to bring the price down to a reasonable level (Isaacson, 2011). Bob Metcalf's quote reflected the operation of the Internet in the early nineties as a research and education network without a viable business model supporting ongoing growth in the infrastructure, something that was visibly changing even as he spoke.

The inability to predict substantial benefits is matched by the enthusiasm for radical change resulting from the use of new technologies: transformational thinking. Virtually every major technological development of the last century has been described as a silver bullet solution to education:

> I believe that the motion picture is destined to revolutionize our educational system and that in a few years it will supplant largely, if not entirely, the use of text-books in our schools. Books are clumsy methods of instruction at best. … [T]he education of the future, as I see it, will be conducted through the medium of the motion picture, a visualized education,

> where it should be possible to obtain a one-hundred-percent efficiency. (Edison, cited in Wise, 1939, p. 1)
>
> Digital technologies will transform the way education is delivered, supported and accessed, and the way value is created in higher education and related industries. (Bokor, 2012, p. 9)

One explanation of the difficulty facing those predicting the impact of technology is the almost fractal way small shifts or minor changes result in dramatically different outcomes. Postman (1992) describes this as being a consequence of the 'ecological' nature of technology, drawing an analogy with complex biological environments where small changes, such as the introduction of a new species, can have significance and consequence far beyond their superficial appearance. Rushkoff (2013) describes technology as invariably changing the nature of the space it encounters:

> This is what Marshall McLuhan meant by the "medium is the message." A lightbulb creates an environment, even though it has no content. Even without a slide or movie through which to project an image onto the wall, the light itself creates an environment where things that can happen that otherwise wouldn't. It is an environment of light. (Rushkoff, 2013, p. 115)

A consequence of this argument is that engaging as individuals and organisations with the implications of technology is not optional. By its existence, a successful technology redefines reality. Short of completely destroying the idea in all its forms, it must be engaged with once the futility of denial is acknowledged. Ellul (1964) used the concept of 'technique' to describe the influence new ideas and models have on human society through the drive to rationality, artificiality, automation of choice, self-augmentation, monism, universalism and autonomy. He asserted that technique assimilates and 'can leave nothing untouched in a civilization … [technique] which is destroying all other civilizations, is more than a simple mechanism: it's a whole civilization in itself' (p. 124–125).

Predicting the impact of future technological advances is complicated by the inherently unpredictable nature of social change and how this influences the way technologies are used. This complexity tempers the technocratic imperative of inevitable change in response to new technologies, as described by Ellul, with the recognition that technology cannot be comprehended solely as the device or tool but must encompass the human dimension of its use reflected in sense-making activities.

As an example, the ancient Greeks were well aware of the power of steam to move objects but saw this as nothing more than an entertaining phenomenon, not as a tool to manipulate the world. The influence of the human experience is illustrated by the development of key layout on English language keyboards. The QWERTY keyboard is deliberately designed to slow typing speeds by widely separating letters commonly used together in English to avoid the mechanical letter strikers becoming tangled when someone typed rapidly. This layout has persisted through to modern devices, and in a variety of different language keyboards, despite the need and rationale for it making absolutely no sense. Multiple attempts to create more efficient keyboard layouts, addressing performance and ergonomics, have failed to gain

adoption in the face of widespread disinterest from people used to the existing layout. Organisationally, the situation is more complicated as considerations of cost and integration into a wider network of commercial activity influence the adoption of new technologies.

Technology does not automatically generate progress. The preference for the established normal is why sense-making for change hinges on the identification of cues. The resistance people have for change is an adaptation needed to maintain our existence:

> Discontinuity is intrinsically threatening. Just as there are human genes with no instructions other than to resist mutation, there seem to be human beings with no other programming than to resist cultural change. A certain degree of steadfastness is, no doubt, a healthy thing for both organisms and societies alike. Were there no genes fighting change, a species would not be able to maintain its genetic composition long enough to find a mate, multiply, and pass on any genes at all. If there were no people fighting change, then society would have trouble holding itself together. With no identifiable constants, our world would feel too fluid, too irregular, and too chaotic for any meaningful or survival-enhancing interactions to take place. (Rushkoff, 2006, p. 16)

The resistance to potentially threatening or stressful technological change is explained as reflecting a more general psychological behaviour described as 'motivated scepticism' where people actively construct meaning to reinforce their existing preferences (Kunda, 1990). A slightly more cynical version is expressed by reframing the biblical verse Jeremiah 5:21 in the form of the variously attributed aphorism: 'There are none so blind as those who will not see. The most deluded people are those who choose to ignore what they already know'.

More reasonably, people need a compelling reason to change and disrupt stable models of the role technology plays. Few seem to have the imagination or will to seek out new solutions to apparently resolved problems. However, a few can be all it takes. Once a genuinely innovative technology starts to be used in a way demonstrating the value of the innovation, it can rapidly grow in significance. Hughes (1995) describes the concept of technological momentum:

> A technological system can be both a cause and an effect; it can shape or be shaped by society. As they grow larger and more complex, systems tend to be more shaping of society and less shaped by it. (p. 112)

There is evidence to suggest the momentum of change resulting from information technologies is growing. Beninger (1986) observes that modern society appears to be more alert to the possibility of significant change in comparison to earlier generations. This focus on the existence of change is seen in the literature with 75 different transformations proposed between 1950 and 1985 (Beninger, 1986), an average of three major social transformations apparently occurring each year, many of which are framed by technological advancement. Setting aside the ridiculous description of all of these as transformations, it is likely they are not all distinct and independent events but can be understood as a representation of a sense of ongoing and interrelated change in society that is being examined by scholars.

In part, this acceleration reflects the way communication technology has introduced faster forms of feedback into society. The mass media is influenced by the rapid adoption of social media by audiences ready to critically engage with new entertainment. A poor initial response can see movies or television programmes fail in days, while a positive one can snowball and generate an almost insatiable international demand for the experience. This is certainly significant to those responsible for creating such media and even more so to those earning money from traditional distribution models, but the more general case is also relevant. The proliferation of information services on the Internet allows individuals seeking information or following interests to rapidly follow a pathway through human knowledge. A passing mention of an idea or a piece of information can generate immediate engagement, a positive feedback or potentiating mechanism for human knowledge able to support a pace of intellectual activity impossible even a few decades ago. The individual capacity to manage this vast sense of the possible, to choose from a diverse melange of human culture, knowledge and experiences and to create purposeful identities, is one of the distinguishing features of people coping with the scope of changes being experienced in society (Rushkoff, 2006, 2013).

There is no evidence this pace of change is going to slow. Our society is predicted to experience the same level of technological change in the next 100 years as it underwent in the last 20,000 (Kurzweil, 2005, p. 50). This is not a consequence of any radical new invention, instead reflecting the rate of improvement of existing technologies over time which, when combined in new and imaginative ways, generate an outcome that is more than the sum of its parts. The relentless rate of improvement in the performance of computers, described as Moore's law (Moore, 1965), is well known. What is less remarked is the way that similar improvements are evident in a variety of other technologies.

Moore's law (Denning & Lewis, 2017; Moore, 1965; Schaller, 1997) is complemented by other observed trends. Metcalfe's Law: computer chips get cheaper as they get more powerful (Metcalfe, 1995). Koomey's Law: the scaling of power efficiency with respect to computational power over time (Koomey, Berard, Sanchez, & Wong, 2011). The lines in Fig. 8.2 are exponential growth curves describing the rapid improvement each individual technology is experiencing. The real impact is when these growth curves combine and the resulting technologies experience synergistic, multiple-exponential change. The impact of these combined changes is what underpins Kurzweil's predictions. A question he poses is: What happens when the rate of change reaches a cusp, or Singularity? The exponential curves trend to a vertical asymptote, perhaps in response to the development of true artificial intelligence. Predicting results at that point remains firmly in the realm of science fiction.

Although improvements in technological performance are probably predictable, particularly over the short term (Farmer & Lafond, 2016), the impact on society and the ways in which they are used remains uncertain. The complex interplay of social and technological considerations results in the cultural innovations and patterns of technology use that Wright (2000) terms 'metatechnologies'.

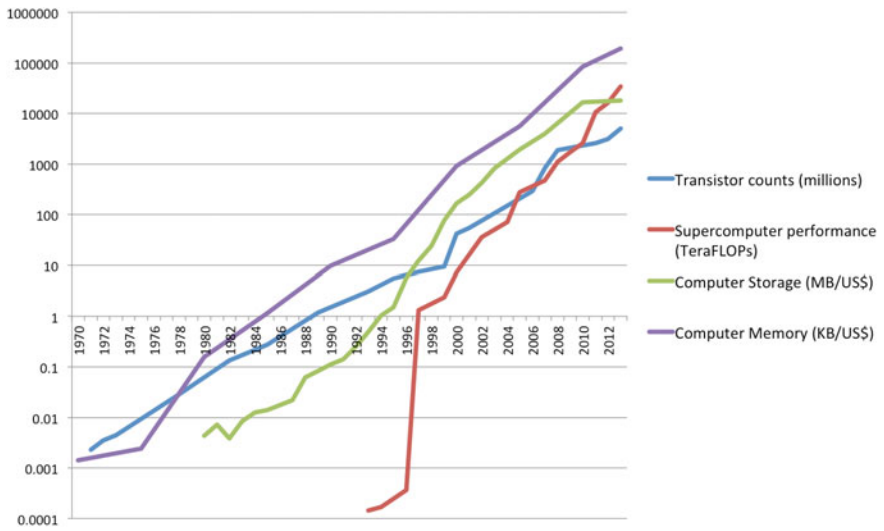

Fig. 8.2 Growth in capability of technology over time

Technology's potential to create intelligence has generated scepticism (Dreyfus, 1992) and concern (Weizenbaum, 1976). The history of genetics, molecular biology and biotechnology provides examples of constraints being applied to research, many based as much on social and cultural attitudes as on a result of sober assessment of risk. Negative characterisations of artificial intelligence (Barrat, 2013), nanotechnology (Eric Drexler's grey goo) (Drexler, 1986) and augmented reality (the 'glasshole' phenomenon) (Lawler, 2013) provide examples of the sense-making process grappling towards new metatechnologies. We may invent artificial intelligences within the next few decades but could just as easily choose not to do so for political or religious reasons. The diversity of possible pathways is limitless. Chap. 20 presents a range of possible futures, including the initial impact of artificial intelligence, as a guide to sense-giving strategies.

8.3 The Cognitive Challenge of Multiple Time Horizons

The generation of these new metatechnologies causing the dissolution of an orderly world into rapid dynamic change is challenging on an individual level and an organisational level. Rushkoff (2013, p. 13) talks about a shift in the 'narrative experiences of life' from the long view taken in the late nineteenth and early twentieth century, to the more transitory short term and on to the immediate pace and instant gratification of modern existence. We see this acceleration in commerce; the village marketplace was long ago replaced with commodities and futures exchanges. Stock markets evolved from orderly mechanisms to raise capital for

investment into dynamic systems generating, a least theoretically, wealth through a frenetic transfer of stocks. This culminates in the phenomenon of high-frequency trading taking place in fractions of a second when an investor buys stock and exploits the consequential small rise in price—at the cost of a risk of dramatic corrections when the algorithms act unpredictably (CFTC and SEC, 2010; Hasbrouck & Saar, 2013).

Our awareness of this pace of change is itself a product of technology, shifting our awareness from time as experience, kairos, to time as a measured quantity, chronos. One of the oldest technological artefacts still in existence is Stonehenge with its alignment to the solstice providing a visible marker of the changing seasons. The astonishing complexity of the Antikythera mechanism suggests that the ancient Greeks were using technology to engage with the passage of time and predict future astronomical events for some purpose. The device may even constitute the first educational technology (Edmunds, 2014). Timekeeping was important to monks following formal rules setting out a daily programme of prayer but soon developed into a mechanism ruling the lives of work and commerce throughout society. Accurate timekeeping was first developed to enable marine navigation but soon regulated the work of people employed in factories in ways incomprehensible to the previous generations. Clocks now surround us and provide an essential reference point for virtually every aspect of modern technological life. Every computer depends on a clock for its operation, and the role of clocks remains paramount in modern GPS navigation.

Brand (1999) describes us as living in a world operating simultaneously at multiple timescales, ranging from the slowest geological timescale, through, with increasing rapidity, the scales of civilisations, governments, infrastructure, and finally, the ephemeral timescale of fashion. Rushkoff (2013) suggests we start to feel uneasy when we lose sense of the difference between these scales, experiencing what he terms the 'posthistoric eternal present' (p. 3). This inability to predict the future on the basis of simple, straight-line projections from the past, in the context of a relatively static present, generates an unreadiness to engage with new ideas that Toffler defines as 'future shock' (Toffler, 1965) and underpins the sense of fragility Barnett (2000) identifies in his concept of supercomplexity.

A similar trend of acceleration is seen in the way education shifts from the long view inherent in elite models, with the focus on changing character, building deep knowledge and long-term relationships subject to the timescale of civilisation or culture, through the more focused and shorter-term model of mass education operating at the scale of governance and infrastructure, to the transactional immediate returns arising from universal education, potentially existing in the timescale of fashion. The difference in the timescale taken to engage with the Virtual University (see Chap. 9) versus the more rapid engagement with the concept of a MOOC (see Sect. 11.2) illustrates the acceleration seemingly endemic to modern life.

Within a university, academics already find themselves operating at multiple timescales. Far from the quiet reflective solitude of Cardinal Newman's university (Newman, 1976), modern academic life operates in a complex mix of the

immediate: online discussions with students and peers, the daily tempo of classes interwoven with technologies such as email and the Web; to the weekly schedule of teaching and administration; the annual cycle of writing, reviewing, grant writing, conference attendance and other scholarly service contributions; and the longer cycle of major scholarly work including books and research projects, curriculum renewal and changes of courses and programmes. These activities are increasingly catalysed by technology, increasing the pace of work, the scale and intensity of activity, and further complicated by the intrusion of wider changes in the shape of the higher education system stimulated by other forces driving change. The stress this generates is a major impediment to sense-making activities, particularly retrospection, and needs to be addressed carefully by leaders (see Chap. 21).

8.4 Technology as a Platform

Despite these concerns about the big picture, where technology may take us as a species, and the stresses inflicted by the pace of change, many people are experiencing significant and positive changes in their lives as a result of modern technologies. Cellular telephony has seen people from a wide variety of poorly developed regions improve their income even as they continue to live in a manner very similar to their ancestors (Salia, Nsowah-Nuamah, & Steel, 2011). The Gibson quote at the start of this chapter describes the way technology is integrated in a myriad of ways as people and society engage in sense-making at the macro- and micro-level. The lesson is that the way different cultures choose to engage with technology is not predetermined. There is no requirement to recapitulate the history of technological development to take advantage of any specific technology, although there are relationships between different technologies and synergies resulting from advances in multiple areas. This is as much a reflection of the evolution of business models and social expectations as it is a reflection of the utility of a given technology. These synergies are autocatalytic, driving the evolution of business and society as much as technology:

> Two factors, Smith noted in The Wealth of Nations, are especially conducive to the growing division of labor that characterizes economic advance. One is cheap transportation. Spending your afternoon making yarn for a Chilkat robe makes sense only if the finished product can be transported at a cost acceptable to its buyer. The second factor is cheap communication. The costs of finding out what buyer want—and the cost to buyers of finding out what's available, and at what price—have to be bearable for transaction to ensue. (Wright, 2000, p. 46–47)

As well as influencing the capabilities of technology, the connectedness of different developments influences the acceptability of new technologies. The Blu-ray Disc is much easier to use if you are familiar with its antecedents, and the smartphone is very user-friendly if you have experience with cell phones and computers. In sense-making terms, the underlying narratives of individual technologies are aligned to support adoption and reuse in novel ways. Innovation in

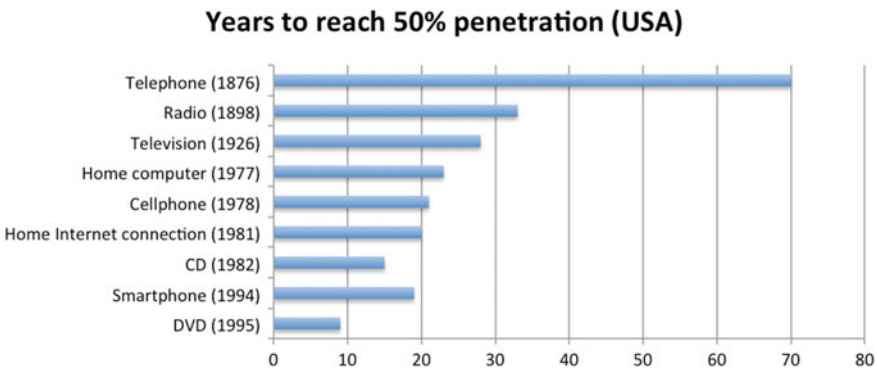

Fig. 8.3 Years to reach 50% market penetration in the USA for common personal and household technologies (invention date)

sense-making terms is as much a process of recognising novel and useful combinations of existing technological tools as it is the creation of completely new technologies. As Burke (1996, p. 5) observes, '[t]he fundamental mechanism of innovation is the way things come together and connect'. The increasing pace that new technologies are widely adopted (see Fig. 8.3) illustrates this experience and there is every likelihood the flood of new technologies will continue for at least the near future.

Enabling this increasing acceleration is the technology platform or domain. Innovation of technology is driven predominantly by recombining pre-existing technologies and ideas in new ways, building on a broad and deep resource of knowledge to rapidly realise new products and services that are impractical and too expensive to create entirely from scratch (Arthur, 2009; Utterback, 1994).

> Modern technology is not just a collection of more or less independent means of production. Rather it is becoming an open language for the creation of structures and functions in the economy. Slowly, at a pace measured in decades, we are shifting from technologies that produced fixed outputs to technologies whose main character is that they can be combined and configured endlessly for fresh purposes. (Arthur, 2009, p. 25)

This goes well beyond the user experience of brighter, bigger television screens. It includes the underlying technical and business standards allowing changes to smoothly integrate into supply chains and consequently appear as consumer products. This allows us to recognise the value of such assemblages, 'purposed systems' (p. 56) in Arthur's terminology as a technological phenomenon equivalent to that of any singular invention. A smartphone can be understood as a technology platform building on established technologies to create a new form of experience that is greater than the sum of its parts, especially considering the open-ended nature enabled by the addition of new 'apps'. Platforms permit new ideas to be implemented more rapidly by allowing simultaneous improvements in functionality in multiple spaces, unified through interoperability standards and frameworks

encouraging experimentation and reconfiguration within the scope of the various domains of knowledge utilised by the platform.

As an example, consider the platforms supporting the Google Glass wearable device. This provides the user with a head mounted display unit providing information in real time in response to user actions, communications from third parties, place and time. Users are given unobtrusive notifications appearing in their line of sight without any visible action on their part. Information relevant to their location and that of others is displayed as desired. The device acts as a personal navigation system, as a communication device through connections to a personal smartphone, and as a two-way video channel able to record and transmit a first-person view of the world to others.

A number of technology platforms needed to evolve to minimum levels of capability for the Glass to exist as a plausible consumer device. Screen technology had to develop to the point where a miniature, high-resolution and low-power display can be small and light enough to fit within a tiny device on someone's glasses. Battery technology had to advance to the point where sufficient power is available in sufficient density for the device to last a reasonable time while not burdening the user with the weight. Computers had to become powerful but energy efficient and small so the necessary processing power can fit in a small device. Network technology had to evolve to the point where sufficient bandwidth is reliably and affordably available to wireless users. Location detection technology had to evolve beyond the basics of GPS and provide more reliable information on where the user is, even when indoors.

The technology implemented in Glass is virtual as well as physical. Software on the device is evolved from a mobile operating system originally designed for smartphones and it integrates with a variety of software services on the Internet providing additional functions and features. The camera on the Glass is made more powerful through integration with location information and connections to Internet services allowing users to share, catalogue and manipulate their photographs individually and as members of collaborative groups. A photograph is now more than a 'Kodak moment', an image captured in a physical artefact. It can incorporate information on the time, place and who was present. When shared, such photographs become part of a greater whole, allowing virtual tourism to occur online through Google's street view system (Google, 2014), or a multiple perspective reconstruction of a police crime scene using photographs combined with three-dimensional models.

Each of the technologies used to create Glass exists independently. Each has value in itself and is used beyond the specific application as a wearable device. Each had to reach a threshold of minimum capability before the Glass device became achievable. As each technology continues to evolve, the capabilities of Glass, and other wearable devices, automatically benefit from the improvements without unnecessarily redeveloping the design from scratch. By creating Glass, the Google engineers are trying to create something more than the mere sum of its parts, a convenient assemblage; they are trying to create a device that gives us the ability to do existing things in a different way and to potentially do new activities in

the future. Even as they try to go beyond the current conceptions of such devices, they still benefit from obvious and predictable incremental improvements in the existing technologies. As further improvements are made in the various technological domains, batteries, screens, networks, etc., the capability of the Glass devices and their successors can be improved incrementally in ways that are easy for users to engage with.

Another example of a metatechnology arises from the fusion of wireless networks, robotics, augmented reality, video recording and video compression. Tele-presence is the name given to communications technology that allows a person to act at a distance, engaging and interacting with a remote physical environment using a variety of remote sensors and tools. An educational example of tele-presence is a science teacher visiting the Large Hadron Collider in CERN, Switzerland, wearing the Google Glass headset (Torgovnick, 2013). The built-in audio and video communication technologies allow students in the USA to see and hear exactly what their teacher sees and hears in real time and to similarly communicate with him. Unlike a recorded video documentary, students ask questions while the teacher is interacting with his environment, providing the experience with an unparalleled degree of flexibility and authenticity.

Students can use robotic tele-presence directly without the need for a local human presence (Student Lyndon Barrie Attends School, 2011). Technology is available to allow physically disabled students to be remotely present in normal classrooms. A tele-presence robot displays the face of the student and provides real-time bidirectional audiovisual communication. The student participates in a variety of classroom interactive educational and social activities that are otherwise denied to them.

The Glass technology also illustrates the social dimension of technology acceptance (Due, 2015). After an initial period of interest, primarily from the technical and academic press, the release of the Google Glass technology quickly generated a neologism, 'glasshole', reflecting society's unease with a technology that draws attention to a growing use of video surveillance and facial recognition technology (Honan, 2013; Lawler, 2013). This concern manifests itself both online and in public places with noted cyborg researcher Steve Mann assaulted in Paris while wearing a similar augmented reality headset (Popper, 2012). Despite the retreat from the public eye, the technology remains in active development and use in specific commercial contexts (Levy, 2017) suggesting it will soon return, perhaps in a more discreet form, to public use.

These examples illustrate the difference between technological sense-making resulting in using video to record lectures as a form of poor-quality educational television, and the evolution of more abstract and tangential features used in combination to generate transformative models. Models which potentially trigger additional sense-making about the purposes of education and the various affordances of teaching and learning are currently in place. Many of these examples are a result of rapidly dropping telecommunication costs combined with increases in the performance and the quality of video recording and transmission technologies. The key point is all the technologies being used are widely available consumer

technologies, not highly specialised and expensive military or research systems. Tools that are owned by students and their families rather than controlled and managed by educators and institutions. In the very near future, tools like Google Glass and the myriad of similar devices will be widely available and students able to engage in remote tele-presence at the individual level with people all over the world. They can share experiences of different cultures and environments freely, rather than being limited to the carefully packaged messages conveyed by the mass media television or commercially published course materials.

8.5 Conclusion

Some of the ways technology will change in the near future are obvious. Performance improvements like those shown in Fig. 8.2 are inevitable, driven by commercial realities and the insatiable demand of consumers for cheaper, faster, better and new. The challenge is to understand how these known developments combine in unknown ways to create dramatic changes in our capabilities and expectations, to create organisations that can make sense of the new and move to take advantage of it efficiently and effectively.

The next chapter explores this challenge, illustrating ways transformational thinking can mislead universities and others, following a path of technological solutionism without engaging in ongoing sense-making. This retrospective analysis of the Virtual University provides a sense-making narrative itself, aimed at illustrating cues that remain relevant today.

Chapter 9
Lessons from the Failure of the Virtual University

Abstract Sense-making is informed through the use of retrospection as a tool for understanding the current state of a system. The virtual university panic of the late twentieth and early twenty-first centuries provides the context for an examination of the way that sense-making can fail in the face of technocratic determinism and transformational thinking. A selection of failed and successful initiatives is examined to create an analysis framework that can be used to engage with the wicked problem of university change, identifying myths that mislead leaders.

> Thirty years from now the big university campuses will be relics. Universities won't survive. It's as large a change as when we first got the printed book (Peter Drucker, quoted in Lenzner & Johnson, 1997, p. 127).

Commentators towards the end of the last millennium described a new model for higher education with courses and qualifications delivered over the Internet like television (Cunningham et al., 2000). The expectation was the scale of global education would attract dominant media companies who, much as with popular television shows, would create a single course for each subject and deliver it simultaneously to millions of people. The growth in online education was expected to drive dramatic increases in traffic on the Internet:

> [T]he next big killer application for the Internet is going to be education. Education over the Internet is going to be so big, it's going to make e-mail usage look like a rounding error. (Networking giant Cisco Systems chairman John Chambers, quoted in Friedman, 1999)

The belief was a global 'virtual university' would be created through sheer market power. The Australian West report captures that sense of a new dynamic expressed by those seeking educational reform:

> Today we enjoy the global university, that vigorously pursues the student wherever he or she is with online delivery, satellite television, e-mail and good old-fashioned print on paper. The electronic university and the switched-on student have reversed the pilgrimage. The world has come to the student. (West, 1998, p. 7)

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As an example of the hype, in 2000, Merrill Lynch predicted rapid growth in all sectors of the online knowledge economy, with billions of dollars of growth in the markets of education and training, and compounding annual growth rates exceeding 50% (Moe & Blodget, 2000). They spoke of online education as the 'killer app' for a new millennium, driving the massive expansion of a new knowledge workforce. Liberally sprinkled with projections of dramatic annual growth and vast revenues, the language of their report is almost evangelical in its prophetic certainty. Ironically, Merrill Lynch later faced legal action for misleading research, was fined US$100 million in 2002 and dealt with a range of lawsuits that were ultimately settled (Graybow, 2007). The co-author of the report and head of Merrill Lynch's Internet research team, Henry Blodget, left the company shortly after the Internet bubble collapsed (McGeehan, 2001). Blodget was personally barred in 2003 for securities fraud, having been accused of exaggeration in his research reports (SEC, 2003). Subsequently, the entire company failed, victim of the 2008 financial crisis and its own role in fuelling the growth in unsecured debt. It exists today as a brand operated by the Bank of America.

In 2000, however, these failures were in the future. Seduced by the technocratic visions of vast revenues and enormous student numbers, Universities rushed to create new entities, either individually or in collaboration with other universities and vendors interested in the scale of the potential market. An example of the hype can be seen in the words of University of Melbourne Vice Chancellor Professor Alan Gilbert while in the process of founding the Universitas 21 organisation:

> An international "virtual" university offering high-quality programs will be established in the near future … The new cyberspace institution would offer courses with high "brand" recognition and be based on franchising, via the Internet, of one for more of the world's top universities … if traditional universities were to survive in the new technological environment, they would do so only by matching the multi-media sophistication and global education networking of the virtual institutions. (Maslen, 1996, p. 6)

Cunningham et al. (2000, p. 125–126) identified the following factors as driving the activity in this space:

- Growing recognition by commercial organisations of the need for adult education, combined with dissatisfaction with existing conventional qualifications;
- The growth in demand for qualifications for people already in work;
- Enthusiasm for technology;
- The shift from public to private funding for education and the growth in a commercial market model of education;
- The exploitation of education as a source of revenue;
- Variable levels of regulation of education provision and quality;
- Concern about the capacity of the current systems to meet future growth.

Universities were joined by educational entrepreneurs, creating new businesses or expanding the operation of existing training or media companies, driving and reacting to these factors as they did so. A vast array of online institutions and collaborations were created in response to the compelling narrative constructed by

consultants and researchers. The resulting organisations are described as 'pseudouniversities' (Altbach, 2001) and criticised for using the term 'university' to describe something lacking academic governance, engagement with research, and focusing only on commercially viable subjects.

> Institutions that are not universities should not call themselves universities. They should not be permitted to offer what purport to be academic degrees. They should be accredited but not by the accrediting agencies responsible for traditional universities. In other words, these institutions should be in a clearly defined category of training institutions, clearly labelled and delineated. (Altbach, 2001, p. 3)

Some of these ventures have remained successful over the last two decades, something of a feat in the fast-paced and challenging Internet business arena. In a few cases, such as UMassOnline and the Penn State World Campus, these are examples of universities choosing to use technology to complement physical offerings and provide flexibility for students, not to reinvent or transform their businesses. By adopting a conservative strategy informed by detailed research into potential markets, they maintain successful programmes on a relatively limited but manageable scale. Carefully controlling the nature and extent of technology use means they are able to keep the exposure to risk at a manageable level. Perhaps in so doing they have lost the opportunity to significantly benefit from any technology investments. This conservative strategy is contrarian to that advocated by contemporary financial analysts and politicians.

Sense-making is informed through the use of retrospection as a tool for understanding the current state of a system. Weick (1995) notes 'people can know what they are doing after they have done it' (p. 24) and this may contribute to the sense of losing control as timescales interact (see Sect. 8.3). Retrospection is the process of looking for evidence of key factors contributing to a current situation drawn by examining past experience. The current explosion of interest in e-learning, including the various forms of MOOC activity (see Sect. 11.2), has many parallels with the virtual university bubble operating over the decade 1995–2005. By examining how that phenomenon came into being and what ultimately led to many virtual universities failing, we can see the possible risks needing to be mitigated in current and future engagement in large-scale e-learning.

The following case studies have been broken into failures and successes, although the challenges being faced by University of Phoenix (Lobosco, 2016) and potentially by Western Governors University (Fain, 2016) suggest that in the rapidly changing online space, success may simply be a matter of timing. It is important to note the cases below are chosen on the basis of their match to the concept of the Virtual University promoted by the pundits of the time, including the availability of evidence to use in the analysis and the extent to which a substantive commitment was made to create a Virtual University as a new form of education. The use of technology as a mechanism to improve well-established distance education models, such as by the Open University (UK), the Andalou Open University (Turkey) or the Open University of Catalonya (Spain), does not fall within this definition.

9.1 Failures

9.1.1 Knowledge Universe, UNext and Cardean University

This first case study illustrates the complex web of companies, universities, venture capitalists and market machinations that characterise the Virtual University. In many ways, this typifies the blurring of the boundaries between different stakeholder interests (see Chap. 4), particularly from the perspective of vendors.

UNext was founded in 1997 by Economist and University of Chicago Professor and Board of Trustees member, Andy Rosenfeld. It was funded by investment from Oracle's Larry Ellison and somewhat notorious financier, Michael Milken through their education investment company Knowledge Universe (Blustain & Goldstein, 2004). Established in 1996 with US$500 million in capital (Guernsey, 1999; Vrana, 1998), Knowledge Universe benefited from the pre-millennial Internet boom and rapidly grew to a US$1.2 billion operation over three years, focusing on what Milkin described as the human capital market (Pizzo, 2001; Reading, Writing and Enrichment, 1999).

UNext created Cardean University in 2000 as a venture in online education (Gajilan, 2000). Cardean University was able to gain accreditation from the Distance Education and Training Council by virtue of UNext purchasing another provider (Pizzo, 2001). Cardean then partnered with Columbia, Stanford, Carnegie Mellon, the London School of Economics, the Open University (UK) Business School and the University of Chicago. At the time, despite the concerns of individual academics (Blumenstyk, 1999b), it was reported that these partners expected profits of US$20 million over a five to eight-year period (Guernsey, 1999). In addition to having strong links to the University of Chicago through Rosenfeld, UNext also hired Stanford University Vice Provost, Geoffrey M. Cox, as vice-president for academic affairs and continuing education and as a provost for Cardean (Blumenstyk, 2000).

Initial customers included IBM, Ford and General Motors (Arnone, 2002c), and the early intention was to use IBM's Lotus Learning Space environment to deliver training to IBM employees. Cardean's programme was initially a selection of business courses including a MBA offered using a problem-based learning pedagogy. Lotus Learning Space was replaced with a proprietary online platform developed by UNext, perhaps reflecting the recognition that, in the 1990s, the Lotus Notes environment was failing to respond to the development of more generic Internet tools such as email, gopher and the WWW. The Thomson Corporation invested in 2001 (Mangan, 2002) and appears to have provided technical services and marketing for Cardean courses but no substantial announcements followed the initial press releases, and it appears that the relationship ultimately failed due to larger problems experienced by Thomson (Blumenstyk, 2013).

Cardean University struggled, laying off staff in 2001 and attempting to renegotiate its relationship with its partners (Blumenstyk, 2001b; Carr, 2001; Mangan, 2001). In 2003, it was renamed Ellis College (Carlson, 2003a), operating in

partnership with the New York Institute of Technology (NYIT). In 2008, following various legal complications (Stripling, 2008), Ellis College of NYIT was renamed Ellis University and operated as a separately accredited institution with ongoing support from Cardean and a reduced minority ownership by NYIT (Blumenstyk, 2008). Cardean was renamed Cardean Learning Group, purchased by K12 Education, renamed Capital Education, refocused on educational consultancy (Kolowich, 2011) and sold yet again to Pansophic Learning (Safanad Limited, 2014) in what appears to be an ongoing attempt to attract additional capital investment. The earlier legal issues concluded in 2012 when NYIT and Cardean were prosecuted for violating US Federal Statutes relating to the student recruitment and finance activities of Ellis College and were fined US$2.5 million and US$1.5 million, respectively. Ellis University was renamed John Hancock University and acquired by the Temania Group essentially, concluding the UNext/Cardean operation (Blumenstyk, 2013).

Knowledge Universe remains an active company with Michael Milken still on the board. The early intention to create a whole of life private education empire seems to have contracted down to a focus primarily on early childhood education. A couple of training providers based in Asia are the remaining legacy of UNext operations; the Asian International College, a Singaporean early childhood teacher-training provider, and EDUCASIA, a corporate training provider active in Korea.

9.1.2 AllLearn

The links between the Internet bubble hype and academia are perhaps most evident in the appointment of former Merril Lynch CEO Herbert Allison as CEO of the AllLearn collaboration in 2000. AllLearn was created by the University of Oxford, Princeton, Stanford and Yale in response to the growth of online learning and was driven by the concept of working collectively to create a much stronger brand than if they acted individually (Walsh, 2011). An interesting decision was to initially position the initiative as meeting the ongoing educational needs of alumni, not the broader public, and to make the venture a non-profit cost recovery operation funded by US$3 million from each partner. Rather than direct revenue generation, the intent was to sustain the reputations of the participants and use the online courses as a way of generating donations from alumni.

In practice, AllLearn failed to generate sufficient interest in its offerings. Courses were initially very expensive to develop, reflecting the premium positioning of the partners. A variety of different models were implemented in an attempt to stimulate interest and reduce development costs. Significant issues arose between the partners, with Princeton choosing to leave in 2001. There were ongoing tensions between the remaining partners and the commercially oriented staff employed directly by AllLearn. Ultimately, the venture ceased in 2006, having taught 110 courses with 10,000 students but failing to sustain a viable model (Kim, 2006; What

Went Wrong with AllLearn? 2006). It was suggested one of the reasons contributing to the failure was the use of audio lectures in conjunction with other media:

> As 'edutainment', online learning still finds it difficult to compete with television for consistency and familiarity. Evidence suggests that those enrolled in continuing learning programmes want to watch television-quality broadcasts online. (Lisa Jokivirta, Observatory of Online and Borderless Education spokesperson quoted in MacLeod, (2006)

In the light of the explosion of poor quality video being used very effectively to support online learning by the Khan Academy and MOOC providers less than a decade later, it is clear that even for experts it is challenging to identify the success factors for effective online courses.

9.1.3 Fathom

The Fathom venture was announced in 1999, led by the University of Columbia and started delivering informal education content to learners in 2000 (Walsh, 2011). The venture attracted a prestigious group of 13 institutions, including the London School of Economics and the University of Chicago. Non-university partners included the Cambridge University Press, the British Library, the BBC, the Smithsonian Institution National Museum of Natural History and the New York Public Library. Fathom shifted focus to more formal education in 2002 and as well as material from the partners, marketed a range of courses from 22 other providers (Arenson, 2003).

Columbia's leadership publicly stated that their intentions in establishing Fathom were to respond to the sense that other organisations, even those in non-educational markets such as Microsoft, were poised to use the Internet to reinvent education. In the process, they would steal the best and brightest staff from institutions that were too slow and too 'stodgy', to act themselves (Walsh, 2011).

In many respects, Fathom was visionary in its attempt to broaden education to include other organisations with a stake in intellectual development, such as libraries and museums. Fathom's failure appears to have been twofold. First was their focus on producing content and materials rather than establishing learning experiences and communities. This then combined with the reality that the predictions of a vast student demand for online learning were simply wrong. Fathom struggled for the first year with a lack of support from its partners, who were quick to sign up but unable or unwilling to provide digital content for the venture, perhaps due to the exclusivity contract Fathom required. Columbia's academic faculty were also less than supportive because of the commercial focus of the venture, maybe in response to concerns of exploitation raised by other academics (Noble, 2002) and the university Senate questioning the alignment of the venture to the core mission of the university.

Another major issue was the unrealistic expectation of the potential revenue Fathom could generate. Columbia is a successful entrepreneurial institution with a substantial patent portfolio, and it appears to have believed that returns similar to those from other inventions would rapidly flow from their online venture. Although there was a large amount of free material provided on the Fathom Website, the business model depended on people paying to complete a variety of course offerings. The company never disclosed what proportion of the 65,000 users had chosen to pay the fees. In practice, revenues were well under one million US dollars in 2001 (Carlson, 2003b). Far short of what was prophesised and unsustainable for the Columbia board given the estimated US$25 million they had committed up to 2003 when the venture was shut down (OBHE, 2003).

9.1.4 Jones International University

Jones International University carries the distinction of having been the first commercial online provider of degree education to be accredited in the USA (Blumenstyk, 1999c). Jones started as a cable television educator, offering students courses sourced from a variety of providers, before shifting to online delivery of business courses in 1995.

Accreditation of Jones was not well received by the American Association of University Professors who stated in a letter 'it embodies most of our major worries about the denigration of quality that could follow this apparently inexorable march toward on-line education' (Perley, 1999, n.p.). Despite these concerns, Jones operated successfully for more than 15 years, ultimately providing degrees at bachelor's, master's and doctoral level in business and education.

Jones ceased operation in 2015 with students transferred to another for-profit provider, Trident University International (Jones International University, 2015). The closure appears to have been in response to declining numbers. The university reported a 55% decline in student numbers, which was attributed to increasing competition (Chuang, 2015). Notably, the retention rates for full-time students crashed from 89% in 2010 to 15% in 2011 and little evidence of recovery was apparent in the years following (data sourced from the National Center for Educational Statistics, College Navigator).

The growing awareness of high student dropout rates and consequent debt issues meant the US tightened access to Federal aid programmes for all providers (United States Department of Education, 2014) and while not acknowledged explicitly, it is likely this contributed to the decision to close the university.

9.1.5 US Open University

The challenge of creating and sustaining a successful business model for university education in global markets is illustrated by the failure of the highly successful Open University (UK) to transfer its model into a new context with its entry into the USA. Although technically a distance provider rather than a pure Virtual University, the US operation shared many of the features of contemporary virtual university universities. The Open University (UK) established the US Open University in 1998, started enrolling students in 1999 (Blumenstyk, 1999a) and invested nearly US$28 million over four years before closing at the end of 2002.

One problem triggering closure was a change in leadership implicated in a reduction of the parent institution's commitment. The major cause appears to have resulted primarily from a lack of understanding of the environment of US higher education, the complexities of accreditation, and the expectations and norms of the student population (Arnone, 2002a; Krenelka, 2009; Meyer, 2006). The University of Phoenix, highly successful at that time, was already fully integrated into the US system and may simply have been too strong a competitor for the same student population.

Enrolment numbers were cited as not meeting the expectations of the business plan (Arnone, 2002b), suggesting the decision to engage in the USA was not researched thoroughly and may have been dominated by academic quality beliefs based on the success of the model in the UK rather than robust market and financial analysis (Meyer, 2006). A particular challenge noted was the affordability of the courses, given students could not access US Federal aid or employer tuition subsidies to attend a university lacking US accreditation (Arnone, 2002b).

Sir John Daniel, VC of the Open University and a strong supporter of the USOU initiative, observed after leaving the OU that it was easy to fall into the hype of online learning and overestimate the short-term impact (Daniel, 2001). While he was lauding the value of the OU's UK programmes, it was perhaps also an acknowledgement of the problems being experienced by its US subsidiary.

9.1.6 The UK eUniversity Worldwide

Governments were not immune to the allure of the vast market potential of online learning, particularly given the importance of international education as a subsidiser of domestic education (see Sect. 3.1). The UK decided in 2000 to create a national collaboration of public universities, the UK e-Universities Worldwide Ltd (UKeU), which was intended to act as a single point of delivery for all online courses offered by UK public universities (Blunkett, 2000). In his speech announcing this direction, David Blunkett, the Secretary of State for Education and Employment—itself a telling combination, spoke of the impact of globalisation and the potential of virtual distance learning, and the role technology might play in improving the scale and

quality of education. His main focus was the economic value of a strong UK position in the international education market and the impact of education on local employment.

The subsequent failure of the UKeU with creditors, including several universities, losing more than two million UK pounds (MacLeod, 2004), provides an important illustration of the risks of assuming technological transformation is inevitable. The business case for the UKeU (Thompson et al., 2000) listed a range of ambitious, even utopian, objectives for the project. These included the use of new technologies to provide excellent learning experiences for learners domestically and internationally, both individually and through their employers. The new organisation was to be financially self-sustaining, building off the government's investment of £62 million and enabling a dramatic increase in the scale of higher education. Concern that the new entity might disrupt the plans and viability of existing UK universities was dismissed on the basis the new platform was available for any institution to use and 'that all such markets are at risk anyway, if not from the e-U then from other universities and other providers' (Thompson et al., 2000, p. 10).

A significant feature of the UKeU project was the creation of a dedicated technology platform as part of a strategic partnership with Sun Microsystems. Almost a third of the budget actually expended on the UKeU project was spent on the development of this platform. Unfortunately, as is all too common with large systems, the resulting software was late in arriving and continued to have significant issues after deployment late in 2003 (House of Commons, 2005).

The real problem that ultimately resulted in the failure of the UKeU was students failed to take up the offerings. Only 900 of the projected 5,600 students enrolled, far too few to generate the scale and momentum needed, and the government ultimately ceased the initiative in February 2004, barely six months after it started delivery. This was a significant failure and politically damaging to the government of the day. It greatly compromised other initiatives aimed at expanding technology use to support online delivery by UK universities. The resulting parliamentary enquiry stated that the failure resulted from:

> A supply-driven approach, combined with the very ambitious nature of the venture in an emerging market that did not sustain the high expectations of demand, and an inability to work in effective partnership with the private sector, led to the failure of UKeU to meet its targets, aims, and objectives. (House of Commons, 2005, p.13)

The project was misled by the technocratic utopian visions of online learning, implemented technology without carefully exploring the real needs and expectations of learners, and assumed without detailed investigation there was a substantial unmet demand for such forms of learning. Much of this reflects a failure to acknowledge the forces noted in earlier chapters, such as the importance of international education as a mechanism for developing international experience and facilitating emigration, and the nature of the financial management of educational institutions.

The inquiry acknowledged another issue; of the 900 students enrolled, 700 were supported through institutional e-learning platforms rather than the central UKeU system. The centrally led, technocratic and unified nature of the UKeU vision had failed to acknowledge the reality of the autonomous nature of the individual institutions. The HEFCE business case might glibly deflect the concerns of individual institutions, but it was obvious their leaders would work to maximise the success of their own institution.

The misalignment of the UKeU business plans with those of the universities reflected both a series of untested assumptions and the relatively unstructured nature of e-learning initiatives within the institutions (Wilcox, Petch, & Dexter, 2005). Once it was clear that the UKeU was not immediately driving vast numbers of new students into the courses, it was inevitable that individual institutions would act to protect their own competitive position. The government's pragmatic financial controls and expectations of the individual institutions were misaligned with their technocratic aspirations.

9.1.7 Babson Interactive, NYUOnline and Virtual Temple

These three cases illustrate the key challenges facing incumbent universities attempting to adopt new business models and strategies for education. The problem, well noted in the literature on innovation (see Chap. 13), is any change is seen as impairing the function of existing activities and consequently is often resisted by staff who are not persuaded of the value or importance of the shift. The popular solution is to create a subsidiary to make changes not able to be made directly by the parent. As will be seen, this strategy does not guarantee success.

Babson Interactive was created as a for-profit company by Babson College in 2000 with a focus on delivery of online MBA programmes (Babson College, 2000). The new company successfully established a partnership with the Intel Corporation to offer a tailored MBA programme exclusively to Intel executives. A particular challenge facing the company was the conflict between its initial success and the sense that it was competing with the standard MBA offerings of Babson College (Halfond & Moore, 2009). These issues were ultimately resolved by explicitly contracting faculty, as part of their role, to support the online offerings. This opened the Intel MBA to other students and allowed Babson to dissolve the Babson Interactive entity back into the main college, while retaining the brand for marketing purposes (Bleak, 2006; Halfond & Moore, 2009).

Established by New York University in 1998, NYUOnline cost US$25 million before closing in 2001 having delivered only seven courses (Carlson & Carnevale, 2001). A particular challenge leading to the closure was a breakdown in trust between the venture and the academic faculty, which prevented the initiative from working directly with faculty to identify and develop online course offerings (Bleak, 2006).

Virtual Temple was established in 1999 as a for-profit venture intended to market online courses nationally and internationally, motivated by the hype surrounding the Internet: 'We are in the early phase of this cyclone and the future does not seem very promising for the traditional university, unless it embraces innovation' (Temple sociology Professor Kyriakos M. Kontopoulos quoted in O'Neill, 1999). Asia was noted as a particularly important market, and one of the major attractions identified was the ability to attract investment capital from sources not traditionally available to the university (Moore, 2002; O'Neill, 1999). The venture failed to gain the wide support of the academic faculty (Carr, 1999) and following a change of leadership was rolled back into the university in 2001 when the economics proved unviable (Blumenstyk, 2001a; O'Neill, 2001).

9.1.8 Universitas 21 Global

The Universitas 21 organisation was created in 1997 by University of Melbourne Vice Chancellor Alan Gilbert as a collaboration between research universities (Maslen, 1996). The group started with 16 universities from 7 countries including Australia, the UK, Canadian, China, New Zealand, Singapore and the USA (Cohen, 1999). The initial aims of facilitating staff and student exchanges rapidly expanded to encompass a range of commercial activities. This soon led to negotiations with a range of commercial partners, including Rupert Murdoch's News International (Maslen, 2000a), to establish a Virtual University, ultimately named Universitas 21 Global (U21G). The initial deal with News International fell through, and U21G announced a partnership with Thomson Learning.

Unlike other virtual universities, where the pedagogical aspects were dominated by the university, Thomson Learning took a much greater role in leading the initiative:

> Thomson Learning will be responsible for the course design, testing and assessment, and student-database management for the project. Universitas 21 will award degrees, diplomas, or certificates to students who complete course requirements. (Maslen, 2000b, n.p.)

This relationship led to concerns being expressed by faculty unions and associations—in the USA, Australia, the UK, Canada and New Zealand (Maslen, 2001a)—and by students (Maslen, 2001b) worried the reputations of the universities involved were being exploited for commercial gain and the faculty governance and oversight of academic quality was being compromised.

The initial establishment of U21G cost the university members US$25 million (Maslen, 2001b) out of a total initial funding of US50 million. After considerable delays in securing funding, the venture finally commenced delivery of an MBA qualification from Singapore in August 2003 (Olsen, 2003). A separate organisation, U21 Pedagogica, was created to ensure the quality of the new courses and help promote collaborative quality assurance projects between the U21 member universities (Chua & Lam, 2007).

Melbourne Vice Chancellor Alan Gilbert profoundly supported the U21G initiative, at one point writing directly to the Chronicle of Higher Education to complain about critical reporting.

> U21 global will be a high-quality provider of higher education worldwide. Through it, the participating universities will make a major contribution to the resolution of what is an otherwise intractable problem: the sheer impossibility of traditional, campus-based higher education's being able to keep up with burgeoning worldwide demand for higher learning. (Gilbert, 2001).

The U21G business plan was ambitious and fuelled by the hype of the virtual university. It predicted 27,000 students by 2005. Gilbert expected 500,000 students at the University of Melbourne alone by 2011 (Marginson, 2004b). In reality, the initiative took far longer to attract funding than expected and never managed to attract large numbers, reporting only 1300 students in 2005 (Goldberg, 2005).

The failure of the U21G Virtual University was apparent when Universitas 21 announced a reduction of their ownership by selling a significant portion of stock to Indian education and healthcare company Manipal Group in 2009, following the earlier departure of Thomson Learning (then renamed Cengage) who had sold its 50% interest to Manipal in 2007 (Trounson, 2009). The venture is now named the GlobalNxt University and continues to offer online MBAs with accreditation from Malaysia and the EFMD CEL programme (EFMD, 2016).

The parent, Universitas 21, shows every sign of remaining a healthy network with a strong focus on international collaboration. The list of members has grown to 25 universities from 16 countries covering every continent except Antarctica. Its current vision and aims are driven by a globalisation agenda (Universitas 21, 2011), and its international engagement is reflected in the recognition of the Universitas 21 organisation by the United Nations (Universitas 21, 2010). Although their virtual university initiative failed, Universitas 21 appears to have maintained its value to members by facilitating the strengthening of member university academic functions through quality assurance activities, research support and the promotion of their own university system ranking scheme—all activities reinforcing the traditional model of a university and bolstering the reputations of the members.

This new focus is apparent in the U21 ranking scheme (see Chap. 16). It focuses on national systems rather than individual institutions (Williams, de Rassenfosse, Jensen & Marginson, 2013). The ranking instrument aggregates a number of measures in four major categories: resources, environment, connectivity and output. The resulting assessments (Williams, Leahy, de Rassenfosse & Jensen, 2015) are intended to encourage benchmarking between countries with the apparent intention of stimulating the development of an environment favourable to universities. Although it is dominated by research measures, 40% of the various weightings, the U21 system specifically focuses on international connectivity. An interesting consequence of the approach is the resulting reports avoid identification of specific universities and their relative performance while acting to stimulate responses benefitting universities collectively. Intended or not, this nicely obscures the dominance of the most highly ranked institutions globally, an outcome almost

certainly desirable for U21 members based in China with its focus on developing a strong international reputation for its universities (Levin, 2010; Wang, 2012; Yang & Welch, 2012).

9.1.9 Global University Alliance

The Global University Alliance (GUA) was established in 2000 as a portal and facilitator of online education delivery into Asia, particularly China, by ten universities and Hong Kong-based commercial partner NextEd (Pittinsky, 2003). The founding universities were the University of South Australia and Royal Melbourne Institute of Technology in Australia; Athabasca University in Canada; Auckland University of Technology in New Zealand; George Washington University, the University of Wisconsin-Milwaukee and the Rochester Institute of Technology in the USA; the International Business School (Hogeschool Brahant) in the Netherlands; and the University of Derby and The University of Glamorgan in the UK. GUA was initially seen as a response to the Universitas 21 network by universities not invited to join the earlier group (Alliance Ready to Take on its Rival, 2001).

GUA's focus was on marketing and provision of existing online courses to the growing Asian market, which was estimated to be worth US$10 billion per annum (Maslen, 2000c). A key feature was the ability to combine courses from the different universities into a qualification awarded by any one of them (GUA to Roll Out into the PRC, 2000). Despite this initial framing, GUA announced in 2001 it would invest in the creation of new courses in business and information technology, possibly reflecting the need to create course content and delivery better aligned to the needs of Asian students (Maslen, 2001c).

A major difference between U21 and GUA was the strong influence the commercial partner had over the operation of the network. NextEd is a commercial operation founded by Australian venture capitalist Terry Hilsberg with funding from GE Equity and other venture capital funds (Johnstone, 2000), along with the University of Southern Queensland (Taylor & Swannell, 2001). NextEd had an existing business providing universities in Australia and the USA (Maslen, 2000c) with an online infrastructure using a customised version of the Blackboard LMS (Networks Update, 1999). Hilsberg had a significant influence on Australian higher education through his work as part of the Global Alliance Ltd. who provided a substantial contribution to the Australian government funded West Review (West, 1998), and subsequently through NextEd. His views on the importance of the virtual university model were very clear:

> Why should a student in a university in Australia be content with having not the best teacher in the world? Why shouldn't they get access to the best one? And why can't the best teacher in the world sit in Australia, or America or Canada or China, or wherever, and teach a worldwide body of students? (Hilsberg, quoted in Morton, 2000)

Although the GUA organisation appears to have quietly ceased in 2004, Hilsberg remains CEO of NextEd. Hilsberg (2006) provided an assessment of the reasons the GUA/NextEd initiative failed, suggesting the primary reasons were due to the university partners failing to sell their product and concentrating on selling education when students, and their parents funding the education, were after a range of different outcomes. These included the positional advantages of graduating from certain universities (see Sect. 6.1) and the social networks built during study. He also acknowledged the development of standardised tools for e-learning meant companies such as NextEd progressively lost the ability to compete profitably with vendors like Blackboard selling services directly to educational institutions.

As with the failures of U21G and the UKeU, the major reason for the failure of this virtual university initiative seems to have been a natural consequence of a lack of interest from large numbers of potential students in the range of programmes being offered.

9.2 Successes

Not all the virtual universities failed. The nature of the different successes further illustrates the importance of addressing the social, political and economic context, as well as the technological and financial drivers, when creating new models of higher education.

9.2.1 University of Phoenix

Once one of the largest education providers in the world and still the largest for-profit provider in the USA, the University of Phoenix now struggles to cope with a dramatic, 25% in 2016, drop in student numbers that has seen its enrolments fall to 155,600 (Apollo Education Group, 2016) from a high of 470,800 reported in 2010 (Apollo Group Inc., 2011). Growth to that height was predominantly driven by a substantial expansion in students taking online two-year associate's degrees, rising from 4000 students in 2004 to 200,800 in 2010 (United States Senate, 2012). This growth was matched by high levels of student loan defaults and dropouts, which ultimately led to changes in US government policies (United States Department of Education, 2014). Growing awareness of concerns about debt, low graduation and subsequent employment rates (Dillon, 2007) saw a substantial fall in student enrolments starting in 2011 and a subsequent shift in programme offerings and admission standards (Blumenstyk, 30 June 2015). The dramatic drops saw Apollo report losses of around US$100 million in 2016 (Apollo Education Group, 2016), and it is currently in the process of being sold to a private equity consortium (Lobosco, 2016).

The University of Phoenix was established in 1976 and accredited in 1978 as an adult education provider. It complemented traditional colleges by offering a model of education that delivered classes in the evening, taught by adjunct faculty employed from the faculty of traditional colleges. Courses were designed by a small team of permanent, full-time faculty and delivered by a much larger group of part-time staff (96% of all staff) (United States Senate, 2012) with a high proportion of practitioners, a model that is similar in many respects to that of the Open University in the UK. The course timetable was flexible and allowed students to start at any point in the year rather than keeping to the standard academic semester pattern (Swenson, 2006). Initially presented face-to-face, the university quickly grew to encompass online delivery.

The University of Phoenix is extensively criticised by many in the traditional sector who accuse it of damaging academic quality, having an unacceptably low graduation rate (Dillon, 2007) and being driven by profit with a training focus instead of wider educational outcomes (Altbach, 2001; Bailey, Badway, & Gumport, 2001; Kelly, 2001). Described by some as 'McEducation' (Strosnider, 2007), the invective used to describe the University of Phoenix is at times astonishing:

> From the perspective of higher education as a field of study, these organizations [e.g. the University of Phoenix] exist, like local sweatshops or sex slavery brothels, in a shadowy world most scholars neglect and avoid. (Waks, 2002)

Others recognised that the University of Phoenix offers an attractive model to people interested in vocational or applied education, particularly when undertaken in partnership with a large employer (Cunningham et al., 1997). Staff at the university are clear about their mission 'to serve the educational needs of the working adult' (Rutherford, 2002, p. 158).

The detailed analysis of the University of Phoenix undertaken by Rutherford (2002) identified the need for the organisation to maintain a careful balance of the key drivers, educational and financial, in order to sustain the success of the business. Subsequent attempts to grow the business to achieve a corporate goal of 'Five Years, Five Million Students and Five Billion Dollars' (United States Department of Education, 2004, p. 6) appear to have damaged this balance and may have contributed to the current financial and reputational challenges it faces.

9.2.2 Western Governors University

Regarded as one of the most successful virtual universities, Western Governors University (WGU) was formed in 1997 as a collaborative effort between nineteen US state governors. The intention was to create a competency-based online model of education, aimed at adult learners, which would boost workplace education and support a growing demand for skilled and reskilled workers (Blumenstyk, 1995). Students are able to commence study at any point during the year and proceed at

their own pace. Recognition of prior knowledge is explicitly part of the model. Students can get credit from courses taken at other institutions simply by passing the relevant assessments.

The model was initially slow to attract students (Carr, 1999), but once accredited it grew rapidly. First accredited in 2001, with regional accreditation in four regions in 2003 (Carnevale, 2003), WGU now teaches over 70,000 students and has more than 65,000 successful graduates (Western Governors University, 2016). A recent Gallup survey of WGU alumni reported significantly better than average employment outcomes for graduates, suggesting the model is achieving its founding governor's goals (Gallup, 2014). The ongoing political support for the model is apparent from the creation of state-affiliated colleges providing local endorsement and credibility to the university. The explicit inclusion of the WGU in a US Presidential release promoting promising practices for increasing the affordability of education is another indication of its viability (The Obama White House, 2013).

WGU appears to have sustained success by avoiding a focus on growth at all costs. Its initial foray included two-year associate degrees, but these were discontinued and the university has focused on providing bachelor's and master's degrees in only four subjects, aligned to professional certifications (Gravois, 2011). Consequently, students and employers have the reassurance of accreditation and an independent external certification process validating the competency of the graduates.

9.2.3 Capella University

Capella University was an early entrant into online provision. It was established in 1993 and accredited in 1997. Capella is a rare example of a private, for-profit, online provider that appears to have weathered the post-virtual university collapse of the early 2000s and is holding its own in the currently contracting US economy. This success seems to be a consequence of its comparatively, for an online provider, small size—38,503 students in 2016 compared to 155,600 at the University of Phoenix (Apollo Education Group, 2016; Capella, 2016) and a focus on providing master's qualifications in a wide variety of subjects. Capella's business is highly dependent on access to federal grants and student loans with over 80% of its revenue derived from federal sources (United States Senate, 2012). To date, it has managed to avoid the issues of poor student graduation and employability affecting other providers.

9.2.4 eCornell, Penn State World Campus and UMassOnline

The independent forays of universities into online delivery were not completely unsuccessful. Cornell, Pennsylvania State and the University of Massachusetts have all managed to create successful, if relatively low-scale, virtual versions of themselves without depending on any external partner or collaborator. Although these are not virtual universities in the full sense of the concept, they do illustrate that online modes do deliver an effective education, if not at the scale and level of profitability imagined by the analysts. A key feature of all three is the creation of a wholly owned subsidiary focused on enabling faculty engagement in online learning through access to dedicated professional support and the infrastructure needed to market and operate the resulting programmes.

Pennsylvania State University created the World Campus in 1998 as an expansion of their existing, small-scale, distance education programme. Initially created with the goal of enrolling 5000 students by 2003 (Selingo, 1998), the World Campus operation has quietly expanded to a population of 16,000 students in 2014, around 17% of their total student population, and has a long-term goal of growing to 45,000 by 2025 (New, 2014). A key feature of the World Campus model is the explicit focus on strengthening the university with 80% of profits returned to academic departments (Blumenstyk, 1998).

Established in 2000 (Dullea, 2000), eCornell is the for-profit, online venture of Cornell University. The president and other senior staff noted the initiative was motivated by a sense that competitors operating in a for-profit model were a risk and might attract away key faculty interested in online learning (Carr, 2000a). Originally intended to take advantage of distance education courses created by faculty (Carr, 2000b), eCornell was subsequently repositioned as a professional development provider rather than a replacement for degrees (Blumenstyk, 2001a, July 20). Despite a significant restructuring in 2004 to reduce the costs of course creation (Carnevale, 2004), eCornell is still operating with a focused set of programmes in areas including hospitality and leadership that draw on particular strengths of Cornell University informed by rigorous market research. Recently, eCornell has started offering MOOCs as a mechanism to introduce students to the experience of online courses (Mangan, 2013).

The University of Massachusetts created the UMassOnline initiative in 2001 as a means of delivering specialist courses throughout the state but with the explicit possibility that these might have a wider market (Carr, 2001). The intention was to provide the University of Massachusetts with experience of and a foothold into the growing field of e-learning (Perez, 2013). The model was very successful from the beginning with 56% annual growth reported in the early years (Wilson, 2003) and is currently sitting at around 50,000 students. Despite this, UMassOnline has required significant and ongoing financial support from the university and only achieved reliable profitability in 2011 (Perez, 2013). The partial funding of the UMassOnline campus by a levy on the budgets of the other five UMass campuses and its

operation as a completely separate organisation reporting directly to the president has caused tension and suggests careful leadership is needed to sustain the ongoing success of the venture (Perez, 2013). Despite these concerns, expansion of the programmes offered suggests the operation is successful (UMassOnline, 2014).

9.3 Making Sense of the Virtual University

The parallels between the impact of the first Internet boom on higher education and the impact of the current explosion of interest in models such as the MOOC are clear. The impetus for change is driven by the forces outlined in previous chapters. The globalisation of education and the growing pressures of scale as the system explores ways of moving to universal provision. The conflicting interests of stakeholders, particularly governments interested in minimising costs and maximising the economic impact of education, and vendors looking for strategies to maximise their profits from a sector still dominated by public and non-profit enterprises. The financial challenges and opportunities represented by the trillions of dollars invested in education. The ongoing pressure to educate people for a high skill, global economy driving shifts in models of employment and qualifications. Finally, the belief that technologies and business models developed to support online access to information and services has the potential to radically disrupt and innovate the experience of education by adults.

The examples of the different virtual university initiatives illustrate the risks institutions face when attempting to radically transform education in response to technology dominated predictions, making it something distinct to, and often disconnected from, their existing models of education. Running through these cases are common themes potentially functioning as sense-making cues and as a framework for constructing sense-giving narratives that can be used to guide leaders engaging with the wicked problem of university change. These include:

- The importance of timing and the need to balance a disposition to urgency with strong systems and clear goals;
- The role qualification systems play in influencing student perceptions and expectations;
- The importance of context and the need to recognise the complexity of education in different cultures;
- The place technology plays as an enabler but not a driver of strategy;
- The challenge of sustaining the ongoing investment needed for significant change;
- The complexity of collaborations and the need to recognise and effectively manage different agendas;
- The value and limitations of reputation and branding; and

- The overwhelming importance of leadership, vision and effective strategy as tools for sustaining any change in the face of inevitable challenges and set-backs.

9.3.1 The Race to Be the First to Succeed

A common theme running through the virtual university studies is the idea that the first successful company will dominate the world and a failure to act immediately will see irreparable damage done to slower universities. Columbia's concerns that companies like Microsoft were poised to steal their best and brightest staff reflect the extent to which this narrative dominated institutional thinking at the time. Transformational thinking, driven by a technocratic inevitability, is evident in quotes from leading academics at the time:

> We are in the early phase of this cyclone and the future does not seem very promising for the traditional university, unless it embraces innovation (Temple sociology Professor Kyriakos M. Kontopoulos, quoted in O'Neill, 1999)

> I think this is like the early days of the railroad or television (David B. Lipsky, eCornell's director of educational planning and review, quoted in Carlson & Carnevale, 2001).

This idea that the 'winner takes it all' (Frank & Cook, 1996) reflected observations that Microsoft, through its success in implementing a particular business model, had achieved in a very short time an apparently unassailable dominance over previously successful companies such as IBM and Apple. Similar examples are apparent in the subsequent success of companies like Google and Facebook. Described by some as 'unicorns' (Lee, 2013), this idea of a runaway success is a key driver of Internet booms, like the one that drove the Virtual University and the one currently driving the MOOC.

This phenomenon is known as the network effect (Katz & Shapiro, 1985; Rohlfs, 1974), and it arises as a consequence of a feed-forward or positive feedback loop where the value of a system grows exponentially as the system grows in scale. This effect is also known as Reed's Law; the power of a network, especially one enhancing social networks, multiplies more rapidly as the number of different groups using the network increases (Reed, 1991). A social network has more value as it connects more people, a search engine gives more value as it connects you to more information, and a computer operating system is more highly valued the more widely it is adopted. In each case, the power and value of the system is enhanced by the way growth in scale supports the core activities of the system. The last decade's dramatic changes in the distribution of digital media in various industries illustrate the way the Internet enables this through the removal of capacity constraints on creation, duplication and distribution.

The logical fallacies flowing from this into education are one of the reasons the virtual universities failed. The first fallacy is that success in one field translates into

another. With Fathom, Columbia allowed itself to feel that companies with no experience in education were such a threat to their ongoing viability, they had to act first or be superseded by the apparently inevitable success of the 'Microsoft University'. Similar concerns were evident from others who saw education as a new form of mass media that would be dominated by media conglomerates like Time-Warner. Subsequent examples have shown success is in no way inevitable; Microsoft has been overtaken by Google and Apple in many markets it had an early lead in. Within higher education, the failure of the US Open University initiative shows educational success is hard to translate, even between comparatively similar contexts.

The second fallacy is the assumption education will similarly benefit from a network effect. If education is seen as a function of access to information, then this would be true and Google would be in a position of extreme dominance through its search engine and creation of the Google Books archive. The implications of the growth in scale of education as a system are discussed at length in Chap. 3 and the effect on qualifications in Chap. 6. This material argues against the existence of a network effect in education, suggesting that for an individual student, and as an impact on the core functions of education, there are minimal benefits gained from increasing the scale of education while it operates in a positionally framed qualifications model.

One of the errors in transformational thinking is the belief certain changes are deterministic, inevitable consequences of a particular development, such as the implementation of a technology. In the case of the Virtual University, this was the analyst-driven belief of a vast and untapped market of students waiting to adopt a new form of education. This fallacy was identified in the House of Commons report on the UKeU failure (House of Commons, 2005), which noted the dependence on a supply-driven model that was not supported by any evidence of real opportunities. As Marginson (2004b, p. 108) notes, 'Hyper-optimism and the frantic struggle for first mover advantage excluded caution and the long view and negated the potential for constructive criticism and alternative visions'. This erroneous and deterministic view of the impact of technology is still very much alive, as demonstrated by the persistence of the myth of the Digital Native (Chap. 10).

9.3.2 Not All Qualifications Are Created Equal

The second lesson from these cases is the importance of the articulation of the type, value and relevance of the qualifications earned. The level of the degree offered is important. Capella University has been successful partly due to its careful focus on master's degrees. This allows them to attract a student population already successful in undergraduate study and thus likely to have the skills, resources and personal attributes necessary for sustaining the demanding process of online study. Master's education also has a level of individualisation and is delivered to a scale well suited to standard online tools. Finally, Capella can justify a higher fee level

for master's degrees than can be charged for undergraduate degrees, a key factor in ensuring profitability.

At the opposite end of the qualifications spectrum is the two-year Associate degree. This qualification progressively declined in value over the last decade (see Chap. 6) as it essentially becomes ubiquitous. The Associate degree is the first step in the US tertiary education qualifications framework, and with the growth in scale of education, the courses need to support students with a wide range of preparation, ability, resources and social capital. Residential programmes recognise this challenge and provide a support services aimed at ensuring students learn how to learn and ultimately complete their qualification. This is much harder in an online context.

The University of Phoenix benefitted from extremely high growth in enrolments in Associate degrees, peaking at over 200,000 in 2010, but at the price of high levels of student failure. Growing awareness of the resulting social and economic costs and consequent action by the US government has seen numbers decline dramatically. The resulting financial pressures have been challenging (Blumenstyk, 2015, June 30). WGU, in contrast, recognised very quickly that associates degrees were not well suited to online delivery and managed their qualifications portfolio very tightly, offering only professional bachelor's and master's degrees.

The degrees taught by successful virtual universities are dominated by applied subjects and by the close relationships between the university, the student cohort and specific commercial partners. The ability of the university to market the qualification as a means for gaining or improving employment appears to be a major success factor but one susceptible to wider changes in the economy. The challenges faced by Jones International University and the University of Phoenix as a result of changes to US Federal student funding policies are a direct consequence of the shift in the economy and the consequent loss in value of the associate's degree as a way of gaining employment. The alignment of the WGU to the development of local economies is dependent on the extent to which investment in local businesses can be sustained, both as a place for the resulting graduates to be employed and as a source of the tax revenues needed to maintain the operation.

The level and content of the qualification is not the only characteristic influencing students and other stakeholders evaluating a provider and programme. Traditional universities running successful virtual universities, such as UMassOnline and eCornell, are explicit that all the degrees they award are identical in quality and not distinguished in any way on the student's transcripts. They recognise that to many stakeholders the traditionally delivered degree represents a gold standard of reliability that has significant value. These successful universities are very conservative in the programmes of study they choose to offer and invest heavily in market analysis and business development prior to any offerings. In contrast, the failure to recognise what students, and their parents, perceive as valid degree is probably a key factor contributing to the UK Open University's US operation's failure when offering a qualification without US accreditation.

9.3.3 The World Is Not That Flat

> When examining the dynamics of a particular sector such as higher education it is also important to recognize that there is not a single market, but rather multiple and interrelated markets. (Dill, 1997, p. 168)

A key argument underpinning the very successful book by Thomas Friedman, *The World is Flat* (Friedman, 2005), is globalisation has shifted from a mode driven by multinationals to one where everyone operates on a level-playing field and where historical and geographical differences are irrelevant. This notion that connectedness dominates all other aspects is one of the fundamental assumptions behind the concept of the Virtual University. The ability to offer a standardised product at scale is the key driver of Internet economics, and analysts predict this will drive global growth in online learning:

> We believe that for every foreign student studying [in the US], there are three to five students who would if they had the access or resources. Currently, this translates to a potential of approximately 1.6 million international distance learning candidates. Clearly, online learning makes it possible to serve these students who would never have had this chance before. (Moe & Blodget, 2000, p. 183)

This assumes the US provider is automatically preferred over local alternatives: 'Students abroad are hungry for top quality, and specifically US-based, education' (Moe & Blodget, 2000, p. 182). The cases presented above suggest that in reality, the situation is more complex.

The failures of the U21 Global and GUA virtual universities in Asia partially reflect that, although a qualification from an internationally well-regarded university is important, students able to afford these offerings tend to come from wealthy families with conservative attitudes to education (Marginson, 2004b) and that choices of study destination are heavily influenced by social factors (Beech 2014; 2015; Mosneaga and Winther 2013). An online offering fails to deliver the opportunity to travel, experience other cultures and, most importantly, build social networks and connections to facilitate ongoing professional relationships (Hilsberg, 2006).

The perceived value of the traditional model of university excellence is evident in the strategies followed by the Chinese government (Levin, 2010; Wang, 2012; Yang and Welch, 2012). Marginson (2004b) makes the point that many Asian countries have strongly nationalistic preferences and a complex mix of diverse technological, political, cultural and linguistic characters that complicate any external delivery of services. This preference for local enterprises is apparent in the failure of corporations like Google and Amazon to dominate in China when in competition with local companies such as Baidu and Ali Baba.

Culture is not a feature of educational provision solely affecting Asian countries. Much of the success of the WGU and University of Phoenix is due to their use of a model of learning strongly aligned to the communities they target for their students.

The University of Phoenix's early success came from a model strongly driven by the needs of a specific culture that of the US workplace and the desire for those students to better themselves through a college education (Marginson, 2004b; Sperling & Tucker, 1997). Its subsequent challenges can be partially explained by a loss of that clear strategic alignment. A similar misalignment of culture almost certainly contributed to the failure of the Open University in the USA. Notably, University of Phoenix's parent company, Apollo, operated a number of international virtual universities in a variety of countries in Asia, Europe and South America, without any evidence of success.

9.3.4 IT Doesn't Matter

An interesting aspect of the cases presented is of how little importance technology plays in determining success or failure. A robust infrastructure and tools are needed, and these were important elements in the early work of virtual university initiatives, but there is no evidence that any particular initiative has been able to achieve any form of distinctiveness on the basis of its technology platform. Carr (2003) argues that, for any modern organisation, the use of technology is a given and consequently of little strategic value in itself. The increasing commoditisation of the various technologies used for online learning means the execution of the strategy matters far more than the capability of the tools.

Poor technology choices can still be made, and they have consequences. An initial misstep of the Cardean initiative was the decision to use Lotus Learning Space, no doubt driven by early engagement with IBM as a partner. The UKeU initiative was significantly compromised by the decision to work with Sun Microsystems to develop a bespoke platform. The delays caused by this decision and the inability to sustain the investment needed to maintain the development were a major factor in failure.

The pace of technological change (see Chap. 8) means any single organisation finds it difficult, and therefore expensive, to continuously redevelop and sustain a dedicated online learning platform of any scale or richness. Commodity IT vendors, such as Blackboard and Microsoft, have enormous advantages in operating IT infrastructure. Thomson Learning and NextEd's failures as providers of online infrastructure to virtual universities arose simply because they were overtaken by other vendors able to offer commodity online learning platforms directly to universities at a lower price and with a faster development cycle. Ironically, those vendors are now struggling to sustain that pace of redevelopment while maintaining service to a very large number of institutions.

The other way technology failed to matter to the extent assumed by the pundits is a consequence of the nature of formal education. The Virtual University concept assumes technology provides a mechanism for education to scale in the same way it did for content industries such as music and movies. Instead, as with a number of dot-com services, the action of 'cost disease' (see Sect. 5.4) constrained the extent

that virtual universities could achieve economies of scale. At the heart of cost disease is the reality education acts not only as an economic system but also as a social one. Sustaining the type of high-quality relationship characterising successful university education limits the scale a virtual education initiative can act at. Successful large-scale online and distance providers, such as the University of Phoenix and the Open University UK, created mechanisms to ensure students are part of a smaller learning community with access to tutors or mentors to provide leadership. These mechanisms maintain motivation and engagement in the absence of the campus environment.

Recognition of the value of the relationships underpinning educational success is a consequence of sense-making. A key aspect of a sense-making approach is the way it identifies aspects of existing models needing to be sustained when technology introduces new cues that identify its significance. This is apparent in the realisation attending a traditional face-to-face course is not just about access to the information or lecture presentation but also the social cues driving successful learning strategies, including time management, exposure to different viewpoints and collaborative engagement with challenging and ambiguous learning activities. This need to balance innovation sparked by the cues new technology provides with the inherent desire to protect the comfortable status quo lies at the heart of sense-making and is explored in more depth in Chaps. 10 and 11.

9.3.5 Sustaining the Cost of Business in a Dynamic World

The case for the Virtual University was made predominantly on the basis of financial analysts' predictions of vast profits. In reality, the cases demonstrate the difficulty such initiatives face in funding initial capital investment and then sustaining operations with additional funding to become profitable, a state only achieved in a few cases. The extent of the challenge is illustrated by UMassOnline, which, despite adopting a comparatively conservative approach, took a decade to achieve profitability. Penn State and Cornell appear to survive by adopting a very conservative approach when choosing programmes backed up by detailed and extensive market research, and a revenue model including substantial returns made to the faculty departments responsible for the academic content of the courses.

Most virtual universities appeared to fail to appreciate just how expensive an undertaking they entered into. As Richard P. Strubel, UNext's president and COO, stated prior to the failure of Cardean. 'This is a very expensive undertaking. And the whole business model depends on making a huge up-front investment rather than a business-to-consumer model of selling individual courses. I don't know that anyone will ever do it again, and they certainly won't do it the way that we did it' (Carr, 2001).

The shift to the Virtual University introduces unexpected costs, complicating the implementation, particularly for existing universities attempting such initiatives. Virtual universities must address the cost of content creation and use, as illustrated

by the Fathom case, and the creation of an effective infrastructure, e.g. the UKeU. There is also the need to change the workforce employed to create and sustain the courses and programmes being offered. Cunningham et al. (2000) identify the shift to a commercial model of professionalised operation as a feature of the majority of virtual university initiatives, in many ways paralleling the industrial models adopted by distance education providers (Peters, 1994). The move from a model of faculty autonomy and independence to one of participation in a team of professionals is challenging for faculty and expensive for organisations who need to identify, train and retain specialist instructional and educational designers and programmers. This becomes more complicated when commercial partners employ and manage these teams, such as in the GUA and U21 Global cases.

A key feature in the business models of a number of virtual universities, such as Jones International University and the University of Phoenix online, is the dependence of their model on access to Federal student loans programmes. In 2010, the University of Phoenix received 88.7% of its revenue from US Federal education funds, including more than US$1.1 billion in Pell grants, the highest amount paid to any college in the USA (United States Senate, 2012). The problem they face is the growing awareness that for-profit students dominate the numbers defaulting on student loans (Looney & Yannelis, 2015). The measures taken by the US government to increase accountability and improve the outcomes achieved from this investment are a major factor affecting the ongoing viability of the University of Phoenix and appear to be a major factor contributing to the closure of Jones International University.

The failures of Fathom, AllLearn and the UKeU similarly demonstrate the financial costs of any serious initiative and reinforce the need to align initiatives to the financial context of the institution, its tolerance for risk, and, where possible, to only invest to the extent needed to start understanding the reality of the new model. In these cases, the strategy to mitigate the financial risk involved collaborations, but as the failures reveal, getting multiple institutions to commit substantively to a shared venture is challenging, particularly if the results are not immediately encouraging such as in the case of AllLearn.

9.3.6 Managing Collaborations with Diverse Partners

The extent to which collaboration was an important feature of the various failed virtual university initiatives is notable. The list of significant organisations involved reads like a Who's Who of academia and commerce. In Fathom, partners were the University of Columbia, the London School of Economics, the University of Chicago, Cambridge University Press, the British Library, the BBC, the Smithson Institution's National Museum of Natural History and the New York Public Library; in AllLearn—the University of Oxford, Princeton, Stanford and Yale; in Cardean—Columbia, Stanford, Carnegie Mellon, the London School of Economics, the Open University Business School, the University of Chicago, IBM,

Ford and General Motors University; and In the UKeU—Sun Microsystems and the collective UK universities.

The first lesson from this is collaboration, even with leading organisations, is neither necessary for, nor a guarantee of, success. The UNext and Cardean story illustrates the complexity private investment brings to the management of educational institutions and the conflicting goals that make relationships with more established universities challenging. It is unclear what long-term value the qualifications awarded by various incarnations of this operation represent to their students and it would seem Columbia, Stanford, Carnegie Mellon, the London School of Economics, the Open University and the University of Chicago were lucky to distance themselves without major damage to their reputation or finances.

The failure of the UKeU lies in the fact it was not a genuine collaboration but something imposed by external political interests and somewhat distrusted by those in the sector. Fathom failed because it could not persuade its partners to commit valuable intellectual property to a shared enterprise. Both cases illustrate the fact that collaborations need to strengthen the partners, enable them to accomplish something unachievable independently and, most importantly, be valued individually as well as collectively (Gunn & Mintrom, 2013).

Achieving collective as well as individual value is particularly challenging when collaboration is with commercial organisations as well as other universities. Companies like NextEd and Thompson Learning answer to a different set of stakeholders with interests not necessarily well aligned to those of universities, particularly public non-profit ones. The investments in technology made on the recommendation of IBM at Cardean and Sun Microsystems at the UKeU show that commercial expertise is sometimes swayed by their own corporate agendas.

Successful collaborations, such as the Universitas 21 (U21), World Universities Network (WUN) or Association of Pacific Rim Universities (APRU), illustrate the ways such relationships can be sustained (Gunn & Mintrom, 2013). APRU has a role in building research collaborations between established and developing universities. A driver for the US, Australian and New Zealand universities is the ability to attract international students and then maintain research collaborations as students return to their home countries to become faculty and researchers. Universities in the other countries gain the opportunity to work with highly regarded partners to build their own capability and reputations. It should be emphasised that many of these universities are very strong but currently lack the visibility and presence of the dominant university brands.

9.3.7 Reputations and Brands

> There is a misunderstanding about 'brand' - it doesn't equate to prestige at all. Jack Wilson, UMassOnline CEO, quoted in Carlson, 2002

Reputation is a fundamental characteristic of any organisation and reflects the aggregated perceptions of its key stakeholders (see Chap. 4). Reputations are particularly important for universities. The ambiguity and challenges in empirically measuring the quality of any given student's education (see Chap. 16) and the value of the social and professional networks in generating the positional value of a qualification (see Sect. 6.1) mean a university's reputation is arguably its most valuable asset. Strong reputations provide easier and more extensive access to a variety of important resources including top researching faculty, the brightest students and the opportunity to access greater financial resources through research grants, tuition fees and additional government investment in major capital and operational projects.

Collaborations such as U21 and WUN have a focus on building the reputations of their members, all of which fall in the category immediately beneath the leading internationally ranked universities such as Harvard and Oxford. The focus on institutions benefitting directly from their membership is apparent in their reporting and structures; the consortia are led by the individual university vice chancellors or presidents in a rotating cycle.

A number of the virtual university initiatives were motivated by the desire to be seen as engaging in a modern, technologically enabled form of education and even to be seen as leading the development of the apparently inevitable online model of university education. Fathom and AllLearn were both driven by the desire to act quickly to ensure their associated universities be seen as leaders. AllLearn, in particular, reflected the reputational challenges perceived by the participating universities, mixing a desire to be associated with a strong online brand with not wanting to fully commit the existing reputation of the university to an uncertain model. A similar tension is evident in the operation of the large MOOC consortia. Universities simultaneously want to benefit from a reputational 'halo' effect but recognise the downside risks on other parts of their organisation.

The failure of the UKeU demonstrates the challenge institutional reputations create in countries with large-scale public university systems. Publicly funded mass education systems are, by definition, seen by government as a collective network responsible for driving economic and social growth in society. In this context, the UKeU was a system for assisting that cohesive network of organisations in a collective engagement with the rest of the world. In reality, the UK system is a mix of élite and mass provision and the individual universities are well aware of the need to sustain their reputation in a competitive space. Success for a university, and its leadership, is driven by their research success and their ability to attract the best domestic and international students. Being positioned as one offering among others through a generic system, like that proposed by the UKeU, presented little of value to the individual universities. The technical failures and delays experienced by the UKeU merely reinforced the wisdom of those universities who chose to focus on building their own capability and reputation.

9.3.8 Faculty Engagement

Reputational concerns are not only the province of university leadership. The faculty of any university are well aware of the importance of reputation and the relationship between their own reputation as a scholar, that of their colleagues, and the university they associate with. Although the dominance of such concerns is diminished under a mass model of education, such élite sensibilities remain a powerful influence on many universities, particularly those most strongly focused on research. Established research universities with solid reputations are predominantly defined by the élite model, and their faculty act with consequently with greater autonomy.

Many of the faculty of these already successful universities saw the reputational and brand drivers encouraging leadership to explore virtual university initiatives very differently. Faculty concerns about the value and purpose of the new initiatives and their alignment with the mission and values of the university are evident in the failures of Fathom, NYUOnline, Virtual Temple and Babson Interactive.

The error apparent in these virtual university initiatives was disregarding the importance of the individual faculty in creating an effective educational experience, focusing instead on the supporting content, facilities, and administrative and educational processes. Faculty recognise the importance of their relationship and engagement with students as a fundamental feature of a successful university education and need to be persuaded the new model will continue to sustain this. In the case of the failed virtual university initiatives, they saw a model defined by external marketing consultants and technologists lacking a strong educational and academic framework. Consequently, they disengaged and as their cooperation was needed as creators of the 'product' being sold, the ventures failed. A similar loss of organisational engagement is illustrated in the ITP-Z case (see Sect. 14.5) arising from failure to recognise conflict between a strong public service ethic held by teaching staff and leadership desire to engage in explicitly commercial activities.

The contrasting success of the eCornell, UMassOnline and Penn State World Campus initiatives reflects the different approach chosen. In these cases, online delivery is positioned as an activity undertaken by the university within the normal systems of academic oversight with recognition of the importance of faculty ownership. The use of technology is positioned as a tool to engage with students in different contexts to achieve the same educational outcomes as in campus contexts.

These successes highlight the importance of sense-giving and the need for a clearly articulated and actively led strategic vision. Rather than a radical transformation, their leadership has focused on understanding the value offered by new technologies to their existing operations and actively engaged in sense-giving processes to ensure academic engagement is maintained.

9.3.9 Strategic Vision and Leadership

A common factor differentiating failure from success is the sense of urgency driving decision-makers adopting an externally defined vision for education, rather than organisations taking time to understand the ways the ideas being promoted might augment, strengthen and sustain existing operations. AllLearn was driven by hype from analysts, allowing the leaders of the University of Oxford, Princeton, Stanford and Yale to believe they were at risk of failing in the face of the new online model and the new venture was the only way they could protect their brand. Columbia allowed itself to feel that companies with no experience in education, such as Microsoft, were such a threat to their ongoing viability, they had to act to prevent their staff from leaving.

In contrast, the successes of the University of Phoenix Online and Western Governors University illustrate the importance of a good strategy and vision, articulated and enabled by strong leadership. The University of Phoenix was the vision of founder John Sperling (Sperling & Tucker, 1999) who was passionate about his goal of educating working adults in ways that helped businesses grow their skilled workforces. His focus ensured the goal of a modular and flexible model of education was sustained for well over a decade. The more recent issues faced by the university can arguably be seen as a loss of that focus, as the demands of shareholders for growth exceeded the capacity of the organisation to maintain its operations.

WGU has similarly benefitted from a well-developed model of education and a mission to improve the economies of the states that created it. The competency model and focus on working adults have helped the organisation avoid the mistakes that led to the failure of other providers, such as Jones International University. The non-profit status and strong local government support made it easier for the university to gain national political support, essential given the dominance of Federal funding as an enabler for the majority of US students accessing higher education. Both these successes show there is a large potential population of non-consumers of current formal education seeking more autonomy and flexibility over their learning. These people need education in a form that provides a positive impact on their personal circumstances.

The UKeU and WGU cases illustrate the importance strong leadership plays in maintaining new initiatives through early failures and challenges. It seems the UK politicians lacked the ability to see past the transformative utopia presented in the initial UKeU business case to realise that any new initiative will inevitably have to evolve once it encounters real-world constraints and conditions. In contrast, the US governors were able to see beyond initially low student enrolments at WGU to recognise the core idea was strong and would grow once refined to focus on specific student populations and qualifications (Carr, 1999).

These two cases illustrate the value of the sense-making processes of enaction and the need for ongoing assessment of the assumptions and goals driving any change initiative. The WGU leaders were able to sustain a sense-giving narrative

focused on the value of competency-based education for working adults and for businesses. The UK politicians failed to sustain their commitment once technology failed to deliver immediate and unambiguous results. The absence of results reflects the lack of clarity about what was intended. The primary aim of the UKeU (Thompson et al., 2000, p. 8) was that it support 'excellence' in the absence of anything more substantive than an expectation that this mean 'excellent fit for purpose' without any sense of the possible purposes (see Sect. 15.2). The UKeU business case is notable in its complete lack of any specific measures of performance or success, other than the nebulous goal of 'expansion', both internationally and through greater inclusion domestically (Thompson et al., 2000, p. 8).

9.4 Conclusion

The core of the idea of a Virtual University is that tertiary education is no different than any other personal service that could be disrupted, innovated and transformed by the Internet. The hype of the analysts and technological enthusiasts, from both within and without academia, created a narrative for change that completely failed to consider the complexity of the ways tertiary education is funded and managed from a public policy perspective. They also failed to recognise the consequent complexity of the 'market' for tertiary education (Dill, 1997) and the power and influence that student preferences and behaviour have on educational organisations.

The nine themes identified in the case analysis illustrate the wicked complexity of the environment education operates within. Each represents a specific issue generated by a combination of the forces for change identified in the previous five chapters. The associated failures illustrate how failing to adopt a range of perspectives when engaging with wicked problems allows unanticipated elements of the problem to manifest as complications that cause a breakdown of the planned change. The Virtual University was an oversimplified vision of tertiary education that failed to recognise the way these forces interact. The core assumption of the Virtual University was that technology is a sufficiently powerful transformative agent that any resulting disruption is inevitable and driven solely by the technological affordances provided by the Internet.

The failure of the Virtual University can also be seen as a failure of the models used at that time to frame the way the Internet was changing society. The last decade has seen a growing awareness of how Internet technologies enable different forms of communication and collaboration, a rise in a culture of participation and creation, and a counterculture to the paradigms of intellectual property. The resulting complex combination of ideas is described as 'Web 2.0' and 'Open' and has led to the invention of 'Virtual University 2.0', also known as the MOOC. The complex nature of openness is discussed in detail in Chap. 11, including an analysis of the extent to which MOOCs really embody the ideas advocated by open scholars and practitioners. The strategic implications of MOOCs are explored in more detail in Sect. 11.2 informed by the lessons from the virtual university identified here.

Chapter 10
Technology and Modern Students—The Digital Natives Fallacy

Abstract The concept of the Digital Native, despite its clear failings and substantive criticism, persists in common use, frequently and unhelpfully creating a divisive narrative of intergenerational difference that inhibits sense-making. Examples of the confrontation and disjunction caused by this failed model include the conflict over patterns of device use by students and the expectations of faculty used to different ways of learning. The failings of this model, however, provide an opportunity to explore more deeply the evolving literacies that are enabled by digital technologies and their impact on learning.

It seems to be impossible to discuss the impact of technology on university learning and teaching without considering the persistent narrative of intergenerational difference. There is an idea that the very students themselves are changing in significant ways, and this may be more important than any possible changes to academic work arising from the use of digital information technologies by academics and in academic contexts. Whether they are Marc Prensky's Digital Natives (Palfrey & Gasser, 2008; Prensky, 2001a, 2001b, 2003, 2004), Millenials (Howe & Strauss, 2000, 2003; Strauss & Howe, 1991), the Net Generation of Donald Tapscott (1998, 2009), Howard Rheingold's Smart Mob (2002), Douglas Rushkoff's ScreenAgers (2006) or more recently the Google Generation (Rowlands et al. 2008), people, usually young, intensively using technology have been anecdotally identified as a strange new species, something to be treated with distrust and caution.

Marc Prensky (2001a) created the most enduring name for the meme of generational differences arising from technology use in education when he coined the phrase 'Digital Native'. Over a series of articles, Prensky (2001a, 2001b, 2003, 2004) asserted that Digital Natives represent a discontinuity in the human experience, reflecting an irreversible Singularity in the changing relationship between people and technology. He described Digital Natives as 'thinking and processing information fundamentally differently' (Prensky, 2001a, p. 1), needing to be taught by techniques incorporating technology and using visual media to enable a holistic and active form of learning, drawing on ideas from hypertext and gaming rather

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than the physical book. In describing his model, Prensky (2001b) drew on evidence from neuroscience showing the brain to be a much more plastic organ than previously thought to suggest Digital Natives are thinking in parallel and are being trained through games and Internet use to learn in bursts of activity as they jump from one thing to the next.

Tapscott (1998, 2009) describes the Net Generation, born since 1977, as the first to grow up surrounded by digital media. Interestingly, this description includes people who in 2017 turned forty and are quite likely parents of their own Net Generation. Tapscott may have created a less memorable meme but he makes a far more extensive and ambitious set of claims about the intergenerational differences. He describes the Net Generation as having a number of distinctly different characteristics when compared to earlier generations, including an emotional and intellectual openness leavened with a fiercely independent expression of strongly held views on society and the world. The Net Generation is apparently 'more tolerant of racial diversity, and is smarter and quicker than their predecessors' (Tapscott, 2009, p. 10). He conflates the use of technology for entertainment, communication and work as driving social transformation, consequently suggesting this group are sensitive to corporate interests and wary in their authentication and trust of others and in the information they encounter online.

The Net Generation is apparently disposed to innovation, action and investigation. Tapscott (1998) asserts that Net Generation people are 'more comfortable, knowledgeable, and literate than their parents about an innovation central to society' (pp. 1–2) and they assimilate technology, finding it 'as natural as breathing' (p. 40) while earlier generations are forced to accommodate. As learners, they are supposedly smarter than their teachers in understanding how to learn with technology and they would rather discover and create for themselves than consume knowledge passively. Oblinger and Oblinger (2005) describe the Net Generation as fast-thinking multitaskers and prolific communicators, driven by the desire for experience and discovery, prolific users of technology but focused on the activity rather than the tool, naïve but instinctively competent.

John Seely Brown (2000) does not represent changes in preference and behaviour as intrinsic to any generation or to physiological changes within people but suggests they result from extensive and effective use of the affordances of digital information technologies. He describes the process of 'Growing up Digital' by outlining ways young people using technology are multiprocessing, biased to action, creation and communication. He suggests learning environments need to change to enable student participation in communities and networks so they can learn through collaborative work. Seely Brown (2002) suggests that extensive use of information technologies shifts the way learners engage in a variety of educational activities, using technology to broaden definitions of literacy, from linear text to navigation through and use of a diverse set of media. He also suggests experience with modern hypertext and community information sources teaches students to be open to exploration, aware of the need to apply judgement and willing to both act and experience the actions of others.

One of the most provocative claims made in the Digital Natives literature is that technology use from an early age makes people smarter than previous generations. This is a very challenging idea that presents many problems, not least the issue of defining a robust measure for intelligence (Gould, 1996). A more testable hypothesis is technology use has trained people to be more efficient in their processing of visual information, more able to navigate virtual information spaces and abstractions of the real world, and able to multitask efficiently, using technology to move between multiple tasks without a significant loss of productivity.

10.1 The New Literacies of the Digital World

The possession of an innate literacy and competence by Digital Natives in the use of digital information tools is, at least in theory, one of the more testable propositions of the idea. The immediate challenge is that information literacy is a complex concept, as reflected in the evolution of its definition. Common problems in understanding information literacy are the conflation of technology skills with information skills and the focus on identifying resources versus using published information in effective ways. In 2000, the American Library Association (ALA) defined information literacy as the ability to 'recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information' (American Library Association, 2000. p. 2). This focus on finding resources is paralleled by the student drive to use the tools they regard as the most efficient without regard for the need to focus on credible and reliable primary sources, and without understanding the processes that create and validate knowledge.

The sense that information literacy is a library issue is unhelpful as it strengthens the 'finding' aspect of information use in academic settings and encourages a wider disengagement with the need to frame it as an issue requiring faculty ownership and engagement (Badke, 2010). Bawden (2001), in his review of information and digital literacies, noted many definitions reflect specific skills and tools, or a focus on practical advice, rather than the broader ideas of knowledge, perception, meaning and context. Recognition of the importance of the metacognitive dimensions of information literacy has seen the ALA definition more recently expanded to a more elaborate description:

> Information literacy is a repertoire of understandings, practices, and dispositions focused on flexible engagement with the information ecosystem, underpinned by critical self-reflection. The repertoire involves finding, evaluating, interpreting, managing, and using information to answer questions and develop new ones; and creating new knowledge through ethical participation in communities of learning, scholarship, and practice. (American Library Association, 2014, p. 2)

This shift in the scope of information literacy is also seen in the ongoing recognition of the importance it plays in the generic capabilities society expects

from educated people (Adelman, 2009; Bosanquet, Winchester-Seeto & Rowe, 2010). Over the last decade, there has been considerable research into the use of information technologies by students. Pegrum (2009) identifies a diverse set of literacies that are apparent in the use of various media:

- print
- search
- information
- participatory
- visual
- audio
- media
- multimodal
- virtual
- remix
- personal (identity)
- intercultural
- communicative
- technological
- texting.

Given the broader and more intellectually sophisticated understanding of information literacy described by the ALA, the idea that the fluency and technophilia of so-called Digital Natives translates into an innate advantage is unlikely. Instead, a general consensus has emerged that while many students like technology, they often lack the skills to translate their use of the technology into a personally effective tool to support learning and knowledge work (Rowlands et al., 2008; Thompson, 2013).

It is worth noting however an alternative explanation. The lack of any shift in student learning capability using technology may reflect the disconnect between traditional models of knowledge use and assessment, and the affordances of modern information systems used by people fluent in their capabilities and without preconceptions as to their potential. Digital Natives' experience and familiarity with modern tools might make them more effective in conducting information tasks, if freed from the frameworks imposed by academics operating in traditional research paradigms rapidly overtaken by digital technologies. Much of the research on student information literacy is conducted in the context of traditional models of research and library use, with many studies simply assessing the extent to which traditional databases are used, or the library physically visited, rather than addressing the quality, depth and efficiency of the student's investigations and analysis.

Typically, an inability to use the complicated search tools provided with academic databases is described as a failing on the part of the students. Another perspective is to suggest the search tools provided to universities by publishers are often poorly designed for use by staff and students. Many of these systems reflect

the experience and preference of librarians and faculty with well-established models of information use unchanged by newer technologies. It is interesting to note that some of these systems, Elsevier's ScienceDirect for example, have been revised to incorporate features inspired by general search engines, including flexible full text searches and cross-referencing to other sources that share common citations or content.

Setting this issue aside and remaining within the traditional academic models of assessment and teaching, academics need to take a greater responsibility in educating students to use information tools effectively. Students entering higher education directly from school usually lack any substantive ability to undertake a piece of formally researched scholarly writing (Head, 2013). Much of their experience in a school setting can be characterised as 'scrapbooking' the results of a digital treasure hunt rather than a thoughtful exploration of a specific topic. Academic faculty need to explicitly teach students how to use the literature in a field as a tool for building understanding and to frame their own investigations within the scholarly norms of specific disciplines. Technology cannot teach students judgment and discernment.

A challenge is recognising the way many assessment designs reinforce poor information use by students. Students, quite rationally, adopt information seeking strategies aimed at meeting the requirements of assessments while minimising the effort needed (Warwick, Rimer, Blandford, Gow, & Buchanan 2009; Purdy, 2012). This approach is, unsurprisingly, compromised by their lack of academic knowledge. Students often have a poor comprehension of formal academic systems for information use, including the ways journal articles are cited and the significance of peer review (Salisbury & Karasmanis, 2011). They need to be taught basic concepts like how papers are structured into standard sections like abstracts, methods, results and conclusions to support their use by researchers (Head, 2013).

Consequently, students are tempted by the convenience of online sources even as they recognise that these may be less reliable than the alternatives. Students consider libraries as more reliable but they also are regarded as inconvenient and time-consuming to use (Sundin & Franke, 2009). Students often search in less systematic ways than trained researchers and use natural language in preference to keywords (Nicholas, Rowlands, Clark, & Williams, 2011). They find identifying suitable keywords and filtering results complex and time-consuming (Head, 2013) and are often unfamiliar with the features provided by search engines to assist in the process of research (Gasser, Cortesi, Malik, & Lee, 2012). This may reflect their familiarity with the power of the default mode of modern search engines, which can parse natural language and extract keywords without human intervention and provide affordances to simplify the identification of related works without needing the complex syntax taught to earlier generations.

The impact of new technology is apparent in the significance students ascribe to their social networks when engaging in information seeking activities (Eynon & Malmberg, 2011; Gasser et al., 2012). There is a culture of peer engagement and reciprocity, which unfortunately generates issues with plagiarism and misconduct as students fail to recognise the formal requirements of academic culture applied to

research and struggle to balance the discontinuity between the two models of intellectual sharing (Marshall & Garry, 2006).

Students report being overwhelmed by the scale and complexity of the information they engage with and can be easily distracted or find themselves wasting time on unproductive research (Gasser et al., 2012). They can lack confidence in their ability to assess the value of particular resources, particularly with reference to the expectations of their teachers (Head, 2013). Evaluation of information quality is done by reference to where it is published, the quality of the supporting media, the popularity and plausibility of the information itself (Gasser et al., 2012). As novices, students lack the necessary experience to make independent assessments of the significance of any single source. While aspects of this can be addressed by simple heuristics, such as where a source is published, it misses many of the factors academics use in assessing a publication including insider information on the people conducting the research, the way a new study is placed within the wider context of the discipline, and detailed judgments of the quality of the methodological and analytical aspects of the research presented (Badke, 2010). This further emphasises the need for active faculty involvement in the development of information literacy.

Research on information use by graduates in employment suggests that outside academia, the focus of information work is very much on urgency and efficiency and the quality of the final analysis. Employers report that when defining and scoping information tasks, students are poor at working as part of a team and at working independently. Students are regarded as not coping well with ambiguity and lacking the tenacity and persistence needed to explore a concept thoroughly (Head, Van Hoeck, Eschler, & Fullerton, 2013).

Technology is influencing faculty as well as their students when it comes to information seeking. Despite some negativity over the use of technology in libraries as 'partially digitized scholarship with much of the life sucked out of it' (Selwyn, 2014, p. 95) and the disdain that the Google search engine is regarded with in some circles (Leibiger, 2011), there is evidence that it is heavily used by academics for a range of research tasks (Jamali, & Asadi, 2010; Nicholas & Rowlands, 2008). Tools like Google Scholar provide a convenient mechanism for identifying literature directly and through citation Webs, and the results are linked to the publishers' databases licensed through the university. Google is influencing the creators of library systems and research database software as they engage with a wider group of users beyond their traditional market of librarians and specialist researchers.

10.2 The Practice Effect

Many of the perceived differences in technology use appear to be related to roles in life, including personal and professional commitments and the ways that technology are actually used in those contexts (Helsper, & Eynon, 2010; Margaryan, Littlejohn, & Vojt, 2011; Waycott, Bennett, Kennedy, Dalgarno, & Gray, 2010). This suggests

that many of the features ascribed to Digital Natives are a result of practice and experience in the use of technology in specific and limited ways, and that rather than being better prepared for the use of technology in their lives, students may lack practical skills even after completing degrees.

The evidence supporting the idea that any differences between so-called digital natives and other people arise from extensive use of technology can be seen in the effect of games on human cognition (Bavelier, Green, Pouget, & Schrater, 2012). In practical terms, this is apparent in the employment of gamers by various militaries as operators for modern combat equipment such as drones and armoured vehicles (Keebler, Jentsch, & Schuster, 2014; McKinley, MacIntire, & Funke, 2011; Triplett, 2008) and in the ability of gamers to outperform experienced surgeons using tele-operated surgical equipment (Schlickum et al., 2009; Ou et al., 2013). In both examples, the research has demonstrated improved performance is the result of practising specific skills, rather than any innate differences generally possessed by the younger population.

These trained differences appear to affect general cognitive abilities applicable in non-game contexts. The ability of gamers to react more rapidly and detect smaller changes in simulation or virtual representations relative to age-matched non-gamers (Blumberg, Altschuler, Almonte, & Mileaf, 2013; Green, Pouget, & Bavelier, 2010; Li, Polat, Scalzo, & Baveier, 2010; Spence & Feng, 2010) is perhaps unsurprising given that such tasks are common in modern game environments. More interesting is the observation that game players have better visual short-term memory than non-gamers (Boot, Kramer, Simons, Fabiani, & Gratton, 2008; McDermott, Bavelier, & Green, 2014). Game playing appears to train people to be more effective at engaging in dual cognitive tasks simultaneously and in switching between cognitive tasks efficiently (Green, Sugarman, Medford, Klobusicky, & Bavelier, 2012; Strobach, Frensch, & Schubert, 2012). Gamers appear to be able to cope with distracting environments more effectively than non-gamers. When the level of distraction is relatively low, competent gamers can efficiently focus on a primary task while monitoring and reacting appropriately to the distractions (Dye, Green, & Bavelier, 2009; Green & Bavelier, 2003). If the level of distraction rises to very high levels, good gamers are able to effectively focus on the primary task to the exclusion of the environment (Mishra, Zinni, Bavelier, & Hillyard, 2011).

The ability to engage in multiple tasks efficiently and remain focused while in an otherwise distracting environment is one of the more prominent claims made about Digital Natives or the Net Generation, complete with the assertion it has arisen from their immersion in an all-embracing technological environment. The research outlined here suggests this skill set has actually arisen from the availability of an effective teaching technology and the application of many hours of dedicated learning. That this occurs in the context of entertainment is irrelevant in appreciating the impact but it may explain the disconnection between many academics (probably not active game players given the pressure of academic workloads) and their students transferring their multitasking skills to the educational context. The conflict arising from this disconnection is explored in more detail in the next section.

10.3 Multitasking

Many students use multiple technologies simultaneously in a variety of informal and formal contexts. A walk around most campuses will quickly reveal students, individually and in groups, engaging actively with a variety of technologies. The use of such technology in the educational space raises questions as to whether this busy environment, characterised by continuous task-switching, is positive, and whether the constant distractions from various technologies and media are reducing their ability to learn despite their preference for those distractions.

It is generally accepted that the human brain has a very limited ability to multitask and can only attend to one cognitive task at a time (Welford, 1967; Dux et al., 2006). Negative effects of multitasking have been reported in the context of driving while using cell phones (Rosenberger, 2012, 2013) and in the comprehension and recall of information on television (Cauwenberge, Schaap, & van Roy, 2014). This evidence does not in itself prove that multitasking is less productive or less efficacious in a learning context. It is hard to distinguish between neural features intrinsic to our brains and changes that can arise from growth—particularly the transition from childhood to adult brains—intensive practicing, learning and the uses of specific technologies. The oft-cited London taxi driver research (Maguire, Woollett, & Spiers, 2006) illustrates that adult brains can change over time in response to specific cognitive work, suggesting that other cognitive attributes might be plastic or vary between individuals.

It is possible, for example, the ability to rapidly switch between different media is a learned skill developed in the same way that earlier generations learned to focus while reading a book, or concentrate while being lectured to for extended periods of time. Multitasking through the monitoring of television and radio has been common for decades (Mostrous, 2010). Interestingly, older people were found to multitask more than Digital Natives and are more effective at switching between tasks (Nicholas et al., 2011), suggesting this is not a phenomenon defined purely by age. It is a complex space, with some limited evidence suggesting a change in student cognitive development arising from their use of such technologies (Carr, 2010; Frein, Jones, & Gerow, 2013; Gleick, 2011; Greenfield, 2004, 2014) while other work suggests that students are potentially distracting themselves and others when they use technology in some classes (Sana, Weston, & Cepeda, 2013).

The expansion in university networking infrastructure and the widespread availability and use of devices such as laptops, tablets and smartphones by students have led to a large number of studies examining the ability of students to multitask in lectures. One area of concern in the changing academic workspace is the conflict between student use of technology in formal learning activities and the norms and expectations of the faculty. Many critiques of student device use appear to be based on teacher preferences and anecdotes, driven more by concerns of control and authority than by evidence of educational effectiveness (McCreary, 2009; Mortkowitz, 2010; Young, 2010).

Any discussion of student use of technology on academic Websites, such as the Chronicle of Higher Education, seems to generate a steady stream of negative comment from faculty members concerned these technologies are damaging the relationship between teacher and student and preventing the creation of a pedagogically positive classroom environment. Typical comments include:

> "Banning laptops is an indication that I trust that my students are smart enough and hard-working enough to learn."
>
> "The [banning devices] policy is set to take everyone into consideration, not the one selfish individual who can't disengage from electronics."
>
> "Universities need to redouble their efforts to lobby Congress for a classroom exemption to the anti-jamming laws."
>
> "The professor requires undivided attention to be effective."
>
> "It is rude to be 'playing' with your technology in the classroom. Rude to the professor and rude to the students who are sitting around you."

These forums rapidly degenerate into attacks on students and arguments between faculty who use technology and those who don't. The idea that technology use may be enhancing an individual student experience is frequently decried—'playing', 'selfish', 'rude'—and the need to accommodate disabled students is barely tolerated in these attacks. Many of the comments share a common viewpoint that the only effective learning approach is predicated on subservience and that engagement and learning is impossible in its absence. Rushkoff (2006, p. 150) provides a counter perspective:

> Teachers feel the impact of empowering technologies first. Computers challenge the teacher's role as the classroom's chief information provider … Teachers threatened by technology attempt to restrict it, or even prohibit its use in the classroom, justifying their actions with bogus claims about how computers quell creativity or stunt social skills. This tactic, aimed at prolonging a teacher's monopoly on data, is doomed to failure.

The body of published evidence seems to provide support for academic concerns and demonstrate the negative consequences of technology use but there are significant methodological issues with many of these studies. A common flaw is the dependence on self-reporting of behaviour and focus, without any evidence to support the accuracy of the reports (Barry, Murphy, & Drew, 2015; Fried, 2008; Gaudreau, Mirnada, & Gareau, 2014; Junco & Cotton, 2012; Karpinski, Kirschner, Ozer, Mellott, & Ochwo, 2013; McCreary, 2009; Ravizza, Hambrick, & Fenn, 2014) despite data that such reports are not reliable (Kraushaar & Novak, 2010; Moreno, Jelenchick, Koff, Eikoff, Diermyer, & Christakis, 2012). The typical sample sizes of distraction studies are small and the studies are difficult to replicate (Aagaard, 2015; Duncan, Hoekstra, & Wilcox, 2012; Hembrooke & Gay, 2003; Kraushaar & Novak, 2010; Ragan, Jennings Massey, & Doolittle, 2014; Wood et al., 2012). The context being tested is often artificial rather than derived from actual behaviours and outcomes arising naturally from the students' personal preferences and experience (Sana, Weston, & Cepeda, 2013).

Some studies unreasonably extrapolate results for a single usage model to all forms of technology (Kraushaar, & Novak, 2010) ignoring the possibility that the observed effects may relate to use of the specific device itself (Frein, Jones, & Gerow, 2013). In many cases, GPA is used to assert students are less successful when using technologies (Junco & Cotton, 2012; Karpinski et al., 2013; Rosen, Carrier, & Cheever, 2013), despite the possibility GPA may be influenced by the student's comfort with the mode of teaching commonly used and may reflect bias in the pedagogical methods and assessments that are differentially affecting sub-populations of students.

Wood et al. (2012) claim that use of social media during lectures results in reduced performance. This is a relatively strong study, attempting to apply a specific methodology rather than just conduct a survey, but compromised by relatively small samples and non-compliance of students with the experimental protocol. This latter point is a significant weakness of this type of study. By asking students to engage in a specific use of technology in addition to the lecture, the researchers are causing a distraction, not testing whether a different type of distraction actually exists in the vicarious technology use undertaken normally by students in lectures.

Similarly flawed, the work of Sana, Weston and Cepeda (2013) asked students to specifically engage in additional tasks in a manner inconsistent with their natural experience of technology use in lectures, which may have disrupted their normal learning behaviour. This required spending a third of the lecture time also concentrating on tasks unrelated to the lecture, including seeking out information. No evidence is provided to support the assertion that on an individual basis, this represents normal behaviour for these students, which they practise frequently and confidently.

The evidence describing the inability of humans to task switch effectively appears strong but includes a proviso that switching between tasks requiring the same cognitive resources is detrimental. An artificially imposed separate task requires decision-making attention and focus different to an experienced digital user monitoring activities. Sana, Weston and Cepeda (2013) argue against any banning of devices, instead observing they have significant advantages and teachers need to provide 'enriching, informative, and interactive classes' (p. 30).

Using technology for other activities while learning is not restricted to the lecture setting. Calderwood, Ackerman and Conklin (2014) examined using technology in a self-study setting and found motivation and self-efficacy was negatively correlated with off-task technology use. This suggests engagement is the issue, not the use of technology itself. Rosen, Carrier and Cheever (2013) report a negative correlation between Facebook use and student GPA and more generally state that students who prefer task-switching have access to more technology, use it more frequently and are more often off task. Their study is limited by the use of a mixed student sample over a very short period of time. They acknowledge student use of a defined and effective study strategy is a more significant determinant of task focus than technology use, suggesting that context and skills need to be considered.

The need for students to adopt effective learning strategies is apparent in Mueller and Oppenheimer's (2014) study of student note taking with and without a computer. The study claims computer note taking impairs learning but this ignores their data showing no significant effect on recall in a test situation. The main point apparent in the data is students find the process of note taking significantly easier with a computer and consequently do not process the notes to the same extent with a resulting loss of deeper comprehension. This suggests the actual issue is the student's lack of skills in learning through the process of note taking rather than a technological failing.

Hembrooke and Gay (2003) report a difference in success rates of students engaging in different types of multitasking, as measured by the frequency of hits against a proxy server by the students while in class. Students who spend significant time on a single piece of content performed poorly, students who rapidly move between different content outperformed others. While limited by a small sample size, this suggests the type and focus of multitasking may be significant and some students may be more effective learners through the application of a multitasking information use strategy.

The positive use of devices is evident in Ragan et al. (2014). Students observed in class were found to use devices most commonly for note taking, although they were only observed to do so for a third of the lecture. This study is interesting because it involved direct observation of students in a natural setting using technology in a manner they chose. The limitations are the low sample size, the lack of contextual information about the students observed and the use of a single class context. A concern with this study is the students did not consent to be observed, and no mention is made of any consideration of the ethical issues involved in essentially spying on students.

The complexity of the issues around multitasking and cognitive skills is apparent in the work of Gaudreau, Mirnada and Gareau (2014). They identify five possible hypotheses affecting the correlation between learning outcomes of students and device use: a failure of individual students to self-regulate; a lack of individual motivation; addiction to the Internet and its various tools; poor skills for learning and time management; and disenchantment with the academic environment. They also note the need to consider a variety of contextual factors such as the size of class and, most importantly, the subject area being taught; factors which influence the pedagogical approach used by the teacher. Benbunan-Fich and Truman (2009) monitored student use of devices over a large number of sessions and noticed the behaviour of individual students varied significantly between different classes. Students are influenced by the content and delivery of different sessions, introducing a further complicating factor not accounted for in most of published studies of student multitasking. Finally, none of the studies listed appear to consider the impact that game playing or practice might have on the impact of device use in educational settings.

Rather than attempting to accurately measure a complex and nuanced set of cognitive differences, it might be more useful to consider why, when placed in a room with their peers and given the opportunity to learn, many students find

themselves drawn to use technology to complete other tasks. A number of researchers (Barry, Murphy, & Drew, 2015; McCreary, 2009; Taneja, Fiore, & Fischer, 2015) report students use technology when they find other student questions or contributions uninteresting or out of a sense of boredom with the class they are attending, reflecting a disengagement from passive models of delivery. This is consistent with the observations of Ragan, Jennings Massey and Doolittle (2014) who find student on-task use of devices was highest at the beginning and the end of a lecture but declined in the second half of the session. Aagaard (2014) points out that many studies embody the tautology that distractions result in distraction, so researchers need to distinguish between factors affecting attention and the intentionality of the studied subjects. Understanding and influencing the learning goals of students remains a key challenge, reflecting Prensky's (2001b, p. 4) observation that 'it generally isn't that Digital Natives *can't* pay attention, it's that they *choose not to*' (original emphasis).

Skill in learning and a sense of control over the learning process appear to be more important in determining the behaviour of students than their use of specific technologies in educational settings. The extent to which participants are interested appears to influence the impact of interruptions (Conard & Marsh, 2014). Students using technology for extraneous activities in a lecture setting are not being engaged by the class. They feel it is reasonable to attend to other tasks because they are not actively participating in something they feel needs and holds their full attention. Student feeling in this regard is emphasised by the publication of an open letter by a group of students in response to faculty criticisms of student device use (Barone et al., 2016) where they note:

> When [University of North Carolina, Chapel Hill Professor] Molly Worthen asks, for instance, why it is so hard for her to hold our attention for just 90 minutes a day, we are happy to tell her. Because it's rarely just 90 minutes of our day. At a university like ours, where thousands of students compete to fulfill their general-education requirements, it is lecture after lecture after lecture. For three to four hours of our day, we sit in cavernous rooms — with up to 800 strangers — where the professor doesn't know our name, let alone ask us to speak.

Interestingly, teachers working with students in different pedagogical models, such as the flipped classroom (Baepler, Walker, & Driesen, 2014; Bergmann & Sams, 2012; Crouch & Mazur, 2001; Roehl, Reddy, & Shannon, 2013;), appear to have no issues with students using technology and disengaging, perhaps reflecting the purposeful nature of the students' participation rather than the passive attention demanded by traditional lecturers focusing primarily on broadcasting information (Gehlen-Baum & Weinberger, 2014).

Finally, it is likely technology is already evolving and changing to take into account the limitations of human attention and other cognitive abilities. The development of Attentive User Interfaces (Vertegaal, 2003), software systems that adjust their behaviour in real time in response to observations of the user, may see a reduction in the distraction potential of software. Attentive software is smart enough to recognise that routine email messages should not generate distracting alerts while a user is busy typing or viewing media but urgent messages might

constitute an exception. More elaborate systems in development use cameras or devices like the Microsoft Kinect to monitor user gaze direction, position and gestures to modify the behaviour of software so it is not distracting. Responsive systems of this type appear to be of growing importance as devices like the Google Glass become common and encourage wearers to continuously mediate the real world with a digital overlay.

10.4 Conclusion: Deconstructing the Technocratic Narrative of the Digital Native

Understanding the long-term implications of student technology use is complex and is not been helped by the simplistic concept of the 'Digital Native'. The modern consensus is the idea has some truth but the initial conception is overblown and in reality, the actual differences are more subtle (Bennet & Maton, 2010; Bennet, Maton & Kervin, 2008; Jones & Shao, 2011; Kennedy, Judd, Churchward, & Gray, 2008; Salajan, Schönwetter, & Cleghorn, 2010; Selwyn, 2009). Jones and Shao (2011) find that while students are supportive of the moderate use of technology, allowing for an evolving sense of what constitutes 'moderate', they are not natural users of many highly visible technologies such as virtual worlds, wikis and blogs.

Treating Digital Natives as a coherent generational group lacks credibility. Explorations of the use of technology by American (Horrigan, 2007) and Australian (Kennedy, Judd, Delgarno, & Waycott, 2010) young people show the vast majority make minimal use of it, while sophisticated and heavy users constitute a small minority (8–14%) of their generation. It is interesting to compare the specificity framing the technological impact on education with the examination of the millennial generation by Howe and Strauss (2000; 2003). They carefully frame the millennial experience as a response to specific experiences throughout the childhood of that generation with parallels drawn to the experience of earlier generations experiencing similar environments. Nothing in the millennial analysis reflects an intrinsic cognitive or biological difference, instead the changing behaviours and preferences of recent generations show a response to a world undergoing dramatic social, economic, political and technological change (see Chap. 8) at a pace corresponding, through the twentieth century, to the pace of human reproduction. Jones and Shao (2011, p. 2) specifically note:

> Advice derived from generational arguments should not be used by government and government agencies to promote changes in university structure designed to accommodate a Net Generation of Digital Natives. The evidence indicates that young students do not form a generational cohort and they do not express consistent or generationally organised demands. A key finding of this review is that political choices should be made explicit and not disguised by arguments about generational change.

The danger of focusing on a generational narrative can be considered by examining the predictions of future responses from the millennial generation outlined over the last two decades by Howe and Strauss (2000). The dramatic impact of terrorism on politics and society, the effect of global economic downturns and the shifting patterns of employment responding to economic and technological change are all absent from these predictions. Arguably, these have influenced the millennial generation more than any legacy from the experience of earlier generations. The increasing interconnectedness of cultures responding to globalisation complicates the analysis as the millennial generation are, as a normal part of their life, exposed to peers with dramatically different experiences, perspectives and priorities.

Selwyn (2009, p. 371) notes that many of the assertions regarding Digital Natives 'gain credence not from their empirical substance but from their associations with wider moral and ideological debates over young people and digital technology'. Despite this, the persistence of the phrase 'Digital Native', the associated ideas of 'Digital Immigrants', and a raft of other identifiers including settlers, tourists, recluses, refugees, explorers, innovators and addicts (Palfrey & Gasser, 2008; Toledo, 2007), illustrates how powerful sense-giving can be as a way of framing the narrative around technology and the different ways technology is regarded and used.

The Digital Native metaphor has created an unhelpfully divisive dichotomy (Jones, & Shao, 2011; Salajan, Schönwetter, & Cleghorn, 2010) that may have further antagonised academic faculty already concerned with their own depth of understanding of different technologies and their sense that classrooms are changing. This may partially explain the negativity apparent in the responses from many academics, although there are also larger issues driving faculty reactions to technology and the associated organisational change approaches (see Chap. 4.2).

Irrespective of the term used to characterise heavy users of digital technologies, describing these differences as generational is unhelpful and alienating. Purposeful use of information technology is a skill that can be developed at any age (Rowlands et al., 2008; Thompson, 2013). As with the outrageous hairstyles and dress of teenagers in earlier generations, the visible, even provocative, use of technology by some young people may simply reflect a combination of the utility of the tools and the desire to distinguish one's self from those in authority. The negative responses of parents or teachers to such behaviour has rarely been either rational or ultimately effective; most people mature and discover their own norms as part of the construction of their identity (Beddington, 2013). This process is inevitably influenced by authority figures but needs to be achieved with some freedom for people to grow into healthy productive adults. A more important problem is how can people of any age be encouraged to see new technologies and tools as opportunities to constantly re-engage with their own identity and modes of work (Rheingold, 2012). Treating older people as second-class 'immigrants' or 'tourists' is unlikely to be supportive of such reinvention.

At its heart, this debate reflects the wicked problem's ambiguity about what education should be doing for students. Many of the existing measures of success, such as qualifications, assessments and grades, reflect specific processes and

techniques and are measures of activity or comfort with a cultural context as opposed to independent measures of qualitative differences in student capability (see Chap. 6). Potentially, many of these tools share the same weaknesses identified by critics of the IQ test with its assumptions about shared cultural capital (Gould, 1996). Awareness of this issue is one of the factors driving international engagement with graduate and generic attributes as a measure of the value of educational experiences (Adelman, 2009; Barrie, 2006; Barrie, Hughes & Smith, 2009; Spronken-Smith et al., 2013). Graduate skill in technology use is expected by employers and as Short (2014) notes, if students need to self-regulate their technology use to be successful, then they need to be supported in learning how to achieve that for themselves.

A change in classroom culture must be an inevitable consequence of the changing student demographic in institutions transitioning from élite to mass education modes. The growing student population possesses a different range of skills and experience reflected in their classroom behaviour. This growing demographic presents significant challenges, as issues of equity of access and opportunity prove more significant than intergenerational differences (Brown & Czerniewicz, 2010).

Institutions operating in the élite mode are unlikely to be interested in models that otherwise exclude students or generate divisive cohorts as these are inconsistent with induction in the élite community which frames the priorities of this mode. Under universal modes of education, the student is essentially autonomous and able to make choices for themselves about the pedagogical model and technologies used. Their preferences and choices are reflected in the context they choose for their own education and models such as the Digital Native will be irrelevant.

The combination of a focus on efficient scaling of education and a shift away from students as definitive stakeholders typifies the mass mode (see Fig. 4.4). This is where the conflict over student behaviour and compliance with institutional coping strategies will be the most apparent. Mandating that students all learn in the same way with the same tools is a way of minimising the cost and complexity of education as it scales. It may even suit the expectations of employers, as the more salient stakeholder, by simplifying the process of integrating new employees into similarly inflexible and controlled employment. While this has short-term efficiency benefits, it seems clear this is a strategy that will fail in the long term given the other changes in the economy (see Chap. 5) and systems of qualifications (Chap. 6) discussed earlier.

Chapter 11
Open Education: A Parable of Change in Higher Education

Abstract The MOOC is the contemporary equivalent of the Virtual University, repeating many of the failures of the earlier model as many universities continue to be swayed by transformational thinking and technological solutionism as solutions to their wicked problems. Application of the framework developed in the Virtual University analysis suggests ways in which the MOOC can be used to generate sense-making cues rather than repeat earlier failures. An important difference between the MOOC and the Virtual University is the apparently open nature of the MOOC, although this in reality is also a misconception. Engagement with the various ideas implied by the open concept can provide a useful sense-making tool enabling an alternative conception of the wicked problem of change and suggesting a range of alternative approaches for university leaders seeking strategies aligned to their specific contexts. An example of this is provided by the concept of the digital badge, designed as an open alternative to formal qualifications, but increasingly constrained by failed sense-making back into the same models.

> If nature has made any one thing less susceptible than all others of exclusive property, it is the action of the thinking power called an idea, which an individual may exclusively possess as long as he keeps it to himself; but the moment it is divulged, it forces itself into the possession of every one, and the receiver cannot dispossess himself of it. Its peculiar character, too, is that no one possesses the less, because every other possesses the whole of it. *He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me* [italics added]. That ideas should freely spread from one to another over the globe, for the moral and mutual instruction of man, and improvement of his condition, seems to have been peculiarly and benevolently designed by nature, when she made them, like fire, expansible over all space, without lessening their density in any point, and like the air in which we breathe, move, and have our physical being, incapable of confinement or exclusive appropriation. (Jefferson, 1813)

If any one thing defines the modern university, it is the focus on ideas and the value placed on free and critical engagement with the entirety of human knowledge. Thomas Jefferson was writing specifically about state control of inventions but his argument is generally applicable to all ideas. His comments provide a poetic

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summary of the issues underlying the motivations for open models of education, reflecting as they do the way education and ideas have wide social benefit which transcends attempts by special interests to restrict and control their use.

Jefferson's purpose was to argue against control, so the phrase '[h]e who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me' is not taken further but it is not hard to extend the metaphor and note that having shared one's light with another, both experience an environment filled with more light. This notion that sharing itself generates value is at the centre of the New Zealand Māori concept of 'Ako'. Although often simply translated as 'education', the word encompasses the relationship between learners and teachers and the benefit gained by both from the experience (Marshall, 2013b). The Welsh term 'dysgu' expresses a similar idea. There is no English word with a similar confluence.

The concept that increased use generates greater value (Reed, 1991) lies at the heart of the modern conception of the Internet. Companies such as Facebook and Google have generated business valued in the billions by enabling people to collaborate and share information in different ways. Earlier, the notion of positional versus material goods was described (see Sect. 6.1). A related idea is the economic concept of rival goods. Rival goods are those limited to a single use or person at a time. Positional goods are almost inevitably rival, while material goods may or may not be. An apple is a rival material good—it can only be eaten once—but when apples are plentiful, their rival nature is of no importance. Informational goods differ from material goods as they are typically non-rival and have costs of production or duplication that tend to zero as more copies are made.

Any discussion of the distribution of online goods is inevitably coloured by the way digital distribution is continually reshaping the music industry. Initially dominated by illegal distribution channels such as Napster (Greenfield, 2000), the music industry was substantially disrupted by Apple's release of the iPod and associated distribution model. A key point is the real disruption was not primarily technological. It is driven by a model of commerce that greatly reduces the transactional overhead for accessing and purchasing music and by a model of consumption that shifts control from the artists and distributors to the users. The music industry continues to rapidly evolve as falling wireless data costs enable users to access digital streams anywhere through services such as Spotify (Krietz & Niemela, 2010) and Apple Music (Apple, 2017).

As a result of these changes, users have many choices in how they access and use music in their lives. Although the music industry is not open, the modifications illustrate how expectations for information use are altering and influenced by a complex combination of technological, economic and political experiences. These changing expectations are part of a wider shift and a growing recognition of the value of openness in many contexts, including government (Her Majesties' Government, 2013b; Matei & Irimia, 2014; Orszag, 2009; Rushkoff, 2003) and education. This shift is generating sense-making cues and providing alternative narratives for the future of education, which is explored in more detail in this chapter.

11.1 What Does 'Open' Mean?

The concept of openness is a complex mix of ideas that in many ways mirror the wider complexity of change facing higher education. It is an interesting example of the way technology can interact with social, political and economic forces to generate a different model for making sense of a complex endeavour like education. In its simplest form, it rejects the dominant model of ownership and control underpinning many aspects of modern government, as exemplified by the legal and regulatory conceptions of copyright (Ku, 2002; Statute of Anne, 1710), and in education through the regulatory frameworks of the mass university in its enterprise forms (Marginson & Considine, 2000). The related conception of openness as an enabler of sharing is exemplified by projects such as Wikipedia (Sanger, 2005) and the Creative Commons (2017). There are a variety of additional and overlapping conceptions of openness that have very little to do with copyright per se. These include (Anderson, 2013):

- openness in a technological sense;
- openness as a social contract;
- openness as participatory democracy;
- openness as an alternative to the neoliberal market;
- openness as freedom of speech;
- openness to new ideas and experiences;
- openness removing the limits of geography and time.

Engaging with openness in only one way misses how the whole concept of open education provides a new model for individuals, institutions and society to achieve educational outcomes.

11.1.1 Open Technology

Technology has democratised many of the information and knowledge production tools and significantly lowered the cost of entry into many aspects of media production, including those used by academia. It is now common for people to engage in various forms of publishing using a wide variety of platforms freely available on the Internet, and this experience of independent creation and sharing is influencing norms and expectations of information access and publication throughout society.

The technological sense of openness has its roots in the first computer systems and the community of programmers and expert users that formed around them, particularly in universities. The open-source movement resulted from the experience of these people creating software as part of that community. They developed a set of cultural norms regarding software source code, the computer language instructions that tell computers what to do. Many software creators started their careers at universities and during the 1960s and 1970s experienced a culture of

sharing, exploring and changing software source code freely. There was little consistency between early computer systems. Hardware was evolving and new uses for software were being discovered as systems became more popular, so the freedom to reuse and modify was a practical response to the constant need to adapt source code. The development of cheaper computers and the explosion in their commercial use led to the creation of a commercial software market where software was sold as a finished product without the source code.

The open-source movement arose in response to the commercialisation of operating systems starting in the 1960s. Bell Labs staff created the Unix operating system after their parent company, AT&T, withdrew from the ARPA Multics project, and the new operating system rapidly became the core technology enabling the growth of the Internet. AT&T's decision to control access to the Unix source code in the mid-Seventies sparked the development of the open-source concept by Richard Stallman in conjunction with the creation of the open-source GNU operating system. Linux followed GNU and the development of open-source ideas became more philosophical, expanding beyond the code to the motivations and organisations of the people who wrote it. Richard Stallman expressed his opposition to the commercial control of software through the creation and promotion of a widely known set of software freedoms:

- Freedom 0: the freedom to run the program as you wish, for any purpose.
- Freedom 1: the freedom to study how the program works, and change it so it does your computing as you wish—access to the source code is a precondition for this.
- Freedom 2: the freedom to redistribute copies so you can help your neighbour.
- Freedom 3: the freedom to distribute copies of your modified versions to others —by doing this you can give the whole community a chance to benefit from your changes, access to the source code is a precondition for this. (Free Software Foundation, 2016a)

An important aspect of these freedoms is the recognition software code is not merely the instructions needed to undertake useful work but can embody mechanisms of control utilised to enforce models of use which may be harmful if allowed to become the only option available. Increasingly, it is recognised software can include surveillance features which, if not illegal, are certainly unethical and constitute a vector for criminal activity (Brown, 2015). The Internet and much of the modern WWW depend on open-source software written by people who generally agree with the intent of these freedoms, if not always in the same model or with the same passion as Richard Stallman. Ethical concepts of openness, sharing, removal of control and positive impact on local communities and wider society are captured in a statement of values known as the 'hacker ethic' (Levy, 1984).

Raymond (1998) describes the difference between closed and open-source development as being like the difference between a Cathedral and a Bazaar (Raymond, 1998). Closed source projects, often large and complex commercial enterprises, adopt a carefully planned and structured design controlled by a group of

insiders with the details concealed. Open-source projects like Linux are more chaotic, built by aggregation and argument, evolving in response to the needs of the participants. Emotionally, these two models reflect the difference between the solitude and control of the cloister and the lively human space of the eastern marketplace filled with unexpected discoveries. Parallels with the debates over the differences between formal university courses and programmes and the various models of open online courses are obvious.

One of the major challenges for advocates of the hacker ethic and software freedoms is the pragmatic reality that the international legal environment is oriented around control of information. By default, laws close access to information to create an economic framework where different uses can be exploited through artificial markets created by that enclosure. Further laws protect these markets by sustaining artificial barriers created by commercial interests. One way open-source practitioners work against these barriers is by using legal tools such as open-source licenses, which work within the legal framework to remove the elements preventing free access to and use of software. Licenses such as the Gnu Public License (GPL) (Free Software Foundation, 2016b) attempt to express the software freedoms within a legal framework strong enough to resist misuse and exploitation.

The open-source movement is widely credited with stimulating awareness of the need to build systems reflecting other forms of openness and raise their profile as important components of a free society. They are responsible for stimulating the creation of the concept of Open Education Resources (OER) (UNESCO, 2002; Wiley & Green, 2012), reusable educational content and activities licensed as open source, an important enabler of various models of open online education.

The MIT Open Courseware Initiative (OCW) (Forward, 2012), with funding from the William and Flora Hewlett Foundation (2016), is one of the first initiatives undertaken in line with this concept. MIT freely released much of the course content online, material they were already using or generating through their traditional teaching, such as recordings of lectures. In doing so, they are discriminating between the artefacts of a course and the social and intellectual reality of being a participant in the course.

Despite this distinction, much of the work on OERs is framed by a perception that students need teachers to provide a course, and courses are offered by institutions. Reusable and open educational resources, also known as learning objects, can encompass entire courses in theory but are normally scoped to address a single concept or topic. This idea is attractive but it founders on a number of fronts, including one known as the 'reusability paradox' (Wiley, 2001). To reuse course elements, they need to be created in so generalised a form, most of the valued components of formal learning are removed:

> The more context a learning object has, the more (and the more easily) a learner can learn from it … To make learning objects maximally reusable, learning objects should contain as little context as possible … Therefore, pedagogical effectiveness and potential for reuse are completely at odds with one another. (Wiley, p. 1)

Under this paradigm, the audience is, of necessity, an academic who can take a learning object and place it within a larger context or curriculum, who can assess student work and provide feedback, and who can ensure student learning meets the expectations of qualification accreditors. This model of reuse distinguishes between the resources that support student learning and the wider context or curriculum.

The MIT OCW stimulated an international re-examination of the concept of open education. Although it did little to directly change the experience of students, it is highly influential in stimulating other initiatives, including the MOOC. These open initiatives include the work of Salmon Khan, founder of the Khan Academy (Thompson, 2011), who started creating reusable learning objects for independent study by students. These are heavily used, with over 3 million followers on their YouTube channel. Teachers also use them, both formally in their own courses and as revision materials to supplement formal courses.

The most recent evolution is the idea the entire experience of a course becomes open. In its most ideologically pure sense, this is seen in the work of the Open Educational Resource University (OERu) (Mackintosh, 2016; McGreal, Mackintosh & Taylor, 2013) supported by UNESCO and an international consortium of educational institutions. In this model, everything is open in every sense of the software freedoms. There are no restrictions on access to the course or to any of its materials and any individual student, academic or organisation can make any use of the course, its structures and tools.

11.1.2 Open Societies

> The Open University, I suggest, is a kind of safety valve, a token institution by which a highly selective elite system defends itself by accepting in principle the existence of a different kind of university, not quite elite but not a mass university either, which reconciles "open access" with a commitment to the university standard for a first degree. While the Open University is nominally open, we know that more than half its entrants could qualify for entry to the universities or polytechnics. And what makes the Open University acceptable finally is that its degree is a genuine degree, up to national standard, attested so by the external examiners from other universities. (Trow, 1987, p. 287)

The positive impact of technology on communities referenced in the hacker ethic is reflected in the second sense of openness, that of social and moral openness addressing the creation and maintenance of an inclusive society. From an educational perspective, this conception of openness focuses on the removal of social, financial or intellectual barriers preventing access to education and is aligned with the shift to universal modes of education. The educational impact of openness as a social contract is typified by the United Kingdom Open University (see box).

The United Kingdom Open University Established in 1969, the United Kingdom Open University (UKOU) is a product of the shift to mass education driving a need for UK higher education to scale its capacity (Robbins, 1963) and the development of technology enabling such scale to be achieved without the construction of large numbers of new universities (Lee et al., 1966). Originally conceived as an 'University of the Air' by Labour leader Harold Wilson (Wilson, 1963), it was intended to have impact beyond the boundaries of traditional higher education:

> I believe a properly planned university of the air could make an immeasurable contribution to the cultural life of our country, to the enrichment of our standard of living (Wilson, p. 4).

The UKOU was not initially well received (Dorey, 2015; Woodley, 2007). The concept was extensively reworked into a more traditional form by an advisory committee to parliament who produced a White Paper setting out the policy parameters for the new university (Lee et al., 1966). The political process saw the UKOU described as a means of providing equality of access to higher education:

> Enrolment as a student of the University should be open to everyone on payment of a registration fee, irrespective of educational qualifications, and no formal entrance requirements should be imposed (Lee et al., p. 6).

The importance of technology as an enabler of the UKOU was recognised, the government planning committee stating:

> The only method of individual instruction capable of being made available everywhere, and capable of indefinite expansion as new needs arise, is correspondence tuition (Venables et al., 1969, p. 6).

At the time, this consisted of a mix of radio and television broadcast and the use of postal delivery to transfer course materials between the university and students. An interesting consequence of the use of public broadcast technologies was much of their course material was broadcast free-to-air, which anyone could use. As alternative technologies became available, the UKOU employed them. Since 2006, when they discontinued use of broadcasts (Read, 2006), many of their course materials remain freely available for personal use on the WWW. This unrestricted access is deliberate and seen by the Open University Planning Committee as providing an important mechanism for lifelong learning:

> …the University will have an important role arising from the changes in, and the increasing rate of change within modern technological society. … the University will be able to make a very special contribution through its combined services of broadcasting, correspondence courses, and residential short courses. (Venables et al., 1969, p. 4)

The UKOU is a strong supporter of online delivery and the OER concept, establishing the OpenLearn OER system in 2006 to provide open access to a substantial repository of educational resources (Gourley & Lane, 2009). OpenLearn does not reflect the full conception of openness. Content is licensed through a Creative Commons non-commercial shared attribution license and the additional conditions imposed by the UKOU make it clear they see this as a marketing initiative for their own provision, rather than a contribution to the open education community (The Open University, 2017). The OpenLearn initiative was extended and rebranded in 2012 as part of the UKOU-led FutureLearn MOOC collaboration, initially with eleven other UK universities (FutureLearn, 2012; Ratcliffe, 2012) and now involving nearly 70 from the UK, USA, Europe, Asia and the Pacific (FutureLearn, 2017a). This initiative signals a shift in the thinking of the UKOU leadership (Shaw, 2012), a point emphasised by the appointment of a former BBC executive into the role of FutureLearn CEO (Wilby, 2014).

The purity of the UKOU's model is marred by pragmatic realities beyond their lukewarm engagement with the full sense of open. Many of these realities reflect the position established in the 1966 White Paper. Much of the value of higher education is associated with the qualifications obtained (see Chap. 6). Awarding qualifications commonly requires expensive compliance with accreditation and quality assurance regimes. Students have to be able to live while learning, and for many the absence of a suitable job means the necessity of borrowing living costs or receiving student allowances, normally only available to formally recognised institutions. Finally, creating course materials is expensive, particularly if they comply with the accreditation and quality assurance requirements. Students need feedback on their work to support their learning, and assessment activities need to be created and marked by people expert in the field being learnt. None of this can be done for free. The UKOU needs revenue to sustain its activities, and, as with any other university, this revenue is obtained through a combination of fees and government subsidies. A consequence of dependence on government is the ability of the government to impose conditions that further mitigate potential openness.

The need to ensure government support is sustained means the UKOU cannot deliver education to everyone as the White Paper described. Analysis of student enrolments over its history shows the students admitted to and completing UKOU degrees are a selected population rather than reflecting the diversity of the wider UK population (McIntosh & Woodley, 1974; Woodley, 2007).

Lewis (2009) observes that the open entry of students has some significant consequences on the operation of the UKOU, reflected in its approach to educating a diverse cohort. These include the need to pay close attention to the setting and achievement of outcomes, supported by stringent and rigorous assessment; the need to provide clear information for potential students to

help them select appropriate courses and to help them prepare for their study; the need to provide strong academic and administrative support services tailored to the diversity of students and their settings; and the need to design courses and programmes that ensure student to student contact is educationally productive despite the diverse experience, skills and knowledge they bring to their study.

More recently, the UKOU has experienced considerable changes in its operations as a result of the changing funding environment in the UK and the Brexit decision in 2016 (Marginson, 2017). Significant funding challenges arose in 2008 when the government implemented a change in funding higher education, withdrawing support for students re-qualifying at a level equivalent to their highest existing qualification (The Open University, 2008). This change meant the university lost substantial revenue from students, particularly part-time students, who previously enrolled in order to change careers, an important part of the model of lifelong learning identified in its creation. The university was also affected by the dramatic cuts in public funding applied across all UK universities in 2011 (Sedghi & Shepherd, 2011; Willets, 2010) which saw fees rise significantly (Aitch, 2011). The UKOU's enrolments decline nearly 20% and revenues decline £35 million to a deficit of £16.9 million in the 2013–2014 academic year (Swain, 2015).

The challenges facing the university under a post-Brexit environment are likely to continue as it is unclear what effect changed relationships between the UK and the EU will have on the UKOU's strategies for growing its international business (James, 2016; Marginson, 2017). The general shift of universities to online and blended models enabling student flexibility of study suggests a more significant strategy than providing MOOCs will be needed to sustain the UKOU (Bothwell, 2016; Garrett, 2016). Their model is not a script for success in other contexts, as was seen in the discussion of their failed attempt to create a US version of themselves (see Sect. 9.1.6). The new environment they face in the twenty-first century is a new context that may prove similarly challenging to engage with. The recent appointment (Kemp, 2014) of a new Vice Chancellor, Peter Horrocks, former Director of the BBC World Service, and the earlier appointment as head of FutureLearn of the BBC executive responsible for leading the BBC iPlayer project (Wilby, 2014), suggests that the UKOU is increasingly aware that its future in a world transitioning to universal models may resemble a public media company more than an élite university (Havergal, 2016).

11.1.3 Open Democracy

The political instinct leading open-source advocates to articulate a model of collaboration explicitly rejecting commercial models is reflected in the sense the wider systems of government can be similarly improved. Open democracy is a political philosophy intended to reduce the coercive and secretive power of government and facilitate participatory democracy through open government (Her Majesties' Government, 2013b; Matei & Irimia, 2014; Orszag, 2009; Rushkoff, 2003). Often described as 'the technique or techniques through which the principles of openness and transparency are given effect' (McDonald, 2007, p. 636), this form of open government encompasses two principal strands of government activity, greater access to information for citizens beyond the minimum requirements enforced by law and greater participation by the public in decision-making processes beyond consultation.

The simplest form of open democracy is described as eDemocracy (Macintosh, 2004) or the use of ICT to engage with citizens: to gain access to information, to consult on government activities and to act as partners in the development of policy. A more ambitious model is open-source governance with a direct involvement of citizens in governance activities and systems:

> We define open source governance as a governing arrangement that promotes the usage of the open source production and development model as modus operandi for engaging citizens constructively across the boundaries of public agencies and levels of government, in order to enhance, via ICT platforms acting as a go-between, the design and the implementation of public policy, goods, and services. (Matei & Irimia, 2014, pp. 813–814)

Educationally, ideas of open governance are used to state a 'bill of rights and principles for learning in the digital age' (Seely Brown et al., 2013). This asserts everyone has the following rights as learners:

- the right to access;
- the right to privacy;
- the right to create public knowledge;
- the right to own one's personal data and intellectual property;
- the right to financial transparency;
- the right to pedagogical transparency;
- the right to quality and care;
- the right to have great teachers;
- the right to be teachers.

Completely open governance of education is a complex space. Consideration of the implications of the New Zealand Māori concept of Ako, or reciprocity in education in line with these last two 'rights', suggests an effective education process needs to embody a substantive recognition of the value of expertise and wisdom (Marshall, 2013b).

In practice, ideas of open democracy will influence higher education in different ways depending on the extent institutions are operating in élite, mass and universal

modes. Universities operating primarily in the élite mode will see alignment with the collegial governance role of the faculty, although slightly more disturbing is the realisation students have equal power and authority under a genuinely open collegial system. Open democracy is in direct conflict with much of the conception of mass education, particularly the concept of the enterprise university (Clark, 1998; Fayolle, & Redford, 2014; Marginson, & Considine, 2000) and academic capitalism in general (Slaughter, 1990; Slaughter, & Leslie, 1997; Slaughter, & Rhoades, 2004). This is unsurprising that it arose from a sense that neoliberal philosophies are damaging society in a variety of contexts and promoting the growing inequality apparent across the world (Giroux, 2014; Higgins & Larner, 2017; Larner & Le Heron, 2005; Self, 2000). Universal models of education are, in comparison, well positioned to incorporate open democratic ideals. Although, as the discussion on MOOCs (see below) illustrates, not all forms of universal provision are open in any sense beyond the simplest extent.

11.1.4 Open Economies

The operation of an open society and an open democracy is closely allied with the concept of an open economy. Here, openness rejects the model of the neoliberal market with its emphasis on speculation over direct contribution to local productivity and well-being. An open economy provides mechanisms allowing anyone to engage with the economy using the tools of collaborative open-source projects (Rushkoff, 2003).

Key to the concept of an open economy is transparency of the system and the importance of local, as opposed to global, activity. Individual contributions and benefits are directly visible, as are the mechanisms operating economic incentives and disincentives and these can be directly influenced by democratic mechanisms. A consequence of this approach is the local decoupling of economies from national and global economies in ways that prioritise stability over extreme growth.

Nelson (1974) with his Xanadu project and Lanier (2014) with his micro-transaction model for the modern Internet provide examples of open economy models. These are the basis of the Xanadu scenario (see Sect. 20.2.15), describing a future model of universal higher education offered through micro-transactions by a disaggregated scholarly community operating within a genuinely virtual university.

11.1.5 Open Speech

Freedom of speech and openness have a long common history. The first copyright law, the Statute of Anne, was supposedly enacted as '[a]n act for the encouragement of learning … for the encouragement of learned men to compose and write useful

books' (Statute of Anne, 1710, p. 261). In reality, the intention of this law was to perpetuate state censorship of works considered seditious or heretical (Goldstein, 2003; Rose, 1993). The close relationship of copyright law and control has shifted over the last three centuries, primarily to respond to economic interests with much of modern copyright law shaped by international treaties. Laws such as the US Digital Millenium Copyright Act (DMCA) (US Copyright Office, 1998) are created to impose legal frameworks enforcing models of information use, going beyond the expectations of wider society to protect existing business practices and create new mechanisms for monetisation of information (Stallman, 1997). Education is significantly influenced by this commercially driven legal agenda. As with the Statute of Anne, laws framed to support educational uses of information, such as the Technology, Education and Copyright Harmonization Act (TEACH Act) (US Congress, 2001) in the USA and the Copyright Amendment (Digital Agenda) bill (Australian government, 2000) in Australia, are in reality Trojan horses. These acts give teachers a limited ability to provide students with digital copies of learning materials but at the expense of complex compliance systems and, most egregiously, the requirement that teachers comply with a copyright education programme designed by commercially vested interests.

The freedom of access to digital information awakened by the Internet changed attitudes towards accessing any information. This is not limited to teenagers copying music illegally. It has started to influence academic attitudes to their research and teaching. One of the defining characteristics of academic work undertaken in universities is the degree of personal freedom many academics have in how they teach and engage in research. This unusual freedom extends to the ownership of copyright in much of what academics produce. Although by no means universal and unlike other employees, it is common for academics to own all of the copyright in their teaching and research materials (McMillen, 2001; Monotti, 1999; Springer, 2005). This reflects a pragmatic response to the volume of work created by academics and their intimate involvement in the publication of that work. Many of the tasks inherent to academic publishing are performed by academics. Commercial academic publishers depend heavily on the freely donated time of academics as editors, reviewers and as authors. This model comes under significant pressure from a variety of fronts.

Academics are increasingly aware of the ways various Internet tools can replace components of traditional publishing and distribution, and they are increasingly questioning why their work is not open to a wider audience (Weller, 2014). Many of the real costs associated with publishing are declining rapidly as electronic media replace the need for physical printing, distribution and inventory. Despite this, prices charged by the traditional publishers have increased dramatically, which is a major problem for universities facing declining support from public funds and pressure to reduce costs (Jha, 2012; Sample, 2012). Many large funders of research are requiring wider availability for the results of that research (e.g. see HEFCE, 2015; National Institute of Health, 2015; National Science Foundation, 2015). The last impediment to a significant shift in academic publishing is the need to establish

new ways for scholarly engagement to provide an effective peer-reviewed process and support recognition of individual scholarly contributions.

Academics are beneficiaries of work by people interested in creating mechanisms enabling open speech without requiring an unrealistic legal revolution. Influenced by the open-source licenses used with software, legal mechanisms exist to promote open access to other forms of information, dismantling many commercially motivated legal controls that discourage reuse and repurposing of media by individuals.

Creative Commons (2017) is a result of the open philosophy and is influential in the creation of open publishing initiatives in academia. Creative Commons licenses are an application of contract law as a means of communicating a more flexible model of information use than the default property regime of existing statutes which impose a choice between complete control or none at all, known as the public domain. Copyright owners select a license describing their willingness to let others copy, modify and share their work, completely openly or with a requirement of attribution or a restriction on commercial use. Creative Commons shared attribution licenses reflect a model of use very much in alignment with academic practices for scholarly work, such as citation and the reality that much research builds on the work of others.

Open standards are another example of open practitioners engaging with the complexity of the control systems established by commercial interests. Standards are powerful tools for creating important connections between different activities but they are also used to impose uniformity on information use. The dominance of the proprietary file standards created by Microsoft is an illustration of how a vendor can benefit from the control they gain over information interchange. Other strategies include the incorporation of patented technology in standards, or 'lock-in' (Updegrove, 2011), allowing vendors to gain a significant revenue stream and discouraging competition. The important development of educational standards for interoperability, such as the IMS Learning Tools Interoperability (LTI) (IMS, 2015), aims to reduce the power of vendors to exert monopoly power through standards lock-in.

11.1.6 Open Reasoning

The concept of open reasoning encompasses the willingness to accept new ideas and experiences without prejudice in order to apply reason and logic to their analysis (Bloom, 1987). This form of openness is fundamental to the idea of a free and just society. It is a necessary condition for inclusivity and respect for diverse cultures and capabilities.

Barnett (2000) expresses elements of this concept in his definition of the university as a site of universal knowledge:

> By 'universal knowledge' is meant not that the university should necessarily embrace all fields of knowledge – although in it should be represented a wide range of knowledge fields – but that it should exhibit an openness towards knowledge. It should understand that the boundaries of knowledge are nowhere fixed and that the source or character of legitimate ideas, qualifications and commentaries cannot be specified a priori (p. 72)

The German concept of 'Lernfreiheit', often simplified in English as the freedom to learn, captures much of the underlying sense of the values underpinning open reasoning:

> The German student alone has this perfect joy in the time, in which, in the first delight in youthful responsibility, and freed more immediately from having to work for extraneous interests, he can devote himself to the task of striving after the best and noblest which the human race has hitherto been able to attain in knowledge and speculation, closely joined in friendly rivalry with a large body of associates of similar aspirations, and in daily mental intercourse with teachers from who he learns something of the workings of the thoughts of independent minds. (von Helmholtz, 1877/1995, p. 176)

This sense of student intellectual autonomy described by lernfreiheit is inherent in the Humboltian model of the university (von Humboldt, 1903/1970). In combination with the equivalent expression of freedom for teachers (lehrfreiheit) and the right of self-governance (Freiheit der Wissenschaft; aligned to open government), these ideas are widely regarded as fundamental to the modern sense of academic freedom (Karran, 2009; Metzger, 1988).

In addition to academic freedom, open reasoning implies the need to develop and support what Pegrum (2009) describes as 'participatory literacy' (p. 38), the capability of people to engage productively with digital collaboration and content generation tools. Terras and Ramsay (2015) make the point that for educational experiences such as MOOCs to support openness, they need to do more than just support open provision; they need to include mechanisms to support effective learning. If students lack the necessary skills, social capital and anything else needed to succeed, then the course is pedagogically closed and inaccessible to that learner. Terras and Ramsay argue that, as a learner, success increasingly requires a range of metacognitive and self-regulation skills that are not always significant in traditional learning models.

Recognising the importance of open reasoning in this wider sense is also recognition of the fundamental fallacy inherent to the concept of the Digital Native (Chap. 10) and the disjunction in academic values apparent in faculty responses to student technology use. As stated by von Humboldt in 1903:

> The state must understand that the universities are neither a mere complement to the schools within the same category, nor merely a further stage in school. This conviction requires that the transition from school to university constitute a stage in the life of a young person which—when it is successful—brings him to point where physically, morally and intellectually he can be entrusted with freedom and with the right to act autonomously. (p. 246)

11.1.7 Open Provision

The final sense of openness is perhaps the most common. This captures the idea of uncontrolled access, including geography and time, as exemplified by the Internet. Much of the Internet is built on implicit ideas of open provision. Early Internet systems were completely open to the extent any user could access any file on any system. The WWW extended this openness by creating a standard environment for accessing information, reducing the technical barriers and opening access to the wider population.

It is this sense of openness that has the most visible impact on thinking about new models of education. The UKOU, discussed earlier, is an obvious expression of the value of open provision to society. The MOOC, discussed in detail below, is an example of openness in the sense of access. Described by Wiley and Green (2012) as 'open teaching', it can simply mean using the WWW to publish openly course documents such as syllabi and assessments, using open resources as primary sources, and using online collaboration tools such as social media rather than closed university LMS facilities.

Despite its importance, open provision is a necessary precondition of open education but is not sufficient in itself. The other forms of openness described above are interconnected by shared values and aspirations, and they work synergistically to create a powerfully enabling vision of education in an open and free society. The next section analyses the most recent attempt to create a tangible incarnation of that vision and assesses the extent to which the MOOC has failed to deliver on that promise.

11.2 Massive Open Online Courses

MOOCs do what the external world thinks that University teachers do (Guzdial, 2013)

The first course generally recognised as a massive open online course, or MOOC, was offered by George Siemens and Stephen Downes in 2008 (Cormier & Siemens, 2010) but the MOOC really exploded as an idea following Stanford Professor Sebastien Thrun's decision to open access to a Stanford Artificial Intelligence course to the world, attracting hundreds of thousands of participants (Markoff, 2011). The term was a nod to the large-scale online games known as massively multiplayer online games, or MMOGs, which, in various forms, have operated on the Internet for decades (Bartle, 1996). Educationally, as the virtual university concept faded, MOOCs were anticipated for some time (Hill, 2012) with the general concept of a 'megaclass' ('A Distance Learning Forecast', 1999). Bok (2003) was prescient in his description of the MOOC some years before it attracted wider attention in the media:

> The way to make big money with the Internet is to attract large audiences with polished lectures by well-known figures, supplemented by attractive visuals and carefully crafted materials, but with a minimum of feedback and interactivity in order to keep down marginal costs and take full advantage of economies of scale. The courses that result may seem attractive, but they will fall far short of achieving the full potential of the new technology. In order to enlarge the size of their audience, providers will favor simpler material over more intellectually demanding coursework. By minimizing interactivity, they will cause their students to learn less. In these ways, the profit motive will lead universities to offer inferior instruction by trading on their reputation and on the gullibility of their students. (Bok, pp. 170–171)

Initially offered to a small class of paid students, the first MOOC was also offered as a free and open course attracting over 2300 enrolments. This initial type of MOOC is described as a cMOOC, reflecting the connectivist pedagocial approach and an open ethos (Siemens, 2004; Wiley & Green, 2012, p. 88), in order to distinguish it from the content focused large-scale alternatives, labelled xMOOCs (Daniel, 2012), that now dominate the MOOC landscape as Bok predicted. This binary distinction is increasingly unhelpful as the range and diversity of different pedagogical models described as MOOCs proliferates (Bayne & Ross, 2014; Conole, 2013; Nkuyubwatsi, 2013; Veletsianos & Shepherdson, 2016).

MOOCs have sparked an international interest in alternatives to the current model of higher education. Perhaps because of the pressure on funding or perhaps because they benefit from another cycle of Internet hype, the MOOC has seen the creation of a number of high-profile partnerships including Udacity (2017), Coursera (2017a), edX (2017a) and FutureLearn (2017a). These partnerships, or consortia, are working together to rapidly expand the range of courses offered (Fig. 11.1). According to Shah (2016), the top five MOOC providers report over 38 million users—Coursera: 23 million; edX: 10 million; XuetangX: 6 million; FutureLearn: 5.3 million; Udacity: 4 million—although it is likely many of these have only undertaken a small number of MOOCs.

MOOCs are normally created by experienced academics either currently or recently employed by prestigious institutions. They use a combination of modern Web 2.0 tools to produce, distribute and administer the courses at a very low cost to tens of thousands of students simultaneously in many countries. The important thing MOOCs do not do is provide a qualification:

> Unless otherwise explicitly indicated by a credit-granting institution, participation in or completion of a course does not confer any academic credit. Even if credit is awarded by one institution, there is no presumption that other institutions will accept that credit. You agree not to accept credit for completing a course unless you have earned a Course Certificate (or other equivalent Coursera credential) for that course. Coursera, the course instructors, and the associated participating institutions have no obligation to have a course recognized by any educational institution or accreditation organization. (Coursera, 2017b, n.p.)

> When you take a course through edX, you will not be an applicant for admission to, or enrolled in, any degree program of the Member as a result of registering for or completing a course provided by such Member through edX. You will not be entitled to use any of the resources of the Member beyond the online courses provided on the Site, nor will you be

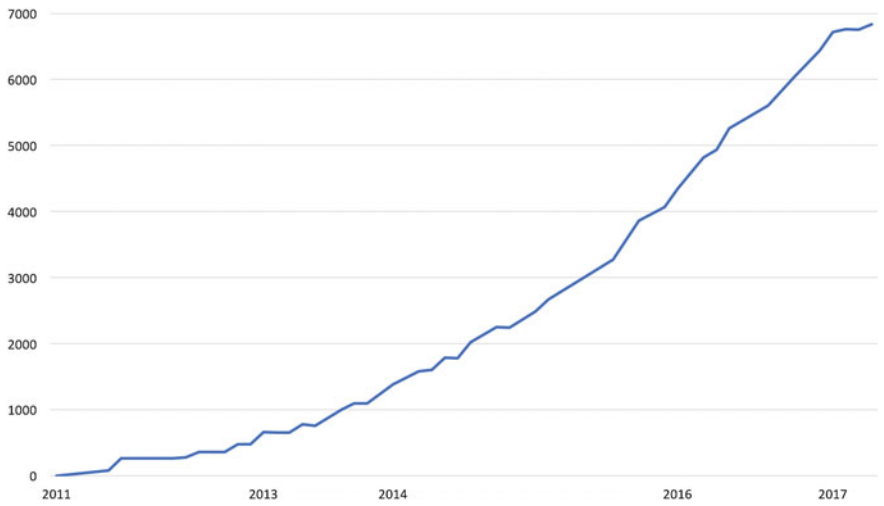

Fig. 11.1 Growth in MOOCs launched (data from Shah, 2016a). Note this shows MOOCs launched by providers; the majority are no longer available (Young, 2016b)

> eligible to receive student privileges or benefits provided to students enrolled in degree programs of the Member. (edX, 2017b, n.p.)
>
> You acknowledge that, unless expressly stated at the time of purchase, any Product will not be affiliated with any university or other certifying institution, and will not stand in the place of a course taken at an Partner Institution or convey academic credit or certification for any Partner Institution and you acknowledge that the Course Administrator will not be obligated to make any attempts to get the course recognised by any Partner Institution or other educational establishment. (FutureLearn, 2017b, n.p.).

The MOOC was met with scepticism (Carr, 2012; Delbanco, 2013; Mazoue, 2013; Sharma, 2013), despite evidence that some pass the minimum expectations of online course quality used by many universities (Adair, Alman, Budzick, Grisham & Mancini, 2014; Lowenthal & Hodges, 2015). The MOOC phenomenon parallels the Virtual University in many ways, and the analogy with the earlier analysis (see Chap. 9) provides an opportunity for sense-making about the MOOC's potential for universities and systems operating within or transitioning between combinations of élite, mass and universal models.

11.2.1 The Race to Be the First to Succeed

The belief in the technocratic inevitability of large-scale online education returned with the creation of a simple narrative, much as Internet businesses managed to re-establish themselves following the first major market crash. MOOC, like Digital Native, acts as a meme embodying a widely held desire for a disruptive transformation of education.

Initially, the MOOC was pushed heavily by early proponents. Stanford Professor Sebastian Thrun, founder of Udacity, stated: 'I think we found the magic formula' (quoted in Gingrich, 2013, p. 46) and his Stanford colleague, Coursera founder Professor Daphne Koller averred: 'This is a wholesale change in the educational ecosystem' (quoted in Cadwalladr, 2012, n.p.). EdX founder and MIT Professor Annant Agarwal ambitiously claimed: 'It's going to reinvent education. It's going to transform universities. It's going to democratise education on a global scale. It's the biggest innovation to happen in education for 200 years' (quoted in Cadwalladr, 2012, n.p.).

Proponents of online education were quick to draw parallels with the disruption of music caused by digital distribution. Shirky (2012) describes MOOCs as the 'Napster moment' for education. Blake (2012) proposes 'jail-breaking' education into components in the way modern music services break albums into individual songs. Disruption is the focus of a Time Magazine article reporting the use of MOOCs by Pakistani children: 'several forces have aligned to revive the hope that the Internet (or rather, humans using the Internet from Lahore to Palo Alto, California) may finally disrupt higher education' (Ripley 2012). Former UKOU Vice Chancellor Sir John Daniel describes MOOCs, perhaps more cautiously, as 'the educational buzzword of 2012' (Daniel, 2012).

Others were less reticent. Stanford President John Hennessy describes MOOCs as a 'tsunami' for higher education (Auletta, 2012; Brooks, 2012), and the New York Times (Pappano, 2012) declares 2012 as the year of the MOOC. The MIT Technology Review was unambiguous: '[MOOCs] are the most important education technology in 200 years' (Regalado, 2012, n.p.).

The hype mirrored the virtual university growth predictions by Merrill Lynch (Moe, & Blodget, 2000) with staff from education services vendor Pearson describing an 'avalanche' of technologically enabled education providing access to the élite education curriculum for anyone (Barber, Donnelly, & Rivzi, 2013). The New York Times also predicts a 'tsunami' hitting higher education (Brooks, 2012) and the Washington Post characterises MOOCs as providing 'élite education for the masses' (Anderson, 2012), quoting A. Burns, dean of faculty at Cornell University:

> The real question is, if you start to get very good online MOOCs, why do you need a university? … And what does an Ivy League university bring to the table? What do you give to students that they can't get sitting at home and eating potato chips?… The campus ideal of a teacher and five students crowded around their feet on a sunny lawn or something like that — that's gone. (n.p.)

Unsurprisingly, politicians were quick to ignore history and assume technology was the solution to the challenging issues of funding education and upskilling the population. UK science minister David Willets states that MOOCs 'will revolutionise conventional models of formal education' (Wilby, 2014, n.p.). In many countries, interest is reflected in a surge of White Papers and reports (Austrade, 2013; BIS, 2013; Gallagher, & Garrett, 2013; President's Council of Advisors on Science and Technology, 2013; Shrivastava, & Guiney, 2014), many of which are

quick to acknowledge the MOOC has been overhyped by media, generating a herd mentality and a 'stampede to produce MOOCs' (BIS, 2013, p. 3).

As with the Virtual University, a major motive for rapid involvement of many universities around the world in the various MOOC consortia seems to be the fear the MOOC represents a disruptive shift, similar to that created by Apple or Google. Young (2012b) notes that university leaders involved in MOOC consortia are concerned about losing revenue to a new model. 'Most of us are thinking this could be a loss of revenue source if we don't learn how to do it well … These are high-quality potential substitutes for some of what universities do'. The panic this engendered is illustrated by the sacking and then reinstatement of the president of the University of Virginia for adopting an incremental growth strategy with regard to any shift to online delivery (DeSantis, 2012, July 17).

The promised transformation of higher education has not occurred and universities that are taking their time and reflecting on the value of different approaches (Brown, Costello, Donlon & Giolla-Mhichil, 2015) appear to be suffering no harm. The MOOC has illustrated once again that the network effect has little value and MOOC students are driven more by their interests in specific subjects than by the brand of the MOOC and its myriad of university partners (de Barba, Kennedy, & Ainley, 2016; Pursel, Zhang, Jablokow, Choi, & Velegol, 2016).

11.2.2 Sustaining the Cost of Business in a Dynamic World

The Virtual University was driven by the belief it would generate vast revenues. The failure to do so led to S. Carr's 2001 observation 'they certainly won't do it the way that we did it' in reference to the high upfront costs of the Virtual University and the subsidisation by universities and venture capitalists.

A decade or so later, most MOOCs are once again funded on the back of massive upfront costs obtained from universities, philanthropic funds and venture capitalists increasingly looking for massive returns from a new sector of the economy (Holdaway, 2013; Singer, 2015). The vast array of educational start-ups and ventures funded over the last five years is illustrative of the interest and very reminiscent of the early years of the millennium (CB Insights, 2016). The business model for the MOOC consortia is the educational equivalent of fossil-fuel strip mining and just as unsustainable (Annand, 2015).

The unsustainability arises from a disconnection between the costs, direct and indirect, of developing each MOOC and the absence of any direct revenue of any substance. The costs of creating individual MOOCs are variously estimated at US $35,000–US$350,000 (Burd, Smith, & Reisman, 2015; Hayward, Woodgate, & Dewhurst, 2015; Hollands & Tirthali, 2014; Son, 2015) but it is unclear whether these estimates include the cost of reuse of existing courses and materials created by academics and universities as part of their normal business. Membership in a MOOC consortium is an expensive proposition, as is the time of staff who support the delivery of MOOCs, particularly if academics wish to remain involved. Also

missing from these estimates is a detailed assessment of the cost of preparing and licensing content, as MOOCs cannot depend on the copyright licenses and agreements of the universities offering them.

In their contract with partner institutions, Coursera identify the following monetisation strategies as options for the collaboration:

- certification (students pay for a badge or certificate);
- secure assessments (students pay to have their examinations invigilated (proctored));
- employee recruitment (companies pay for access to student performance records);
- applicant screening (employers/universities pay for access to records to screen applicants);
- human tutoring or assignment marking (for which students pay);
- selling the MOOC platform to enterprises to use in their own training courses;
- sponsorships (third party sponsors of courses);
- tuition fees. (Young, 2012b).

There is no evidence any of these generate a substantive contribution to the revenues of the participating universities. Potentially, the recognition of this lack of a plausible business model is responsible for the lack of any real growth in the number of universities choosing to offer MOOCs. The reported number of institutions saying they believed MOOCs to be sustainable fell from 28.3% in 2012 to only 16.3% in 2014 (Allen et al., 2016).

The risk to universities operating unsustainable MOOCs is creating, within the minds of politicians and other stakeholders, the perception that the costs of higher education are indeed amenable to a technological solution. The narrative attached to the MOOC phenomenon, with its seductive suggestion of free education for all, runs the risk of damaging the perceptions of these stakeholders to the value and nature of higher education pedagogy and qualifications. Institutions need to have communication strategies that convey the underlying value of formal offerings, demonstrating a willingness to respond to the real concerns of the different stakeholders and reassuring those committing to the institution that the educational models in place are going to generate significant outcomes, including the approach taken for MOOCs.

Historically, many higher education institutions enjoyed a relatively protected status within society. In times of economic hardship, that protection cannot be depended upon. Price sensitivity is evident, if somewhat influenced by the complex interplay of student finance. The perception of the impact of qualifications on future employment and earnings (see Chap. 3 and 4) is also noticeable. Many countries have substantial public investment in higher education but this model is becoming hard to sustain and models of economic rationalism are increasingly apparent. Universities are seeking ways to diversify their revenue streams and find means of operating free of government control. By subsidising a model with their existing systems, courses and staff, and not generating revenues to sustain and build these,

universities are damaging the case for ongoing public funding and reducing their capacity to invest in other strategies that might deliver genuinely sustainable models.

11.2.3 IT Doesn't Matter

Despite the MOOC eponymously depending on technology for online delivery, technology is remarkably unimportant in shaping the impact of MOOCs. Most incorporate very little technology, essentially replicating a linear model of content structuring and presentation resembling many online courses developed over a decade previously, upgraded with higher quality video (Storme, Vansielegheim, Deleminck, Masschelein, & Simons, 2016). Many experienced online educators criticise the majority of MOOCs for the poverty of their design. They lack meaningful interaction with peers and with teachers, they use simplistic assessment models aligned primarily with recollection rather than cognitive development, and they are without any substantive mechanism for informed feedback aimed at stimulating ongoing learning (Baggaley, 2013, 2014; Margaryan, Bianco, & Littlejohn, 2015). Harvard Professor Eric Mazur, a highly respected innovator in pedagogical practice with technologies, including classroom feedback systems and the flipped classroom, is quoted as saying:

> What is really worrying is that people are jumping on the massive open online course bandwagon, taking a failed model and putting it online. We need to rethink how people approach teaching (Eric Mazur, quoted in Parr, 2013, n.p.)

Much was promised in the initial excitement of the MOOC. Technology, in the form of data analytics and artificial intelligence, was going to provide evidence of the impact of new pedagogical structures and provide students with high-quality feedback on a rich range of learning activities and assessments. In practice, there is little evidence of analytics being used for anything other than marketing and the assessment marking systems remain no better than the first computer-assisted learning programs.

Still, researchers are actively exploring the role technology might play in improving the pedagogical quality of MOOCs. Bayne (2015) describes the development of a system facilitating engagement with students, helping staff provide a more responsive experience but also illustrating the challenges still requiring a solution before the tool has any real value. Similar experiments are creating tutors for online courses in artificial intelligence (Maderer, 2016) and helping school students learn maths (Devlin, 2016). To be successful, such systems require a substantial analysable knowledge base to provide responses to students. As yet, they are still too dependent on extensive tailoring and involvement of people.

Despite this work, it is clear that while dependent on technology for their delivery at scale, MOOCs remain very similar across all providers. There is no evidence they are informing strategies for new modes or new forms of education

and neither are they differentiating any university as more technologically capable. If anything, the generic nature of the vast majority of MOOCs is emphasising the point Nicholas Carr made in 2003—the commodity technology involved means that any real value of MOOCs lies in the execution of the broader strategy they contribute to.

11.2.4 Faculty Engagement with MOOCs

Academics are the stakeholder group with potentially most to lose from the growth in MOOCs, or the most to gain. MOOCs are ultimately repositioned as part of a diversity of online models. The very first MOOC was entirely a faculty initiative (Cormier & Siemens, 2010), and the ease by which Websites can be created and promoted means there are now many cMOOCs offered by academics as individual initiatives without any support, or likely any awareness, of their university. The MOOC arose from academics who chose to develop courses and systems in their own time and without payment.

Many universities have an explicit intention that their staff engage in work to the benefit of the community; however, there is usually a clause in the employment contract preventing actions contrary to the viability of their employer. MOOCs that function as developmental aids, which act to raise the awareness of specific disciplines, or serve as transitions to formal education are one thing; MOOCs which establish a competing system of higher education might be quite another. The growth of MOOCs can easily see many of the unique elements of academic copyright ownership revisited by institutions that do not already claim ownership in teaching materials. Relationships with textbook publishers can also change. Currently, many institutions regard staff publishing texts as a positive thing. This may alter if the publishers start to look less like partners and more like competitors. The MOOC also provides a mechanism for exploiting open resources at scale, which may result in faculty being increasingly prevented from using open licenses for their teaching materials.

The vast majority of MOOCs are institutional activities undertaken as part of a substantial investment in a MOOC initiative and as part of a major MOOC consortium. MOOCs operating through the large consortia show every sign of repeating the errors made in the faculty engagement strategies of the virtual universities. There is little evidence that staff are substantively rewarded for their efforts in creating MOOCs and it is unclear, particularly when the novelty and reputational value fade, whether there will be ongoing support and recognition for academics engaging in MOOCs. In many cases, MOOC selection and promotion processes appear to operate outside normal systems of academic governance, much as with the Virtual University. Consequently, it is not hard to see their operation shift away from the core academic values of the university into purely operational activity undertaken by professional staff.

Beyond the potential degradation in their freedoms, academics also face potential loss of jobs arising from growth in MOOCs. The pressures are internal and external. The success of MOOCs and their supporting systems are used to ask questions about the need to employ academics to teach courses at all, particularly in introductory topics or in areas of highly structured knowledge such as maths and computer programming. If teaching staff are needed, perhaps only teaching assistants and tutors, adjunct faculty, are necessary. The risk of an expansion of low-cost provision on the security, such as it is, of academic employment is readily apparent and has seen some universities cancel MOOC plans (Heller, 2013; Vardi, 2012).

There is evidence MOOCs are assisting academics in their own understanding of online learning. MOOCs have potential as a mechanism for development of faculty, in terms of their skills as teachers in online modes and as participants in a wide variety of professional development opportunities. Many existing participants in MOOCs state they are validating or refreshing existing knowledge and skills. This suggests faculty will also benefit from opportunities to do so. Evidence indicates that educators are a significant demographic in the MOOC student population at around one-third (Chuang & Ho, 2016; Fabris, 2015d; Seaton, Coleman, Daries, & Chuang, 2015).

Despite the involvement of some academics, a recent survey of US chief academic officers (Allen et al., 2016) found that only 29.1% believed their faculty accept the value and legitimacy of online education. This is lower than the figure reported in 2003 (Allen & Seaman, 2005, p. 13) and falls to barely over 10% in universities without any distance offerings. Fifteen years of growing use of technology still show no real shift in the perceptions of the majority of US academics regarding the value of online education. As noted with the Virtual University, it seems likely that this disengagement reflects a lack of a compelling strategic narrative communicated effectively to the academic staff of many universities.

11.2.5 Managing Collaborations with Diverse Partners

As with virtual universities, MOOCs are defined by extensive collaborations with a wide range of educational partners (Baggaley, 2014b). Table 11.3 summarises some of the prominent MOOC collaborations and the large number of universities and other organisations participating in them. Despite the prominence of the universities taking part, only 11.3% of US higher education institutions currently have MOOCs and 58.7% report no plans to do so (Allen et al., 2016).

In total, these collaborations represent a remarkably small number of universities, less than 350, or less than 10%, of universities considered to have sufficient profile to warrant inclusion by the QS World University ranking organisation (Quacquarelli Symonds, 2017b).

The primary value of collaboration appears to be shared investment in the MOOC delivery platform and collective marketing and management of the students. Other than annual conferences, there is little evidence of any genuine

Table 11.1 MOOCs and Similar Large-Scale Online Education Initiatives (data sourced from organisation Websites as of January 2017; note that partners includes a range of non-university organisations)

Name	Founded	Model	Collaborating partners
Coursera	2012	For-profit xMOOC	149 partners in 29 countries
edX	2012	Non-profit xMOOC	MIT, Harvard, and 48 other charter members, 57 ordinary members
Udacity	2012	For-profit xMOOC	University of Alberta, San Jose State University, Georgia Institute of Technology, Colorado State University Pearson VUE, AT&T, General Electric
OERu	2011	Completely free licence non-profit	Open University and 23 other universities worldwide
FutureLearn	2012	Open model, details private	122 partners in 20 countries

collaboration occurring in ways that change the capability or activities of the partner universities. Dublin City University assesses there is no clear advantage in any one of these collaborations (Brown et al., 2015) which illustrates the minimal value the consortia have achieved through collaboration, consistent with the virtual university experience.

11.2.6 The World Is Not That Flat

In another parallel with the Virtual University, proponents of the MOOC were quick to describe the technology as enabling the entire world to access higher education, automatically assuming western universities needed to do this for other nations. Udacity founder Sebastian Thrun is quoted as saying:

> I'm much more interested in bringing Stanford to the world …I see the developing world having colossal educational needs. (Markoff, 2011, p. A11)

Coursera founder Daphne Koller states that the MOOC is aimed at a global audience but seems unaware of the assumptions she makes about education and what might constitute 'best' in that global setting:

> we formed Coursera, whose goal is to take the best courses from the best instructors at the best universities and provide it to everyone around the world for free. (Koller, 2012)

Similarly, edX president Anant Agarwal shows no awareness of the value of cultural context or diversity when he wrote:

> One way Moocs have changed education is by increasing access. MOOCs make education borderless, gender-blind, race-blind, class-blind and bank account-blind. (Agarwal, 2013, n.p.)

The positioning of MOOCs in this way is consistent with the general trend of economic globalisation (Chap. 3.1). There are many critics who see this conception as a form of educational neocolonisation or homogenisation reproducing and sustaining privilege and inequality (Altbach, 2013; Barlow, 2014; Mok, 2007; Rivard, 2013; Sharma, 2013):

> Because the MOOC movement is dominated by providers eyeing the world 'market' for education, whatever they proclaim to be their motive, their attempts to make MOOCs 'accessible' to international learners goes to show that they are either ignorant or unwilling to acknowledge geopolitical dynamics that shape learning experience on a global scale. (Sharma, 2013, p. 3)

Kamenetz (2013) gives the example of MOOCs used by US embassy staff to promote US government policies and politics, an obvious attempt to influence local culture through an educational activity aimed at young people already affected by global media. As with any form of colonisation, the issue is the impact this has on the development of these countries: 'The danger in overreliance on global MOOCs is that they don't build local capacity for education, research or knowledge creation in the education sector' (n.p.).

Although largely hypothetical, there is evidence MOOCs are perpetuating discrimination in some countries as they are disproportionately being taken by men and enrolment requires access to expensive equipment and international Internet service (Robertson, 2015). The use of MOOCs as a cheap strategy to address the educational needs of disadvantaged groups perpetuates inequality by reducing the pressure to provide formal qualifications and education delivering more substantive outcomes (Marshall, 2014a), essentially trading quality for quantity and failing to address the systemic causes of educational disadvantage (Dore, 1997b).

Despite these concerns, and the genuine desire of many MOOC proponents to improve access to education, there is evidence that participation in MOOCs by people from many countries in Asia and Africa is limited at best (Christensen et al., 2013; Chuang & Ho, 2016; Ho et al., 2014; Liyanagunawardena, Williams, & Adams, 2013; Nesterko et al., 2013). This low use probably reflects the lack of access to infrastructure and support for many students, particularly those outside urban centres. Analysis of certification rates in relation to the World Bank HDI (Chuang & Ho, 2016, p. 7) suggests the MOOC is impacting developed countries more than less developed ones, with the exception of a small number of specific initiatives such as the edX and Facebook project in Rwanda (Biemiller, 2014). Laurillard (2014) observes that MOOCs are primarily used by already qualified male professionals and are hardly of value to the developing audiences most in need of effective educational interventions.

The disconnection between the cultures of MOOC creators and international students also discourages participation. Typically, MOOCs are not open, they cannot be adapted or modified by local educators to reflect particular cultural, social and educational contexts relevant to the students (Liyanagunawardena et al., 2013). The solution is to create local MOOC platforms capable of respecting local laws and customs. Both edX (edX, 2014; Rocheleau, 2013) and Coursera (Strausheim,

2013) have partnered with Chinese universities to create successful MOOC platforms, XuetangX and Coursera Zone, allowing millions of locally registered students to take a mix of locally developed courses and translated versions of courses provided by international universities (Shah, 2015; Shah, 2016; University of Queensland, 2016). As Marginson (2004b) notes the solution to local provision of education in China must be a Chinese one if it is to be acceptable to their business customs, local laws and regulatory environment (Forestier, 2013; Xinying, 2015). Similar solutions are needed for each country, suggesting the scale of the MOOC may ultimately be framed by specific contexts.

11.2.7 Reputations and Brands

The fallacy of transformational thinking and technological solutionism is often expressed in the alignment of a brand with a sense of the sublime nature of technology (Kasson, 1999). Both the Virtual University and the MOOC operate within a marketing narrative linking the use of the particular model of online learning with a reputation for excellence. The myth of the MOOC links the élite education of Stanford, MIT and Harvard with the apparently transformative power of the Internet to disrupt higher education and produce a Napster moment. As Littlejohn (2014) points out, there is a subtle but important distinction between the altruism of the MOOC myth and the hard realities of higher education marketisation when engaging in open initiatives.

Pragmatically, the brand of the MOOC appears to be fading. The association of early MOOCs with the top universities is seen by some critics as providing the MOOC with an unearned sense of legitimacy which is declining as the MOOC becomes more familiar (Selwyn, Bulfin, & Pangrazio, 2015). Although the numbers of institutions involved in the various consortia is not a large proportion of the world's universities, there is very little exclusivity in these arrangements. Surveys of institutional leaders report interest in the value of MOOCs to increase the visibility of an institution (Allen & Seaman, 2014) and as a showcase of institutional activities and staff (Falconer, Littlejohn, McGill, & Beetham, 2016) but there is a sense of uncertainty that this will continue to be true (O'Connor, 2014). Reputational positioning is important to all universities, and there is evidence that assessing the role of the MOOC is becoming a more complex proposition (Brown et al., 2015).

11.2.8 Not All Qualifications Are Created Equal

A major difference between the initial conception of the MOOC and the motivations for the Virtual University is the framing of MOOCs as courses but not as qualifications. Early MOOCs are framed around the learning experience, and while

structured like courses in formal qualifications, they are not intended to operate formally and produce anything more significant than a certificate of participation. The first MOOCs include explicit statements during the enrolment process distinguishing the MOOC from the formal qualifications of the host university.

The sense that the MOOC is an educational experience more akin to a good book is noted by Laurillard who critiques the MOOC as the '21st-century answer to the public libraries of the 20th century' (MOOCs Hotly Debated, 2013). The informality of the MOOC experience is apparent in the data on student persistence and motivation. Many studies continue to show a pattern established in the early days: high initial interest followed by much lower actual commencement and even lower completion of the planned set of learning activities (Belanger & Thornton, 2013; Breslow et al., 2013; Christensen et al., 2013; Clow, 2013; de Barba et al., 2016; Koller, Ng, Do, & Chen, 2013; Lindeore, 2013; MOOCs@Edinburgh Group, 2013; Pursel et al., 2016). Studies of students' motivations to enrol and engage with MOOCs are generally inconclusive; a common theme is student persistence is associated with the extent of their interest in the specific subject, rather than in the MOOC model itself (de Barba et al., 2016; Pursel et al., 2016). Where the option exists to obtain a certificate, well under 10% of MOOC participants actually do so (Belanger & Thornton, 2013; Chuang & Ho, 2016), even when a large proportion claim to be intending to gain certification (Chuang & Ho, 2016).

Further evidence of a lack of student interest in the MOOC as qualification per se is apparent in the multiple failures of early attempts to link MOOCs with various credit-bearing outcomes. Colorado State University, in partnership with assessment provider Pearson VUE, was quick to become the first university to award formal credit to students completing MOOCs (Mangan, 2012b) but a year later no students had chosen to take up this option (Kolowich, 2013b). Other partnerships, with a variety of universities, seem to have little impact (Kolowich, 2013c). A number of commercial facilitators of the process were tried unsuccessfully including 2U (Kolowich, 2015), which rapidly failed, and MOOC2Degree. This was established by Academic Partnerships (see Fig. 4.2), announced with considerable fanfare in 2013 (Academic Partnerships, 2013), and then appears to have quietly vanished as an active initiative during 2014.

An explanation for this lack of interest from students in credit for MOOCs is found in the observation that most MOOC participants already have degrees (Christensen et al., 2013; Chuang & Ho, 2016; Ho et al., 2014, 2015; Nelson, 2014). This is not unexpected given the evidence that many participants are teachers and professionals interested in a little personal self-development.

MOOC providers are shifting from the early attempts to reframe themselves as 'lite' versions of formal qualifications towards identifying, as successful virtual universities like WGU did, a context aligning the benefit of the MOOC with a real need it can address in a meaningful way. Professional development and training is one of these contexts.

Coombes (2014) reports that US employers are reducing investment in professional development and are interested in using MOOCs as a low-cost alternative, particularly one associated with a reputable university and MOOC consortium brand. Radford et al. (2014) state that employers see staff engagement with MOOCs as speaking to personal characteristics, such as motivation, and they could be useful as tools for professional development delivery within the workplace. Employers indicate no real value for MOOCs as indicators of skill and knowledge except in highly in-demand technical areas. Other groups, such as medical professions (Hoy, 2014), are investigating the way MOOCs can facilitate and support ongoing professional development.

The importance of this context is recognised by Udacity who moved away from Sebastian Thrun's early idealism to focus on the use of MOOCs in the job skills setting (Manjoo, 2015; Udacity, 2016). This suggests that if MOOCs are disruptive in the sense meant by Christensen, Horn and Johnson (2008) (see Sect. 17.3), they are disrupting commercial training providers, not higher education.

The other context where MOOCs are being tested, beyond the realm of work and careers, is in the transition into formal study. The edX consortium created initiatives with Arizona State University's Global Freshman Academy (Huckabee, 2015; Young, 2015d) and with Texas State University through the Modern States Education Alliance (Texas State University, 2015) that are intended to reduce the cost of the first year of study and provide a more flexible pathway for students transitioning to university study. A particular complication with these initiatives is students in the USA are not eligible for financial aid under this approach, so while cheaper than normal, they are likely to remain a solution for middle-class students with little impact on students from disadvantaged backgrounds.

Attempts to use MOOCs to provide traditionally framed formal qualifications continue. The successful Georgia Institute of Technology collaboration with Udacity and Pearson VUE offering an online computer science master's degree (Kolowich, 2014a; Strausheim, 2016, 2017; Young, 2013b) is stimulating others to offer similar master's qualifications. The University of Illinois is partnering with Coursera to offer what they call an iMBA (Young, 2015c). The trademarked MicroMasters™ model created by edX allows credit towards MIT (Strausheim, 2015; Young, 2015e) and Georgia Institute of Technology (Strausheim, 2017) master's degrees. These latter initiatives recognise the transition to study as a potentially useful context for MOOCs while ensuring awarding formal qualifications remains controlled by the processes needed for formal accreditation.

The areas where the MOOC is gaining some value are consistent with the experience of the Virtual University and wider understanding of the experience, skills and resources generally needed for students to succeed online. History has taught us that online learning requires access to expensive resources, either a strong set of personal learning skills or a supportive context, and some experience with formal learning. Both Master's qualifications and on the job training reflect these requirements and suggest the dominance of MOOC participants by professionals is a reflection of the strengths of the model and not a failure.

11.2.9 Strategic Vision and Leadership

Initially a creation of individual academics, the MOOC was, in the way of many Stanford projects, quickly transformed into a series of competing Internet start-ups. Although the edX initiative is framed as a continuation of the MIT OCW project, the primary driver is a combination of political response by Harvard and MIT leadership to the publicity of the Udacity and Coursera initiatives and a sense that MOOCs provide a safe context for exploration of online delivery without the risk of a compromise to the value of the formal qualifications and élite exclusivity of either institution (edX, 2012).

Intentionally or otherwise, the strategic impact of these announcements is a shaping strategy (Hagel, Brown, & Davison, 2008), reframing wider stakeholder understanding of an activity so participants are stimulated to collaborate and engage in change activities rather than act more conservatively to protect the status quo.

Presenting the possibility of large-scale adoption of openness in this manner introduces a number of opportunities for change in higher education that are seen differently by the various stakeholders (see Chap. 4). The idea of free education available to many more people is not only appealing to donors, funders and governments but also to students and their parents. The opportunities for new business models and new entrants into a vast market, historically restricted to a limited group of providers, are attractive to many commercial businesses, and the ability to select a range of open courses and create new qualification models is attractive to new providers and to employers engaging in new partnerships.

Stanford, Harvard and MIT act strategically in different ways towards institutions without élite reputational capital to depend upon. It can be argued that the support of MOOCs by institutions with strong reputations is a strategy of disruption (Armstrong, 2012). By giving away course materials and access to basic e-learning systems, these institutional MOOCs are establishing a minimum threshold of quality that must be substantially exceeded by other organisations, particularly non-accredited ones, wanting to charge for their materials (Marshall, 2013a).

This redefinition of the higher education market and price structure places for-profit online providers in a more difficult place. Their fees must now fall into a space defined by free offerings at one end and the cheaper public institutions at the other. Their systems and content need to at least equate with the MOOC offerings available, and the for-profit providers are generally unable to make any significant use of MOOC materials themselves given the routine use of non-commercial licences by the majority of MOOC owners. The fact that previously successful organisations, such as the Apollo Group (Blumenstyk, 2015, June 30; Gonzales, 2012), are faltering reflects the impact of these challenges on their strategy.

Subsequent engagement with MOOCs by the initial universities involved in establishing the various consortia and those who have joined them shows no evidence that MOOCs are shaping the strategic goals of these universities. There may

be a sense that MOOCs have contributed but it is less significant than the transformative hype of the initial MOOCs.

MOOCs are framed strategically in a number of different ways, supportive of other goals:

1. MOOCs are used for marketing the reputation of an institution through association with the gloss of technological modernity (Falconer et al., 2016). This is risky as the earlier discussion suggests it is unclear if the positive public attitude to MOOCs will be sustained over time.
2. MOOCs are a tool for marketing qualifications to prospective students (Radford et al., 2014), building relationships and providing students with an opportunity to start a programme of study at no financial cost to them. A similar approach is seen in the use of MOOCs marketed to alumni, encouraging them to see opportunities for further formal education (Fabris, 2015c; Kolowich, 2014b).
3. MOOCs support research and organisational change projects aimed at redesigning curricula to support active models of learning (Falconer et al., 2016; O'Connor, 2014). Harvard seeks to understand ways online education can be undertaken successfully in their MOOC initiatives (edX, 2012). This research supports a growth in the knowledge of effective online pedagogy, better comprehension of various costs involved and development of a robust online infrastructure. It recognises the value concepts like the MOOC play in academic sense-making and enables effective conversations about changing educational models, a concept Falconer et al. (2016) describe as 'technological momentum'.
4. MOOCs provide research benefits through their alignment with existing programmes. An example is the University of Tasmania MOOC on the care of aged persons with dementia (Goldberg et al., 2015). This initiative strengthens the reputation of Tasmania's existing research institute while providing researchers with a conduit into a population of participants who not only personally benefit from membership of the group but are also encouraged to support the ongoing research project.
5. MOOCs are part of the achievement of broader social outcomes consistent with the public mission of the higher education institution. This has risks, as MOOCs offer none of the wider benefits of a formal education but it may provide some universities with a coherent framework for community education programmes while ensuring they do not compete with formal study.

The strategic positioning of MOOCs is shifting, as illustrated by the Harvard SPOC—Small Private Online Course (Coughlan, 2013). Describing themselves as 'already in a post-Mooc era' (Harvard Professor Robert Lue quoted in Coughlin, 2013, n.p.), Harvard recognises the value of the transition from study into life as a context for MOOC-like activities aimed at sustaining the alumni community. By providing SPOCs for their alumni, they reinforce the privilege these people feel and help maintain an active relationship supporting a range of benefits to the university, including donations, encouragement to others to study at Harvard and further postgraduate study (Fabris, 2015c; Kolowich, 2014b). As with the virtual

university, success with the MOOC follows recognition of the need for ongoing sense-making, supported by enaction and the identification of goals relevant to the university's core values and identity.

11.3 Badges and Micro-credentials

> A badge is a symbol that something exists, and it is important to make sure that it does not come to replace the thing it represents. This is true regardless of where badges are used, but becomes particularly important in learning. If the process of earning a badge is itself a learning process, and even better, if it can lead others to learning, the badge has done its job. (Halavais, 2011, p. 368).

> Badges can help engage students in learning, and broaden the avenues for learners of all ages to acquire and demonstrate—as well as document and display—their skills … Badges can help speed the shift from credentials that simply measure seat time, to ones that more accurately measure competency …And, badges can help account for formal and informal learning in a variety of settings. (Duncan, 2011, p. 1)

Badges and micro-credentials are a mechanism for disaggregating learning recognition in the same way the MOOC disaggregates access to learning experiences. At their most basic level, they represent an attempt to move the model of the traditional cloth badge given to children as recognition of sporting and other activities into the educational space. Badges reflect a human preference for symbols conveying membership and status within social groups (Ellis, Nunn, & Avella, 2016). Children's badges are deliberately designed to mimic military insignias of rank and status (Halavais, 2011). Badges, or 'achievements', are a common feature of video games, used to recognise completion of specific tasks. This is the concept proposed as a new form of educational credential.

Digital badging for education was first implemented during a Mozilla Foundation event in 2010 (Mozilla, 2016). The development of online 'badges' is a further evolution of these systems of electronic recognition. Badge systems, such as that described by the Mozilla and IMS Open Badge Specification (IMS, 2016), provide an infrastructure for organisations and communities to use to develop recognition frameworks. Interest in the model of disaggregated qualifications, reflected in badges and other micro-credentials, is apparent in the race to trademark various terms associated with the concept (Young, 2016a) with educational companies applying for a range of potential descriptors including nanodegree™ (Udacity) and MicroMasters™ (applied for by EdX).

Badges are promoted as providing a range of positive benefits (Knight et al., 2012) including learner motivation, reputation and community building, and achievement. These signal a wide range of accomplishments, skills, qualities and interests, including those not normally addressed by formal qualification systems. Badge schemes potentially provide successful personal development strategies, identified and shared with novice learners as pathways for their learning.

The range of potential benefits reflects different ways sense-making processes frame how badges can be understood and used. The most obvious is as a form of digital qualification. The use of the alternate terms 'micro-credential' or 'nanodegree' reflects the positioning of badges as a credentialing mechanism for recognition of small amounts of learning, such as completing activities within a MOOC (Lokuge Dona, Gregory, Salmon, & Pechenkina, 2014).

By implication, this suggests the domain addressed by the badge can be treated as discrete units of learning and that it is sensible and useful to provide evidence of having learnt that knowledge or skill at a granular level. Creating a sensible map or ontology of an educational domain is a complex task, reflecting the need to encompass a field of human knowledge with all its explicit and implicit context and all the ways that it is understood by different stakeholders. Capturing knowledge reliably in a structured manner remains a significant area of research for knowledge management and artificial intelligence researchers. The educational challenges are evident in the contested nature of approaches used in the assessment or recognition of prior learning and in the construction of generic attributes for degrees (Adelman, 2009; Barrie, 2006; Barrie, Hughes & Smith, 2009; Spronken-Smith et al., 2013).

An issue with associating a badge with an extrinsic benefit is the consequent need to address trust and maintenance of reputation of the badges (Grant, 2016). Much of the technology underpinning badges results from the consequential nature of the resulting micro-credential. The need to trust what the badge represents means there must be a way to verify who issued the badge, to whom it was issued, when it was issued and what evidence provided the basis of issue. This raises significant ethical concerns for educational institutions:

> Poorly implemented badging systems also create an ethical (and possibly legal) quandary. Organizations that invite learners to engage with the promise of an achievement badge really must consider the implications of offering an essentially worthless, untrusted, or unrecognized marker of achievement. (Willis, Flintoff and Mcgrath, 2016, p. 26)

The risk organisations positioning various learning activities, including MOOCs, as qualifications face is they can damage the credibility of their other, traditionally structured, formal qualifications and the reputation of the institution as a whole (Marshall, 2013a, 2014a). One response to this is technological in nature. The MIT Digital Certificates Project (Media Lab, n.d.) uses technology developed for digital currency to provide a system of encrypted and digitally signed badges that can be verified and are protected from fraud and counterfeiting.

Another response recognises that treating badges as a new form of qualification or credential is sense-making framed by the assumptions and models of mass education. Examples of commercial systems operating in this model include Degreed.com and Parchment.com who market systems designed to turn evidence from badges, MOOCs and other activities into measured, tracked and consequential credentials. The creation of these business models, inserting themselves between the university and key external stakeholders, is a mixed blessing. They do provide a richer picture of a range of learning outcomes but as ex-President of Harvard Derek Bok says, '[i]t would be a mistake for universities to let others take over the task of

explaining what your students know' (quoted in Blumenstyk, 2014, p. 137). Watters (2016a, 2016b) warns the conflation of a technological model of credentials and the business models and tools of digital currency carries a number of significant assumptions regarding the value of education and who benefits from it. The 'learning is earning' scenario she quotes illustrates one path this could take:

> Welcome to the year 2026, where learning is earning. Your ledger account tracks everything you've ever learned in units called Edublocks. Each Edublock represents one hour of learning in a particular subject. But you can also earn them from individuals or informal groups, like a community center or an app. Anyone can grant Edublocks to anyone else. You can earn Edublocks from a formal institution, like a school or your workplace. The Ledger makes it possible for you to get credit for learning that happens anywhere, even when you're just doing the things you love.
>
> Your profile displays all the Edublocks you've earned. Employers can use this information to offer you a job or a gig that matches your skills. We'll keep track of all of the income your skills generate, and use that data to provide feedback on your courses. When choosing a subject to study in the future, you may wish to choose the subject whose students are earning the most income.
>
> You can also use the Ledger to find investors in your education. Since the ledger is already tracking income earned from each Edublock, you can offer investors a percentage of your future income in exchange for free learning hours. Our smart contracts make these agreements easy to manage and administer. The Ledger is built on blockchain, the same technology that powers bitcoin and other digital currencies. That means every Edublock that has ever been earned is a permanent part of the growing public record of our collective learning and working. (Learning is Earning video text (http://www.learningisearning2026.org/) quoted in Watters, 2016a)

The focus on economic impact, accountability, quality, evidence and value to external stakeholders are all driven by the same sociological features defining the mass mode. Badges can, however, be re-examined from the perspective of a universal model of education where the focus shifts from certification of learning to the experience of learning by individuals as part of learning communities.

One way to understand the universal model experience view of badges, with acknowledgement to Doug Belshaw, is to reflect on the educational journey of an individual student using the metaphor of the iconic London underground map (see Fig. 11.2). The map represents an interconnected network of individual tracks that meet at major stations. Minor stations are provided as waypoints between the major stations. When moving around London, it is perfectly normal to enter at one station and then move through others, shifting tracks as necessary, to navigate to a destination. Each traveller has a range of options regarding their route, which can be influenced by stoppages, congestion, time and convenience. Educationally, this is describing a system where the tracks represent flexible learning pathways, potentially operated by multiple organisations. The minor stations represent points of formal acknowledgement of success, such as certificates. The major stations denote recognition of more substantial qualifications at points where they can transition on to other learning pathways or where the learning journey is used to support an important external activity such as professional accreditation or employment. This

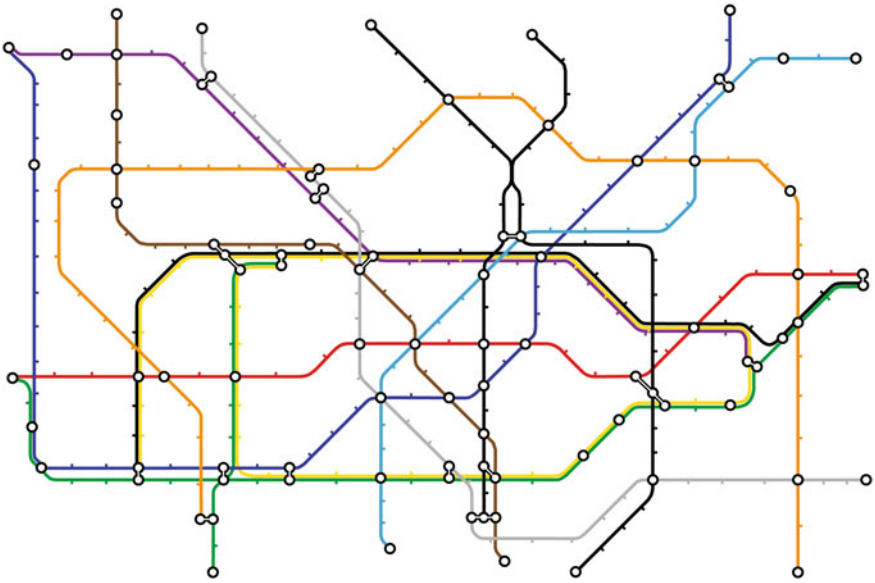

Fig. 11.2 Education pathways recognised by badge systems

illustrates the important relationship between the processes of learning, individual choices made within those processes and the transition points into external systems.

Rázvan and Matei (2015) describe badge systems as providing students with a map of the potential learning field to help them organise and manage their learning. This mapping is a tool placing the learner within a landscape or learning ecosystem (Itow & Hickey, 2016) occupied by a community of learning, providing evidence of activity recognised by that community. Willis, Flintoff and Mcgrath (2016) note the role badges play in supporting student sense-making of their educational choices, through the construction of individual maps and as a tool enabling a conversation with other learners. In this conception of badges, they are simply a representation of the process generated by learner activity.

Placing badges within learner communities provides a range of contributions reflecting a broader sense of education than is recognised by formal mass education systems with their focus on privileging economically important outcomes. These include the contributions people make to the communities they participate in.

An example is the framework created by the Educause organisation (Smith, 2015). They created badges reflecting a range of contributions and roles individuals undertake for the organisation, including reviewing articles and acting as officials. The badge infrastructure provides minimal protection against badge misuse but at their heart they depend on social norms and the associated opprobrium for non-compliance—such as only wearing a tie denoting organisational membership if entitled to do so. If such systems result in an extrinsic benefit, fraud and forgeries will inevitably proliferate.

Choosing to treat badges not as a validation system but as a system to help people organise and manage their learning, may help address the inconsistent outcomes reported by researchers studying the impact of badges on learner behaviour. Badges are shown to motivate student engagement and retention, providing extrinsic rewards positively regarded by students (Ambrose, Anthony, & Clark, 2016; Lokuge Dona et al., 2014). There is evidence that these positive benefits depend on the type of badge and the prior knowledge of the student, with some badges demotivating weaker students (Abramovich, Schunn, & Higashi, 2013).

Avoiding the credential model helps mitigate the complexity of organisational sense-making regarding the use of digital badges. Gander (2016) identifies a diverse group of stakeholders who complicate badging initiatives, including students, employers and recruiting agencies, end users of the products of student work, funders of any educational activity recognised by the badge and administrators of the badging process. These stakeholders reflect the mass model of salience (see Fig. 4.3). By removing the primary focus on external validation, many of these perspectives can be discounted, redirecting the primary focus back to the student as definitive stakeholder.

11.4 Conclusion

It is easy to conflate the values and tools of openness with the transition to universal education. Doing so makes the mistake of transformational thinking, losing sight of an opportunity to make sense of the core values and experience of education by seeing the ideas of openness implemented in specific ways as direct solutions to the complex challenges facing higher education.

The MOOC is frequently described in ways that suggest it is an open and universal complement to élite and mass models. The MOOC is however, in most incarnations, far away from delivering a completely open education model. The history of the MOOC illustrates the challenge for leaders attempting to enact change, not just by repeating the mistakes of the earlier virtual university but also by framing the MOOC concept in misleading ways. In many respects, the MOOC reflects a Trojan horse; sustaining mass education models while appearing to engage with the transition to universal education.

The MOOC can be described as four lies for the price of one. The vast majority of MOOCs are not massive in terms of their enrolments, or in their completion rates, or in the scope of education they address; they reflect only a tiny fraction of universities and are dominated by a limited range of subjects. They are open in only the most limited of ways. They show a very constrained model of online learning. While structured as courses, they bear very little resemblance to a formal course in either the extent or depth of their coverage and most lack anything more than a trivial acknowledgement of the fundamental importance feedback and assessment play in learning.

Digital badges are built on open technologies but do not drive a greater appreciation of the open philosophy as a model for change in education. Digital badges provide a useful example of the intersection between technological change and sense-making in education. It is too easy to position badges as a digital qualification, taking pre-existing ideas of how and why credentials exist and using these to frame a technological replacement for traditional paper diplomas. The description of the technology as 'micro-credentials' is evidence of sense-making aimed at sustaining an existing model of education defined by the qualification rather than the process of learning owned by the student.

The various forms of openness can, in combination with various technological developments, stimulate sense-making relevant to all three models of higher education. Open technologies support all forms of education. The existence of a wide range of open tools and systems is fundamental to sustaining the infrastructure of the Internet and much of the experience of élite, mass or universal education, open or closed, is dependent on this. There is a synergy between the different models through the decision by some élite universities to contribute to the success of mass and universal education by supporting research and development of open technologies and sharing content through mechanisms like OERs.

The open sense of inclusivity and the maintenance of open societies, democracies and economies is challenging to all three models for different reasons. Élite universities struggle with genuine inclusivity. Most articulate a willingness to educate according to students' ability rather than their wealth but in practice the existing systems need to change. Acting meaningfully in this space is critical if society is to address the widening inequality identified by Piketty (2014), Stiglitz (2015) and others. Mass education systems are increasingly criticised for adopting models of operation driven by inclusivity and equity only in theory. In practice, they are no longer generating the same impact on people's lives as previously, and the growing cost of mass education is increasing inequality rather than decreasing it. Universal education is, by definition, inclusive but is not necessarily open. The challenge is defining models of universal education to empower, not disempower as some accuse the MOOC of doing, and to enable all communities to own their educational experiences.

Open speech and open reasoning are fundamental concepts at the heart of the university (see Chap. 14). The university has, from its earliest days, focused on providing an environment where information is accessed as freely as possible. The heart of academic freedom is framed by the same values underpinning open reasoning and open speech. Élite universities are defined by an awareness of the importance of academic freedom but often are less engaged with the implications for students. Mass education, as evinced by the critics summarised in the introduction to the first section of this book, is less certain in its commitment to these values. It struggles at times with the perceived conflict between open speech and reasoning, the neoliberal frameworks defining the shift to academic capitalism (Slaughter, 1990; Slaughter, & Leslie, 1997; Slaughter, & Rhoades, 2004) and

enterprise universities (Fayolle, & Redford, 2014; Marginson, & Considine, 2000). Universal education has the potential to embrace both open speech and open reasoning but as the MOOC illustrates, there are many ways in which this model is almost completely closed.

The OERu follows a genuinely open model but the current generation of high-profile MOOCs all restrict use of their materials and facilities to individual students (Coursera, 2017b; edX, 2017b; FutureLearn, 2017b). Unlike OERs, MOOCs are managed as complete courses and controlled by licences that are not in any way 'free' in Stallman's terms. This may seem like a minor quibble in the face of the open access and provision they enable but the consequence is the owner defines the pedagogical experience for all students. Students and other teachers have no ability to 'remix' the course to suit other styles of learning, cultures or educational goals. The framing of these licenses exposes the disconnection in values expressed by marketing attempting to gain reputational benefit from association with 'openness' and the pragmatic reality that they are not reusable like other open technologies (Conor, 2014; Falconer et al., 2016).

Open provision is the conception of openness people assume is being described by the phrase 'open education'. By definition, élite education cannot be completely open access but it can enable openness in partnership with others, working within the same institution or external to it. The MOOC is built on the reputations and resources of élite universities. Universal education is almost the exact opposite, being defined by open provision. The challenge for universal education is to create and sustain models of open provision that are not swayed by existing preconceptions regarding qualifications and which embody other senses of openness. This is possible, particularly if open education is placed within community contexts and not defined by employment.

Mass education is capable of offering models of open education, as illustrated by the many open universities such as the UKOU, the Open University of Catalonia and the Anadolu University in Turkey. The case of the UKOU illustrates the challenges mass education management and accountability systems pose to the core values of open provision. The disconnection between the social benefit of readily available open provision and the economic cost of sustaining it at scale presents significant problems, particularly when combined with a drive for qualifications and the absence of equivalent pathways for individual success. The German system (see Chap. 5), although not an open provision system, could be reframed as one with minimal changes, such as shifting the Arbitur into a foundation year with success, a precondition for ongoing progression. The existence of socially valued and viable alternatives means this could occur without failing under the load of student numbers.

The challenges faced by the UKOU are not the only issue affecting the ongoing development of open education. The UNESCO definition of OER reflects one of the major complications:

> The open provision of educational resources, enabled by information and communication technologies, for consultation, use and adaptation by a community of users for non-commercial purposes (UNESCO, 2002, p. 24).

In an international legal environment, the term 'non-commercial' is so ambiguous it is meaningless. It is also in conflict with the software freedoms previously described. The freedom to employ software for any use explicitly includes any form of commercial activity. This recognises that even if software is free, there is still value in paying other people for various services associated with that software and those people need to be paid to sustain the free software ecosystem. The balancing feature is these payments are not an abrogation of the freedoms, if they result in poor outcomes users are free to go elsewhere and in so doing retain everything they already have. The MOOC illustrates a situation where the boundary between commercial and non-commercial has become sufficiently blurred that legal risks start to dominate decisions.

There is a worrying unintended consequence of the recent US Justice Department decision (Jaschik, 2016). All content made available for educational use by US universities must now comply with all of the requirements of the Americans with Disabilities Act 1990, not just that provided formally through MOOC platforms (Fabris, 2015b; Lewin, 2015; Malone, 2015; United States Senate, 1990). This lead to the removal of online material by the University of Berkeley (Larimer, 2017) and all other US universities will probably do so as well. The decision is potentially disastrous for open education as it imposes a significant cost and liability on all universities that are currently relaxed about academics providing educational materials on the Internet. It is too soon to be sure, but a likely consequence is a ban on staff providing any material online for open access. The real educational needs of disabled people are undeniable; however, the solution is not to deny everyone access but to improve the technology so content is accessible automatically to all. Until such technologies exist, this decision will impede any wider transition to universal education.

Intentional challenges for universal and open provision of education include the complexity of laws in the international setting. Many countries have laws regarding defamation, blasphemy, privacy, provision of educational services, social cohesion, modesty and many other issues that mean a global access model is inevitably compromised. The example of China and the XuetangX and Coursera Zone platforms show local solutions can be implemented but this requires significant investment that may not be achievable in many countries.

MOOCS are a halfway house between openness and closed commercial education and like most compromises likely to fail to deliver the value of committing to either option. Some argue that the MOOC has been cleverly captured by élite universities in order to sustain their privilege and to benefit commercial interests acting in the mass and universal space (Krause & Lowe, 2014; Selwyn, 2014). The exploration of the different forms of openness shows that the MOOC is only open in the most meagre of ways. Very little of the MOOC mainstream speaks to forms of openness other than basic access and independent study.

Open education provides an alternative narrative for education suggesting there are potential pathways for engaging with sense-making the wicked problem of systemic change. It also illustrates how the components of that wicked problem interact to generate a sense of disengagement and even futility at times. This is when leadership is essential: rather than assuming the dominant transformative narrative, such as the MOOC or the use of digital badges, creating sense-giving narratives showing the value of different forms of openness in any educational context.

Chapter 12
The Modern Technological University

Abstract The university is a meta-technology combining the work of the scholarly community with an ever-changing set of technologies that sustain and shape the nature of scholarly work. Despite the stereotypes, modern universities are actively engaging with digital technologies to engage with information for teaching and research. A number of examples show the way that different sense-making frames can substantially shift the perception of technology, the coexistence of which by different stakeholders contributes to the wicked nature of change. The limited impact of the LMS is contrasted with the use of classroom feedback systems enabling active learning to show how the process of sense-making influences the impact of technology on learning and teaching. The no significant difference phenomenon is shown to arise from the use of half-invented technologies that need further sense-making to realise substantial pedagogical benefits, emphasising the need to consider the context of a technology as well as its technical affordances. The evolving conception of space is explored to illustrate the complex meta-technological nature of university learning and teaching, while the use of the cloud and BYOD is shown to provide both an improved infrastructure and a means of blurring the boundaries of the university as staff and students move away from institutional infrastructure to personal versions using a domain of their own. Finally, the use of data to support the work of the university is explored as a tool that can generate cues for sense-making and support leaders stimulating change.

> The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it (Weiser, 1991, p. 66)

Despite their popular characterisation as old-fashioned and out of date, universities are insatiable consumers of technology. Technology has been intrinsic to education for millennia. Archaeologists recovered pedagogical materials from the ancient Sumerians, Egyptians and Greeks describing the experiences of students and their teachers. Writing is the technology with the greatest impact on human learning. Related technologies, such as the folio book and printing, sustain and develop its impact on our civilisations. The concept of the university is a direct product of writing. The scarcity and cost of books drove the formation of scholarly communities of learning, propelling the development and support of expertise

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through collaboration by a critical mass of scholars. The lecture arose as a pedagogical tool for sharing access to books and addressing the limitations of literacy. It also raised the status of those with specialist knowledge. The printing press further extended the ability of experts to communicate with larger audiences and began the focus on publishing that dominates modern academia.

Higher education institutions use modern information technologies to efficiently build on the foundation created by writing. Technology facilitates access to course materials. The institutional library is a vast virtual repository of academic knowledge, available to students and faculty at any time, from any place. Communication tools facilitate the administration of the university and its courses, allowing virtual analogues of the tutorial and faculty office hours. Email simplifies communication, and word processing accelerates document creation. Lectures are recorded and available to students for revision, or even as a replacement for attendance in the first place.

The contemporary university adopts as many different identities as there are different stakeholders (Chap. 4). The purposes and identity of the university as an institution are examined in the next chapter but from a technological perspective, the university is a meta-technology, the confluence of a culture of scholarship with a rich platform of evolving technologies disproving the view of the university as old-fashioned, static and disconnected from the realities of its place in a modern technological society.

12.1 The Impact of Technology on Scholarly Work

At the close of World War II, Vannevar Bush, director of the Office of Scientific Research, wrote an insightful paper titled ‘As we may think’ (Bush, 1945). In this paper, written by a scientist with full knowledge of the then classified digital computer, he considered how information technology would be used in the future to support scholarly work. Framed by the analogue technologies of the day, his descriptions are sometimes quaint but at the heart of his paper is the device he called the Memex.

The Memex provided access to a library of micro-film books connected by personal hypertext links he termed ‘trails’. These trails could be interlinked and shared as a new form of scholarly publication, essentially a foreshadowing of the remix culture at the heart of open systems. Bush imagined a technology embedded within a desk and requiring a small van to transport the contents of a personal library. From a functionality perspective, this device is now carried in people’s pockets around the world.

Bush’s article is a masterpiece of sense-giving. It provides a narrative, not about the development of technology, but about the way technology will change the experience of the work being done. Technology now infuses the scholarly life of the university and continues to stimulate changes in the work practices and expectations of academics on a daily basis. These changes include new ways for academics to network in communities of practice that transcend organisational and national boundaries and new ways to publish scholarly work and to cope with the explosion of published human knowledge.

12.1.1 Technology Enabled Academic Communities

The university is substantively defined as a community of scholars, reflecting an historical relationship to monastic communities and organised around the production and storage of the precious libraries of human knowledge. The expansion in range of subjects taught and researched and the increasing specialisation of individual academics means this community is increasingly a virtual one, transcending the local institution to include collaborations and engagement with a global community interested in similar ideas. The Internet accelerates and expands the functionality of this global community, reducing the need for time-consuming travel to visit colleagues and access libraries. It blurs the boundaries between academic groups, making it easier for ideas to 'leak' between different fields through serendipitous discovery enabled by databases and search engines.

Thirty years ago, keeping up with the papers published in a particular area required physical access to expensive journals and laborious examination of printed lists of journal articles. In many cases, access depended on personal relationships with authors and for the majority of academics outside of the great research centres of the USA or Europe, access to the latest research was often significantly delayed or non-existent. Now, anything newly published is immediately available and access to the vast majority of research literature is obtainable through the Internet merely by searching for it. Typing a few phrases not only identifies a specific paper but also, in a modern version of perusing the library shelves, lists related papers and citations. Just as discipline was needed in the past to avoid time wasting meanders through library shelves, now a scholar must remain vigilant of the risk of endlessly following threads of ideas and unproductively 'surfing' through the Web.

Knowledge codified in a structured form is now supplemented by the idea of knowledge created through a network in real time by drawing connections between ideas in separately published works, or by using the network to engage directly with other people to convert the aggregated work into something greater than the sum of its parts. A variety of tools allow academics to see who is reading, sharing and citing their work in presentations and publications. The growing use of 'altmetrics' (Erdt, Nagarajan, Sin, & Theng, 2016; Mingers & Leydesdorff, 2015) reflects the shift in formal structures of scholarly publication and the increasing importance of engaging with this information to build collaborative networks.

This process of expanding access to increasingly specialised information tailored to the individual's needs is not entirely positive. The risk that personalisation of information, accessed through social media, is amplifying tensions and divisions within society is increasingly recognised (Miranda, Young, & Yetgin, 2016; Quattrociocchi, Scala & Sunstein, 2016; Zollo et al, 2015). The creation of inward looking 'closed' communities, avoiding conflicting viewpoints or evidence by only engaging with like-minded peers, is not limited to the general public. Such conservatism and collective 'groupthink' has always presented a barrier to new ideas (Kuhn, 1962), and it is possible that the ability to operate independently of the mainstream consensus that is enabled by digital information and communication technologies may work to increase the success of non-conventional thinking.

An inevitable consequence of the expansion in volume and detail of human knowledge is the progressively finer levels of specialisation required to become an expert and the consequent creation of subtle distinctions within disciplines further subdividing academia. In the eighteenth century, the scope of scholarship and learning supported by a university could be comprehensively stated as improving the 'reason, and fancy, and carriage' of a gentleman (Ward, 1654, p. 50). In these simpler times, a university and its academics could aspire to complete coverage of all important areas of scholarship. Today, this is not plausibly true of even one disciplinary area. Any university must make choices, not only about which disciplines are maintained as areas of expertise but which subjects and areas of research within the broader headings are focused upon. Academics working in these areas find themselves working with peers outside of their own institution unless they are lucky or successful enough to have their specific expert area privileged as one of organisational strategic distinctiveness.

Scholars increasingly participate in an international 'Invisible College' (Crane, 1972) that de-emphasises the importance of the local organisation. Much of this collaboration and networking benefits from technology. Communication technologies, the Internet, and electronic publication all mean it is almost easier to work with colleagues in other countries than to leave the office and find a collaborator locally. Wired editor Chris Anderson (2006) describes the 'long tail', a consumer phenomenon of technology enabling the pursuit of a growing diversity of interests. The academic parallel is the ability of technology to sustain internationally distributed collegial communities of a small number of specialists (Seely Brown & Adler, 2008).

This evolving ability of scholars to engage in virtual communities suggests a pathway the meta-technology known as the university can take in the future. One version of this is used as the basis of the Xanadu scenario in Sect. 20.2.15. The combination of growing capability in the various information tools on the Internet and the dynamic nature of many aspects of modern scholarship mean it is now possible for some academics to operate independently of a formal university role, with the capability to work in collaboration with those who still do. This is a far more positive framing of the shifting role of the academic than the precarious place of the adjunct faculty member described in Sect. 4.2, success dependant on access to the resources and reputational supports needed to be credible. The possible paths academia might eventually follow are also influenced by the changing pattern of academic publication and engagement with each other's ideas.

12.1.2 Technology and Academic Use of Knowledge

As noted at the start of Chap. 8, information technologies have affected the way humans engage with ideas since the creation of language. Oral societies operate at the intimate level of the extended family, sharing local knowledge and mythology relevant to daily needs of the group as they interact with their immediate environment. Australian Aboriginal society links these stories with elaborate paintings anchoring the stories to place. This knowledge remains private to the social group creating it.

The creation of writing allowed ideas to spread beyond this intimate setting with the codification of laws and the creation of monumental and religious texts establishing the concept of a social organisation greater than direct biological relationship. This inheritance of ideas rather than genes transcended history and society. It allowed the early work of Greek philosophers to stimulate the thinking of later Indian and Arab scholars before returning to the West. It remains a foundation of modern civilisation.

Universities have long been associated with their libraries, but often this is misunderstood as a caretaker or custodial relationship. Scholarly literature is more a conversation than a repository. The various timescales of academic work identified in Sect. 8.3 play out in the modern literature. Fundamental concepts and records accumulated by humanity over centuries are constantly re-engaged with. Journals operate over decades as meeting points for scholars with a common interest in shaping the key ideas of their disciplines. Individual papers are contributions to an intense conversation that may take years to define and articulate. The best papers stimulate interest in new challenges to resolve. New ideas released as tweets and blog posts generate comment and response, stimulating weeks of conversation in academic departments and months of conversation in scholarly meetings. Historically, academic conversation was limited by the speed of the post with early society journals named as 'letters' or 'transactions' in reflection of this process. Now, a tweet or blog post can ignite a scholarly debate with thousands of peers, and top journals, such as Nature and Science, operate specific publication practices aimed at ensuring they keep up with the pace of new discoveries.

The problem is being heard above the noise of the vast explosion of academic publications, formal and informal, via the expanding and blog-enabled 'grey' literature. The low cost of information production and access stimulates an unhelpful process of ever-increasing publication. The 'publish or perish' phenomenon (Garfield, 1996) has seen the scale of academic publication dramatically increase. It has also driven the creation of a vast body of work that is never cited (Costas, Zahedi, & Wouters, 2015) and an explosion of dubious journals publishing papers for a fee (Beall, 2012). Academic publishers are struggling to cope with the growth in their products and with the pressure to change their models of publishing to support greater access to academic publications.

The networks of scholarly activity supported by the Internet revolutionised the mechanics of academic publishing. The tedious process of typesetting and revising a printed article is completely reinvented by computers and the Internet. Manuscripts are formatted as they are written. Submission and review is undertaken online and final editing and publishing is a digital process. The author often does not even get a physical copy of the final 'paper', a term that seems increasingly anachronous, as the digital version is the definitive item. The concept of the journal 'issue' becomes irrelevant as well with the now ubiquitous document object identifier (DOI) enabling publication and citation without the need for volume or page numbers.

Tools for computer-assisted publication continue to improve. The use of computer-generated writing technologies is seen in the analysis of US schools published by ProPublica (Coutts & La Fleur, 2011) and supplemented by an extensive database of school information rendered by Narrative Science's

algorithms into very readable school capsule articles. This technology is not limited to supplementary material. Reputable publishers like Forbes.com are partnering with companies such as Narrative Science, using algorithms to generate business news reports on corporate earnings indistinguishable from those produced by human journalists (DVorkin, 2012; Fassler, 2012; Levy, 2012). More recently, Associated Press, which is responsible for generating much of the news reported worldwide, announced it is using a similar system called Automated Insights to generate earnings report articles (Colford, 2014).

It is easy to dismiss these examples on the basis of the limited domain and the regular structure of the material generated, but these algorithms will improve significantly in the future. It is not hard to imagine entire areas of academic publishing being similarly replaced. Currently, systems creating academic papers generate gibberish. Despite this, some have unfortunately slipped through and been published (Van Noorden, 2014) suggesting the validation systems are already starting to break down under the volume of papers submitted. There is no reason why this software cannot be improved to the point where it becomes useful, if only as a tool to help researchers publish in English when it is not their first language or as a learning tool providing helpful summaries of specific topics.

Even if software is not responsible for the final polished prose, it is easy to imagine tools like Google Scholar growing to embrace the role of the traditional research assistant. Digital assistants can plausibly produce literature reviews and annotated bibliographies in support of scholars, amplifying their productivity by freeing the human brain to make connections and breathe life into the collection of facts assembled by the computer. Google Scholar's tools already deliver elements of this capability through updates for individual researchers based on their publication profile, interests and the work of those who cite them. Google is attempting to enhance its search functionality with automatically generated summaries of topics displayed as a sidebar along with the lists of links.

Many years ago, science fiction author and scientist Isaac Asimov wrote a short story 'Galley Slave' (Asimov, 1957) which revolves around the creation of a robotic writing assistant and the inability of a faculty member to cope with the concept that technology can outperform a human in aspects of scholarly work. It seems likely faculty will shortly need to cope with this challenge in reality; perhaps by using these technologies to improve the impact and quality of their work by freeing their energies for the cognitively creative aspects rather than continuing to see them as tools that simply increase the volume of works produced.

12.2 Technology and the Evolution of University Teaching

> A course is a technology for learning. I have 'taught' about two hundred of them and do not know why each one lasts exactly fifteen weeks, or why each meeting lasts exactly one hour and fifty minutes. If the answer is that this is done for administrative convenience, then a course is a fraudulent technology. It is put forward as a desirable structure for learning when in fact it is only a structure for allocating space, for convenient record-keeping, and for control of faculty time. (Postman, 1992, p. 138)

Within the meta-technology of the university, there are meta-technologies called 'qualifications' and 'courses', or, even more anachronistically, 'papers'. The experience of learning within these structures is often described as timeless with parallels made to monastic recitations. In reality, there are many changes occurring in the way academics engage with students. These changes are not the obvious ideas of virtual universities or MOOCs with a minimal pedagogy defined by media consumption and transient communities engaging in superficial discussion boards. These are changes reflecting a growing sophistication in our understanding of the neurobiology of learning, and the contribution technology plays in enabling and shaping the learning process (Willcox, Sarma, & Lippel, 2016).

Thirty years ago, Apples' Knowledge Navigator video (1987) showed a model of academic life in the future with a digital assistant assembling materials for a lecture and drawing the academic's attention to relevant new work in real time, including assisting him in collaborating with a colleague working in the area. We are very close to experiencing elements of this scenario today. It is hard to predict the magnitude of the shift on education stimulated by evolving information technologies; but when attempting to understand the likely impact, it is worth considering the way technology has influenced people's ability to work with numbers.

12.2.1 Technology and Numbers

The teaching of mathematics has been an important part of the educational curriculum since its formalisation. Numeracy and literacy are considered the fundamental cognitive skills, and league tables of student performance in mathematics are still one of the important international measures of national educational ability (OECD, 2014). In the early part of the twentieth century, a computer was a person skilled at numerical computation. The impact of technology on numerical work provides an insight into the long-term impact of information technologies on knowledge work, which includes much of the work performed by academics.

Technology has been used to support numerical work almost as long as we have had writing. Tally lists and tables of calculations are among the earliest written works. Long before digital calculators were invented, the computers of previous centuries were supported with tables of pre-worked calculations, such as logarithms, and a mechanical calculating or tabulating device. Then the invention of the transistor and the integrated circuit revolutionised mathematical work producing machines working faster than any human or mechanical device.

Technological developments soon saw digital calculators become common, and in the latter half of the twentieth century, they disrupted the teaching of mathematics as teachers grappled with the idea that a device should routinely be used to augment human intellect and memory. Numeracy required students to learn without devices although it was evident that for any important calculation, humans were far too prone to errors. The argument was devices inhibited development of mathematical skills and would leave people unable to function effectively in ordinary life

without the impractical step of carrying a calculator everywhere. This seems an increasingly quaint and old-fashioned argument.

Spreadsheets cover most calculation needs in the workplace. Calculators are everywhere. Most people carry cell phones as an essential device, and all but the very simplest phones have a calculator function. Electronic tills remove the need to manually check a shopkeeper's addition, and the individual item price tags in supermarkets display useful numerical information such as the price per unit quantity. The development of electronic RFID tags as wireless versions of the ubiquitous barcode will soon see shopping trolleys displaying price information as we add purchases to the basket; unfortunately they will inevitably also include advertising trying to push additional consumption. Amazon is already publicly testing retail outlets where you browse the shop, then simply leave, any goods taken having been tallied by computer and a transaction triggered electronically, without the need for further verification, by the act of leaving (Alba, 2016). The last vestiges of an employee having to handle cash and calculate change are vanishing visibly as we shop.

Numbers and numeracy remain important literacies, but our use of them is evolving; increasingly, we focus on using the results of calculations to do useful work rather than being inhibited by the mechanics of calculating. Our priorities are shaped by technology such that we act on the basis of a mediated reality that no longer draws our attention to the tools needed to support our decisions.

This incorporation of a technology so thoroughly into daily life that it stops being acknowledged is what psychologist Donald Norman calls the 'invisible computer' (Norman, 1998). The invisibility reflects the subsumption of the technology into the task, such that we simply focus on our goals without needing to become familiar in detail with the tools. This goes beyond concepts of user friendliness maintaining clear separation of roles—user versus tool—to a point where use of a tool is not noticed. This suggests a point where information technologies will similarly change our use of human knowledge, unnoticeably augmenting our memories and our ability to solve problems or create new knowledge. This is the profound shift Weiser speaks to in the opening quote to this chapter.

Invisibility describes technology that has been through a process of sense-making to the point that it no longer generates cues to trigger a further re-examination. Depending on how a technology is used, absence of engagement with sense-making cues can reflect a lack of desire for further re-examination rather than lack of opportunity to use the technology in different and arguably more effective ways. The next two sections explore how the processes of sense-making around two different technologies have influenced their impact on student learning to date.

12.2.2 Learning Management Systems and the No Significant Difference Phenomenon

The ways higher education can be expected to change in response to technology in many ways mirror the evolving conceptions of the Internet and the World Wide Web (WWW) and their place in modern society. Over the first decade of its

existence, the WWW moved from a model of information created by researchers and hobbyist users to one of professional publication. A well-designed Website became the modern equivalent of the traditional marketing brochure. The model was one of traditional publishing; the creation of high quality information distributed for consumption by the public.

Over the last decade, the original conception of the WWW has extended and evolved. Not content with consuming commercially published material, Internet users discovered ways of creating and sharing their own content in a variety of media. Tools like wikis were invented, allowing users to collaborate in the creation of Websites. Blogs and a myriad of social media tools appeared, removing many of the technical barriers preventing people from communicating online. Tools for communicating with family, friends and colleagues were augmented with the ability to support calendaring and 'push' services to mobile devices. Then these same communication tools were supplemented with tools for communicating with people you do not know; strangers who encounter your ideas as a result of other tools aggregating and redistributing content. Twitter, Facebook and a myriad of others illustrate the value of many people collectively aggregating information. The idea of individually created and maintained content is now complemented by the concept of 'crowdsourcing', the creation of resources by entire communities for everyone to use freely, reflecting the influence of the open source movement on a range of creative work (Chap. 11).

This form of the WWW, where value is found through collective social engagement, is referred to as Web 2.0 (O'Reilly, 2005). The tools that define Web 2.0 do not replace the existing Web infrastructure; they augment and extend it. Tools from the early Internet, such as email, telnet and ftp, provide much of the basic infrastructure. WWW sites created as repositories of published material complement and extend the earlier services. What we experience as the modern Internet are the Web 2.0 social media tools layered on top of and supported by the more traditional WWW sites.

Educationally, the Internet was used during the early years as a tool for research. Individual researchers' hand-created Websites were essentially ignored by the organisation. Once the importance of the WWW was recognised, these sites quickly evolved and now every university has some form of corporate Website, controlled by a marketing group and used to solicit students and donations. A similar pattern occurred when academics started creating individual course pages, which have been overtaken by the development of dedicated Web servers for educational materials known as learning management systems (LMSs).

The LMS provides a generic educational communication infrastructure that has the advantage of providing a common reference point for all students, teachers and courses, simplifying the user experience and facilitating the operation of the system as a whole. Universities initially developed systems individually or in consortia with UNext and the UKeU, spending significant amounts of money on bespoke LMS software development (Chap. 9). The expense and complexity of developing these systems led some to commercialise their initial systems, resulting in the creation of the modern commercial LMS. Blackboard came out of the University of Waterloo in this way. A wide variety of such systems are now offered commercially and as open source projects.

Many of these systems are compromised by their focus on organisational needs, rather than those of the learner (Dahlstrom, Brooks, & Bichsel, 2014; Mott, & Wiley, 2009), and by the broader failure of the LMS vendors to keep up with the wider ideas of Web 2.0 (O'Reilly, 2005). This section started with a quote from Postman, bemoaning the impact of technology as a constraint on academic creativity in the organisation of academic work supporting student learning. The modern LMS reflects the metatechnologies of the course and the qualification by establishing a walled garden for learning and a disposition for separating the activities of learning from other activities of student and academic life.

The LMS embodies the character of the university as a whole, full of important information and still serving many important roles but struggling to keep up with changing expectations raised by developments in other fields. It is a common narrative in the adoption of technology, and the initial sense-making process placing the technology in a particular context that minimises disruption. By treating the LMS as an administrative convenience and publishing system supporting teaching and learning, complex re-engagement with the purpose of many of the parts of the university course is avoided.

The problem the LMS creates for sense-making is the way its affordances define and limit the conception and expectations for learning, suppressing the cues triggering a change in the experience of learning and teaching (Herrington, Reeves, & Oliver, 2005). The evidence is reflected in the body of literature labelled 'the no significant difference phenomenon'. This describes a feature of the scholarly literature for educational technology where multiple papers, reporting on different applications of technology, relate that little is added to the experience, not harming but also not enhancing (Russell, 2001; Ramage, 2002). Such research is viewed as confirming an obvious idea that applying technology without significant reassessment of the pedagogical approach is unlikely to change learning outcomes. The real value of such technologies is only evident if the expectations of the teacher and student are also revised to reflect the affordances and opportunities of the new technology, rather than being constrained by the model used prior to its introduction.

Currently, the LMS is used in ways that meet a set of expectations defined by an older metatechnology of learning and teaching framed by constraints that no longer exist. Until something acts to reframe these expectations, change is not unreasonably resisted, as it apparently offers no benefit.

12.2.3 Clickers and Classroom Feedback Systems

An example of how long it can take to move a technology out of a dead end, such as that occupied by the LMS, is seen in the use of classroom feedback systems invented in the 1960s (Littauer, 1972) and implemented in Stanford in 1966 and Cornell in 1968 (Judson & Sawada, 2002; Abrahamson, 2006). These systems provide a mechanism for large numbers of people to provide responses to questions or ideas, aggregating and displaying summaries of the responses for use by the person leading the session.

Created as physically wired systems embedded into classrooms and controlled by dials and lights, early examples were expensive, inflexible and cumbersome. Subsequently, they evolved into devices like television remotes, commonly called 'clickers' and familiar to the general public through their use by game shows and with audiences of political debates (English, 2003). A diverse range of names are used to describe these systems with Good (2013) listing 27 different terms for essentially the same technology, which now encompasses both dedicated hardware as well as software running on mobile computers (Ratto et al., 2003; Carroll et al, 2014) and the use of generic SMS messaging on cell phones (Scornavacca, Huff, & Marshall, 2009; Voelkel & Bennett, 2014).

In its simplest form, a clicker provides a mechanism for each person in an audience, or each student in a lecture, to choose from a number of possible responses and provide information to the presenter or lecturer. This can be collated if a poll is being taken or recorded as an individual response if it is functioning as a multiple-choice questioning tool.

The first use of clickers was the obvious pedagogical one: as a tool for automating multiple-choice exams, allowing immediate marking and removing the need for processing forms. Clickers remained, at best, a curiosity for the next thirty years. Multiple-choice tests delivered in a form of programmed instruction were popular as a cheap and time efficient examination technique. Pedagogically, early use of these devices was unimpressive and resulted in little measureable benefit to student learning (Judson and Sawada, 2002) a classic 'no significant difference' outcome.

Clickers in the early nineties were what Taleb calls 'the half invented' (Taleb, 2012, p. 189); an invention that exists but which needs a process of sense-making to occur before it can realise significant benefits for its users. The Classtalk clicker system was explicitly created to support more productive discussions between students in large classes (Dufresne, et al. 1996). Further benefits became apparent when these systems were combined with a formative pedagogical approach intended to expose students' misconceptions by asking carefully crafted questions (Abrahamson, 1998; Dufresne, et al. 1996; Poulis, et al., 1997; Shapiro, 1997; Crouch & Mazur, 2001).

The approach used can be illustrated by the experience of physicist Eric Mazur. He was attempting to address the problem of teaching basic physics concepts to students who found rote memorisation of various formulae boring and who struggled to apply the formulae effectively to problems. His solution was to reform his pedagogical approach into a model he named peer instruction (Crouch & Mazur, 2001). In this model, students are provided with a conceptual problem and asked to collaborate with other students to predict an outcome. Student predictions are collected with clickers in large classes, and then an experiment is performed to illustrate the student's intuitions have probably mislead them as to the outcome. The combination of evidence from the clickers that most students were wrong, combined with their own experience of the problem, resulted in students becoming significantly more motivated to understand how different formulae could be used to analyse the problem as physicists do, generating the correct answer and greatly improving subsequent performance in related tasks.

Once clickers were recognised as having a value beyond testing and programmed instruction, the impetus was sufficient to stimulate an evolution of the hardware, using infrared and then wireless clickers. Most recently, this includes abandoning dedicated hardware completely and using software, or 'apps', on student-owned mobile devices, providing a range of incremental usability improvements but fundamentally adding very little to the conception of the idea implemented in the late 1990s (Carroll et al., 2014; Wijtmans, van Rens, & van Muijlwijk-Koezen, 2014).

Modern clicker software provides support for Mazur's peer instruction approach and also for a wide variety of other pedagogical techniques aimed at improving student engagement and motivation in large classes and in multiple disciplines (Fies & Marshall, 2006; Kay, & LeSage, 2009; Good, 2013). The move to software with bespoke systems like ActiveClass and more recently commercial Web services like GoSoapBox means new pedagogical approaches can be rapidly tested taking advantage of new consumer devices. Augmented reality versions of classroom interaction systems have already been tested (Zarraonandia et al., 2013) and devices like the Google Glass or Microsoft Hololens are likely to continue providing new opportunities for different activities.

The literature is full of examples of the range of positive pedagogical outcomes arising from the use of clickers in the context of an active learning approach (Fies & Marshall, 2006; Kay & LeSage, 2009; Good, 2013). This is in stark contrast to the results from earlier assessments of the value of the technology and illustrates the problem facing institutions considering new technologies; context and intent matter as they define the potential for changing outcomes.

12.3 Technology and the Evolution of the University Infrastructure

The campus is perhaps the most important context experienced by students and academics. The evolving conception of a campus and the infrastructure it provides are consequently generating cues for potential sense-making. An examination of the use of the word 'space' in the literature reflects this sense-making by some (Barnacle, 2016), while other cues are generated by a wider transition away from physical provision of information technology, described in the sense-making narratives of the 'cloud' and 'bring your own device' (BYOD).

12.3.1 Learning Spaces and the Affirmation of the Physical Campus in a Digital World

Learning in classes from lectures on the university campus is a powerful model and defines the educational expectations of many staff and students. This power is

apparent when technology recreates the experience of physical classroom attendance in virtual worlds (Kitroeff & Otani 2014), even when the technology is not limited by the affordance of this space. Enrolment patterns at virtual universities and on MOOCs show there are significant numbers of students engaging with the online models, but the vast majority continue to find a face-to-face experience necessary for their success.

In modern universities, technology is most visible in the physical learning and teaching spaces. These include a myriad of expensive equipment including wireless network access points to support students and staff carrying multiple devices, data projectors able to project high-resolution images onto several projection surfaces, specialised lighting and acoustic designs intended to support a variety of learning modes, power throughout the space to support student use of devices with limited battery life, systems recording activity in the room for later review by students and furniture able to be easily reconfigured as needed by the academic and students.

Figure 12.1 illustrates the range of spaces a university operates and the technologies supporting learning activities by staff and students. A feature is the explicit inclusion of both physical and online spaces reflecting the way these can be mixed and matched as needed. This infusion of technology into the physical environment potentially changes the way people engage with each other and with the activities they undertake, individually and collectively. Andersen and Pold (2011) describe this in semiotic terms, suggesting technology can rewrite the script of the space for people. In sense-making terms, technology acts as a cue for new interpretations and possible uses of the space. Scripts become a way of enacting the new sense; assigning meaning to the impact the new uses of the technologies have had on changing our understanding.

The budget for this technology is easily tens of thousands of dollars per room and represents a massive expansion in the infrastructure cost for face-to-face learning. Unfortunately, it is common to see classes still taught as if none of it existed at all, despite this investment. The result is limited engagement from students, and presentations that could (and sometimes have) been delivered unchanged from decades earlier.

The disconnection between these two possible modes reflects the same failure of sense-making driving the LMS to a dead end. Spaces sustaining an existing model will, in the absence of a disjunctive narrative or significant cue, continue to be used to offer classes in the same familiar ways. Given the expense and time needed to create new teaching spaces, the challenge is to provide transition points and to create, identify and adopt models of learning that blend the best features of online spaces with the physical.

The peer instruction pedagogy developed by Mazur and supported by clickers is greatly enhanced by a simple change to the design of traditional tiered lecture theatres. In a dual-tiered theatre, students are arranged in pairs of rows on the same level with swivel chairs allowing the front row of a tier face the back row. This simple change means students go from talking easily to at most two peers, to being able to talk in groups of four or six students. Provided care is taken with aisle placement, the academic can easily move through the space and monitor or support

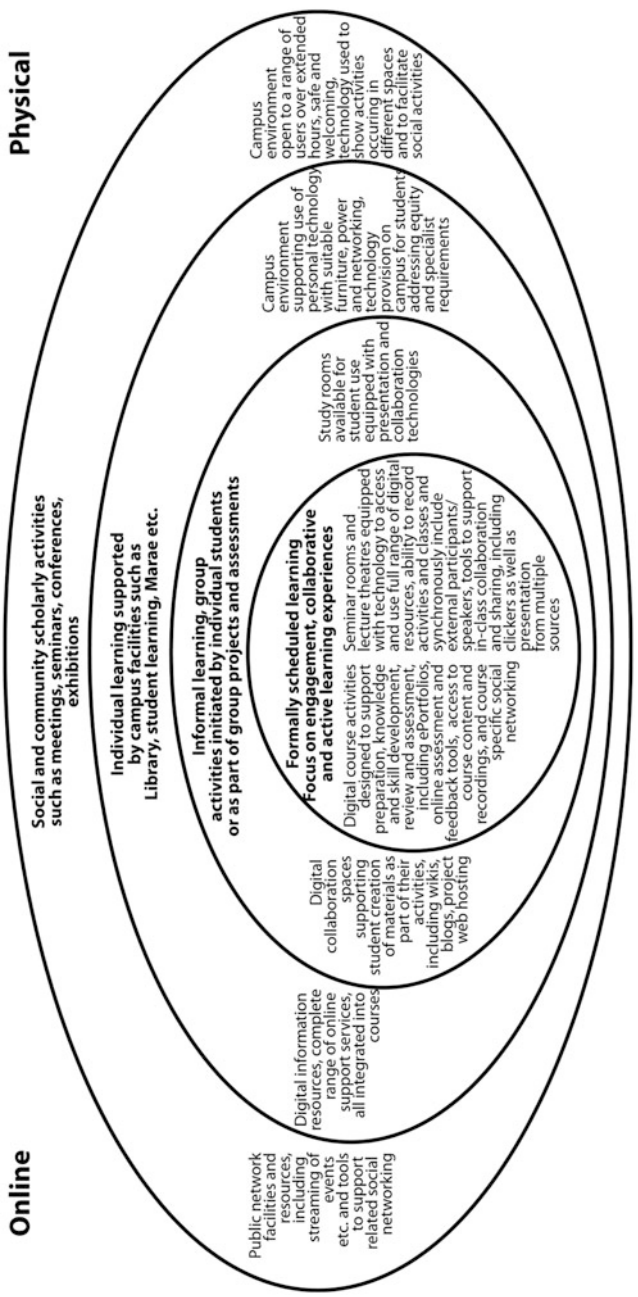

Fig. 12.1 Technology within physical and online learning spaces

group discussions. The ability to choose when and how often to shift from lecturing to active learning pedagogies is reassuring for teaching staff, and the change to the familiar lecture theatre is sufficiently minor to avoid any anxiety that customary approaches will not work. From here, it is another minor step to move online with flipped (ELI, 2012) or flipped–flipped (Schneider, Blikstein & Pea, 2013) approaches that de-emphasise the content focus of lectures and increase the focus on interaction supporting student motivation and engagement.

More radical pedagogies such as SCALE-UP (Beichner et al., 2007; McNeil et al., 2015) require a more significant configuration shift. These models use a flat space with students clustered into groups, engaging in problems as sub-teams and then working with the full team to explore different options and outcomes. In practice, this sees groups of over 150 students, supported by a small team of staff, learning in sessions of four to six hours, which substantially or completely replace the use of lectures. A subtle feature of this model is the focus of the students is on each other and most of these spaces avoid a traditional room layout with a dominant 'front' privileging the staff. The advantage is technological requirements are increasingly minimal. The spaces simply need to be flat-floored rooms with sufficient power points and wireless networking capacity for the individual devices in use. A simple rearrangement of these spaces turns them back into traditional seminar rooms.

Modern campuses are moving out in the layers described in Fig. 12.1 to provide semi-formal and informal learning areas for students to continue to work, individually or in groups. These provide important transition spaces between formal classes and other course activities and support the use of the online resources through provision of comfortable furniture, power, Internet access and other amenities such as food and coffee. The sense-making narrative this supports is a validation of the role the meta-technology of the university plays as a human space with a sense of community, while also being a place that actively engages with technology.

12.3.2 Cloud

Although the value of the campus as a context for learning and teaching is increasingly affirmed by the experience of blended and active learning approaches, the technological infrastructure of the university is progressively moving away from the campus and onto the 'cloud'.

The concept of the cloud was first articulated in 1963 (Licklider, 1963) and has since evolved through various technologies to the modern version sitting behind major Web systems such as Google and Amazon. The key idea is the concept of the virtual computer. Gone is the individual system associated with a single physical computer containing its own processor, working memory and storage. The cloud utilises a collection of hardware, hiding the actual details from the users and potentially operating a single system on a multitude of computers or a multitude of

small systems on a single computer. The value of this approach is a system such as an LMS can be designed to scale as demand grows, both in terms of direct performance and the locations it operates from. Almost all of the systems used to support major Internet services are implemented using cloud technologies operated by vendors such as Amazon through their Amazon Web Services (AWS) business and Microsoft through its Azure business. Data centres scattered around the globe in key locations with good infrastructure and physical security provide services that appear to the users to operate from a single location.

Vendors such as Microsoft and Google use the cloud to offer complete packages of systems and services to universities including identity management, email, calendaring, document creation, storage and sharing. They also offer a wide range of collaboration tools designed to support administration, research and education. The vast array of vendors offering services for higher education (Chap. 4) increasingly are themselves cloud vendors, usually in partnership with one of the major providers such as Amazon or Microsoft.

The cloud is not without its detractors. The association of the concept with major US corporations and the location of major data centres in the US generate concern about the surveillance and privacy impact this can have (European Parliament, 2012). The European Union, in particular, has been an active proponent of strong data privacy laws and agreements in the cloud space. One response is the growth of data centres located in a range of different countries so vendors and their customers can choose to operate services and store data in jurisdictions with specific legal frameworks. The ease with which this can be done in comparison to previous system architectures is an attractive feature of the cloud's virtualisation of systems. Pragmatically, cloud-based services are less likely to fail compared to systems operated directly by all but the most well-resourced universities, and they provide a much more resilient infrastructure capable of coping with events such as earthquakes or fires.

It can be argued that the cloud represents a return to the earlier model of a shared mainframe system. The reality is the cloud represents a more fundamental shift in the virtualisation of information and the tools we use to engage with it. Until very recently, computing was defined by access to expensive hardware. Planning for its use required purchasing capacity in advance; hoping the purchased performance was sufficient for the demands made of it but not overspecified and therefore wasteful. The heart of the cloud is the dynamic nature of the capacity used. Cloud systems can be designed to scale automatically as demand grows, with availability of the specific type needed—memory, storage, bandwidth, processor power—changed as appropriate. The result is a flexible model enabling the creation and testing of new services and tools without the need to attract substantial resources in advance. Computing power is redefined as a purchased commodity in a model not greatly different to those supplying services such as water and power.

This flexibility means new ideas can be enacted and used to generate sense-making cues within an organisation without the need to overcome change resistance and formal business decision-making processes. The opportunity and challenge for university leaders are recognising how to use this to enable agility

rather than see a threat to the authority and control of traditional management hierarchies. The next section illustrates the reality that these hierarchies are already irrelevant and ineffective.

12.3.3 BYOD: Staff and Students Creating Their Own Infrastructure

Through the nineties, use of technology in higher education was constantly framed by concerns that the cost of technology was creating a 'digital divide' (BECTa, 2001; US Department of Commerce, 1999), which would further perpetuate the inequality of the élite models of education as well as fuelling the myth of the Digital Native discussed earlier. Access to computing and to the Internet was enclosed within a model of organisational technology use framed by the management and control systems of the university. Priorities focused on cost control and efficient use of a scarce and valuable resource.

In 2000, the Pew Internet Life survey found that only 50% of US adults had access to the Internet. In 2017, the situation has dramatically changed with 99% of 18–29-year olds using the Internet (Pew Research Center, 2017). With the exception of some developing countries, the vast majority of students in universities today have access to an Internet capable computer, increasingly a portable device connected via a high performance wireless connection.

The switch from depending on an organisation for computer access to providing your own and using it to access the services and tools you need is known in the technical literature as 'Bring Your Own Device' or BYOD (Raghunath, Anker, & Nortcliffe, 2016). BYOD's most basic form is rather than the organisation owning all computers and having to manage the equipment inventory, it instead allows, and often subsidises, the use of individually owned computers for organisational purposes. BYOD offers the potential for significant administrative savings, and a positive recognition of the role flexibility of technology plays in the work of information professionals such as academics, particularly when the organisation has a mobile workforce using a variety of technologies.

BYOD arose from the expansion in availability of portable computers and accelerated with the widespread availability of wireless networks. It depends on a number of other technologies, particularly the rise of a standardised Web environment with standards-compliant Web browsers, protocols allowing secure access to organisation networks, and the ability to 'virtualise' standard computing environments onto the cloud, thus providing organisational tools and managing sensitive information.

The student experience of computing at university has similarly evolved. Initially, access to computer laboratories and provision of sufficient networking infrastructure was a major issue (McCollum, 1997), which evolved into programmes aimed at providing students with portable computers for their study (Young, 1997). The more recent proliferation of formats is balanced by the

standardisation of tools and communication technologies and when combined with the reduction in cost of devices, students now bring their own devices without any need for formal institutional programmes. Indeed, students are often using multiple devices. The ongoing developments of cloud infrastructure services and commodity wireless and ultra-high speed broadband at low cost are lowering the capital costs rapidly to the point where even individuals can afford to create extensive Internet services independently of any organisation.

Reclaim Hosting and the University of Mary Washington 'Domain of One's Own'

Reclaim Hosting was established in 2013 by staff at the University of Mary Washington. Following a successful project giving students a domain—the unique part of a Web address—of their own they could use to identify their work and linked to a UMW Web hosting facility (UMW, n.d.), Reclaim Hosting is a space for staff and students to experiment on the Web. Space that they own completely, rather than being dependent on consumer services which can be terminated without warning (Grossman, 2013).

The Reclaim Hosting service provides a low-cost space on the Internet, identified by a domain name of the student's choosing and subsidised by the university during the period of enrolment. It remains the property of the student for as long as they wish to pay for it. They can use this space to run a wide range of standard tools without any sophisticated technical knowledge. They can run blogs or create and deploy their own Web systems from scratch as part of their studies, personal life or as an entry to private entrepreneurship.

The idea was stimulated by dissatisfaction with the standard commercial Web services provided by consumer-oriented companies, the rigid feature sets of the LMS and the sense students need to directly engage with the Internet as part of a modern education. Campbell (2009) articulates the concept of the 'personal cyberinfrastructure' as a tool for learning:

> "Just as the real computing revolution didn't happen until the computer became truly personal, the real IT revolution in teaching and learning won't happen until each student builds a personal cyberinfrastructure that is as thoughtfully, rigorously, and expressively composed as an excellent essay or an ingenious experiment. This vision goes beyond the 'personal learning environment' in that it asks students to think about the Web at the level of the server, with the tools and affordances that such an environment prompts and provides." (Campbell, 2009, p. 59).

Watters (2014b) expresses this idea as freeing students from the framing of technology in learning as a 'templated' activity, one owned by the institution or vendors such as Facebook. That the university would mandate the pen and paper used by students for their learning seems ludicrous. That we constrain their use of digital tools to specified platforms for the convenience of the university or academic staff will seem similarly ridiculous in the near future.

Our understanding of technology use by students and staff needs to evolve to recognise the implications of this change. Universities must be able to engage with technologically enabled autonomous users, recognising that traditional models of control and authority over technology use are rapidly failing. The organisational models for IT management need to focus on facilitation and integration. Clarity is required over which technical systems must remain under direct IT department control and which are now commodities. Carr (2003) frames technology for organisations as simply a question of managing the adequacy and cost of the resources needed to achieve a strategic end. A similar shift of thinking is occurring for individuals, and now they have options that can be exercised without any need for a traditional organisational IT service.

The mind shift these cues imply is that university IT services need to see themselves as trusted consultants, able to influence and inform decisions but not in control of the work of others. The complexity of vendor relationships described in Sect. 4.6 and the rapid pace of change in online technologies requires specialists who combine technical knowledge and skills with a deep awareness of the core businesses of the university, who are capable of leading change (Bennis, 1999; Flutey, Smith, & Marshall, 2017; Jones, Lefoe, Harvey, & Ryland, 2012; Marshall & Flutey, 2017). The awareness of this type of role is recognised in the literature, described as operating within the 'third space' between academic and administrative concerns of the university (Whitchurch, 2008; 2009a; 2009b). The next section explores the complex and evolving reality of university administration and the blurring of the boundaries between academic and administrative uses of technology.

12.4 Technology and the Administration of Universities

To date, technology has had the greatest organisational impact on the administration of the university. The transition to mass models of education described earlier is accompanied and supported, or even driven, by the creation of elaborate management systems aimed at collecting, analysing and reporting an ever-growing volume of data. Vast amounts of money are invested in administrative systems aimed at managing the processes of enroling, teaching and reporting on students. Technological tools are more effective at supporting administrative frameworks for courses and qualifications than they are at supporting pedagogical engagement.

A reason for the growing complexity of university administration is the increasingly hostile nature of the Internet. The ease of connecting to anything, anywhere and the ease with which information propagates across the Internet creates a fertile ground for a wide variety of criminal activities. Many countries have laws designed to protect individuals and businesses, and these often include specific requirements of educational organisations. Driven by a mix of external legislative and accountability requirements aimed at addressing funding, educational success, equity, student welfare, privacy, security and even terrorism, the modern university is a complex technologically enabled bureaucracy.

The development of technologies described as 'learning analytics' provides an example of the intersecting forces for change in university administration. More than a single technology, learning analytics are yet another meta-technology operating within the university.

12.4.1 Learning and Academic Analytics

As discussed above, the shift to large-scale systems is accelerating with a further shift to 'the cloud'. A consequence is the vast amount of information being stored in various interconnected systems provides a significant opportunity to identify patterns that inform the development and evolution of services. Variously known as 'data mining' (Papamitsiou, & Economides, 2014), 'big data' (Picciano, 2012) or business intelligence (Long, Siemens, 2011), this idea reflects the sense-making cue inspired by scientific and commercial uses of large data sets to extract patterns.

The combination of large data sets and modern data analysis algorithms underpin services for organising and finding information ranging from news or academic journal papers through to context sensitive geospatial data such as weather or traffic predictions. Large-scale data analysis algorithms underpin the ability of automatic language translation systems and the contextual support services incorporated into smartphone personal assistant software such as Apple's 'Siri' or Microsoft's 'Cortana'.

The growth of this technological infrastructure has the potential to greatly facilitate the collection of information on educational activities. This is the concept described as 'learning analytics' or 'academic analytics'. In its simplest form, it uses the tools and ideas developed to analyse large data sets, particularly those developed in the context of commercial Web 2.0 systems, to gain insights into student activity and use that information to improve academic outcomes (Picciano, 2012). The broadest sense of the concept is apparent in the definition proposed by Siemens (2013, p. 1382):

> Learning analytics is the measurement, collection, analysis, and reporting of data about learners and their contexts, for the purposes of understanding and optimizing learning and the environments in which it occurs.

Online tools, such as the LMS, collect a vast array of information on what students are doing and this data is available for analysis. Demographic and other data collected as part of the enrolment process; data from student accommodation and other support services; wellness information, including the amount of sleep, exercise and individual happiness (Leece & Hale, 2009; Kaye & Stuart, 2012); activity information from student use of key systems, down to the level of mapping student movement through Web pages, also known as clickstreams; assessment information or contributions to online forums. Some institutions are even going beyond their own systems to integrate information from social media systems such as Facebook (Hoover, 2012; Shum & Ferguson, 2012).

Using a variety of quantitative and qualitative data analysis tools, institutions can generate detailed reports analysing the activities of students. When combined with other information—prior educational experience, current grades, and demographics—they can predict a range of useful things, including the risk a student might disengage or fail to succeed (Papamitsiou & Economides 2014). Such systems are already deployed by institutions concerned about student success, often as a result of requirements imposed by performance indicators (Chap. 16).

There are other ways the technology is used by those prepared to analyse more deeply and consider new models of education. Given a large set of analytics data on a population of students, an institution can apply the information to assign students into course cohorts or tutorial groups on the basis of compatible skills, knowledge, experience, goals, learning styles or any other factor determined to positively influence success. Students can be matched with courses derived from multiple sources with options to choose different content, level of challenge, pedagogical model or structure as needed. Information on how students engage with a rich set of educational materials can lead to the discovery of skill maps or relationships that can be usefully systematised, further developed and shared with new groups of students.

These two models are increasingly recognised through the careful distinctions made between academic analytics and learning analytics. Van Barneveld, Arnold and Campbell (2012) define academic analytics as the use of information to manage and improve the performance of the institution and its constituent organisational units. This includes the use of data to analyse admission, course success, graduation, employment and citizenship (Prinsloo et al., 2015). Learning analytics in the narrower sense are defined as 'focused on the learner, gathering data from course management and student information systems in order to manage student success, including early warning processes where a need for interventions may be warranted' (van Barneveld et al., 2012, p. 6).

Another distinction can be made on the basis of who is empowered to act on the insights obtained from analytics. Academic analytics are tools for organisational leaders, administrators and external stakeholders influencing the governance of the institution. Learning analytics enable teachers and students to influence individual student outcomes. Shum (2012) describes learning analytics as operating at the micro-level and academic analytics at the meso-level of the institution. A further macro-level of analytics is used for system wide monitoring of higher education by quality and accreditation agencies (Chap. 16).

Learning analytics are the organisational equivalent of student assessment. They can be summative, looking at compliance with an expected outcome, or formative, forward looking and framed by the possibility of future improvements. Educators distinguish between assessment *of* learning and assessment *for* learning. A similar sensibility is needed when thinking about the information provided by analytics systems (Macfadyen et al., 2014). This understanding is central to those who explicitly distinguish between academic analytics, where the audience is primarily leaders, and learning analytics, aimed at students and teachers.

An extensive array of organisational activities are identified as benefiting from the use of analytics (Atif, Richards, Bilgin, & Marrone, 2013; IBM, 2011; Long & Siemens, 2011). These include organisational concerns regarding the monitoring and reporting of key performance indicators and other measures of the qualities valued by key stakeholders. Internal use of analytics includes management of staff, identifying the attributes of high performing staff to use for ongoing professional development and operational management of various systems including courses and programmes. Information on organisational performance is important for management planning and strategy development and can be used in sense-giving to shape wider understanding of the context stimulating the need for changes.

Educationally, analytics are used to monitor the student population and predict students in need of early intervention and support. They are used to refine the ways the university structures programmes of study and the associated support mechanisms. Analytics can be used in relatively simple ways to monitor activities and assessments within courses and provide feedback to both students and staff on the current state of student performance. These are key enablers of more ambitious pedagogical models including adaptive content and curricula implemented for individuals or for cohorts of learners.

The scope and ambition of this list of activities illustrates the impact analytic technologies have on organisational performance monitoring and quality improvement processes (Chap 16), but there are caveats. The major benefit of learning analytics, the ease with which it facilitates the collection of this rich diversity of information, is also its major weakness. The resulting volume of data can be persuasive purely on the basis of its sheer scale and technological context but neither of these speak to the underlying reliability and validity of the data collected (Boyd & Crawford, 2011). Pilot analytics initiatives found evidence that much of the data available in educational systems is unreliable and inconsistent having been collected for unrelated purposes (Barber & Sharkey, 2012).

A key element distinguishing academic analytics from learning analytics is the identification and analysis of the student as an individual. The data available for learning analytics is constrained by the need to identify the student so information supplied through anonymous feedback mechanisms is not useful for learning analytic purposes but can potentially be of great use in an academic analysis system aimed at improving the quality of organisational systems and processes.

The dominant use of learning analytics to date is identifying students at risk of failing, either out of concern for the student or for ensuring student retention rates comply with institutional performance standards (Norris, 2011; Barber & Sharkey, 2012; Papamitsiou & Economides, 2014). This is achieved by analysing demographic information combined with their academic record and any available information on activity within current courses, such as early assessment results or engagement with key systems such as discussion fora or library facilities. A student identified as at risk is usually notified through an LMS or by direct contact (Arnold, 2010; Arnold & Pistilli, 2012; Leece & Hale, 2009). This approach explicitly acknowledges that some students are likely to fail and provides a means for the institution to choose how to prioritise resources aimed at supporting success; a form

of academic triage with the unpleasant connotation that some students may be left to fail because they are too costly to support.

The inherent logic and appeal of this is compelling, but there is evidence that using analytics in this way ultimately fails to make any significant difference to student outcomes (Dawson, Jovanovic, Gašević, & Pardo, 2017; Tempelaar, Rientes, & Giesbers, 2015). This use of analytics is undoubtedly politically useful, despite minimal evidence of improvement to student outcomes, and many institutions probably cease their sense-making of the technology at this point.

A more educationally positive model is seen in the use of analytics information to modify the pedagogical approach in response to student needs (Gašević, Dawson, & Siemens, 2015). One example is demonstrated at Harvard where students are matched in discussions with each other using analytics aimed at maximising the potential for learning (Parry, 2011). Other approaches being tested include the ability to individually tailor course learning materials and activities in real time (Parry, 2012) and the incorporation of analytics into learning designs to create active and responsive pedagogies (Lockyer, Heathcoate, & Dawson, 2013).

Analytics systems, as part of the institutional technology infrastructure, are operated by individual staff and students to gain insights into personal patterns of work (Duval, 2011; Wolfram, 2012). They are used proactively to predict which programme of study is best suited to a student to maximise success (ASU, 2011; Parry, 2012). A future trend is the development of mechanisms allowing institutions to provide students with individual analytics data derived from institutional systems in the correct format for integration with personal analytics and so used to guide individual choices regarding study patterns, sleep and exercise; an academic adjunct to the personal health concept known as the 'measured self'.

Intelligent curriculum systems encourage the adoption of different pedagogical strategies and replace the need for manual monitoring and some aspects of feedback. Organisations use the data to help staff improve their performance by identifying and developing key attributes of good teachers. Larger scale quality improvement activities are modelled using real data to predict outcomes and inform operational and strategic planning for change.

Vendors are active in the analytics space with companies like Microsoft (Farr, 2014) and Knewton, owned in part by Pearson (Knewton, 2011), providing programme advice on the basis of analytics. They are using analytics information to help universities tailor their courses in real time to respond to different student needs (Watters, 2011; Upbin, 2012). The collection of data is not limited to university and vendor systems. Companies such as University are mining social media, Facebook for example, to influence student enrolment choices based on the decisions of the network of friends (Hoover, 2012).

Ongoing developments in the fields of mobile and ubiquitous computing, combined with geolocation technologies, will see vendors offering universities the ability to track students as they move about physical campus locations or interact directly with internet-enabled equipment and facilities on campus (Rubel & Jones, 2016). Technologies such as RFID tags and low powered Bluetooth and Wi-Fi enable the 'internet of things' (Kortuem et al., 2010), which add a form of

continuous analysis of student activity. The implications are not entirely positive and form one of the many ethical and organisational challenges raised by the use of analytics.

12.4.2 Ethical and Organisational Challenges Raised by Analytics

Many challenges are posed by the use of analytics (Campbell & Oblinger, 2007; Papamitsiou & Economides, 2014; Slade & Prinsloo, 2013). They include consent; privacy; data management, including de-identification of data when using it for research; tension between organisational and student interests, including duty of care and the need to respect student autonomy; and transparency and accountability, particularly when there may be negative consequences for students from assessment or access to study opportunities. Added to these challenges are the issues arising from the quality and reliability of the analytics data itself (Barber & Sharkey, 2012; Boyd & Crawford, 2011; Campbell & Oblinger, 2007).

Learning analytics are described as creating an educational equivalent of Foucault's Panopticon (Slade & Prinsloo, 2013); the technology risks creating an environment of distrust through a sense of constant monitoring and surveillance by a faceless technological overseer (Knox, 2010). Trust is widely recognised as a fundamental precondition of learning. Anything that damages the trust between student and university, or worse, student and teacher, is going to compromise the student's education.

Many people are now aware that others can monitor their online activities. People are starting to assert their rights to privacy and to control what information is collected about them and how it is used. Strong legislative regulations on information collection, storage and use apply in many countries, including the USA (Family Educational Rights and Privacy Act, FERPA; White, 2007) and the European Union (The European Parliament and The Council of The European Union, 2002). Beyond the legislative penalties, even technically lawful monitoring systems, such as the use of cameras to record attendance at lectures, can generate substantial negative publicity and reputational harm (Koenig & Kolowich, 2014).

It is not a large step from some of the 'wellness' monitoring systems to an intrusive and unpleasant surveillance regime. What if government concern with rising costs resulted in a policy of funding student debt or student access only if a student maintains a level of diligent activity considered worthy of society's investment in their education? Separation must be maintained between the use of analytics to improve the quality of processes, and the use of the information to measure the quality of student outcomes.

The challenge for universities is navigating the complex area of privacy with regard to students, given the duty of care and teaching relationship that exists. What is meant by privacy is hard to define in absolute terms. It needs to encompass who

is accessing information, what information is being accessed, what burdens and benefits accrue from the use, and what awareness and control is there over these by the subject (Rubel & Jones, 2016). The blurring of boundaries between public and private complicates these issues, a blurring facilitated by social media technologies and a lack of explicit awareness of the implications by the people subject to monitoring (McKee, 2013).

An obvious approach is to be completely open about the data being collected and the uses it is being put to, preferably before the student enrols so they can make an informed decision to consent (Weeden, 2012; OLDS MOOC, 2013; Marshall, 2014a). This is challenging to universities operating in the élite and mass education models where the lines of accountability are weighted towards other stakeholders than the students. As part of their enrolment process, many universities collect consent from students to use data for the necessary purposes of their education. As the scope of this data use grows, it is increasingly unclear if this is a genuinely informed consent sufficient to justify the use of the data (Lawson et al., 2016). The lack of knowledge and the concerns that academics themselves hold about analytics (Huijser, West, & Heath, 2015), mean students are unlikely to get a clear picture unless the university invests in communicating and engaging directly with students.

Another challenge is the organisational capacity needed to engage effectively with the data (Siemens, 2013). Data collection requires significant investment in a technology infrastructure, including the middleware or integration systems enabling efficient information sharing between disparate systems. The complexity of the raw data requires specialist processing skills combined with statistical knowledge and a detailed understanding of the organisation's process and its students. Processed information needs to be represented in a form that provides non-specialist managers and academics with useful insights into the organisation, the functioning of its systems and processes and the student learning experience. Key elements of this capability are often lacking and institutional leaders are left with a limited data set incapable of supporting strategic and operational decision-making (Marshall, 2008; 2010b).

The empirical basis of analytics with its roots in science may mislead users by implying it represents an unbiased and objective reality. Data collected by organisations is rarely free of bias, and its use to influence organisational decisions and processes is likely to affect the nature and quality of the data collected and the resulting analysis (Boyd & Crawford, 2011). There is every likelihood the data being collected by analytics systems is missing key information necessary for the uses universities and other stakeholders would like to make of it (Tempelaar, Rientes, & Giesbers, 2015). Any successful analytics initiative is likely to change the nature of the experience being analysed as staff and students respond to the questions asked and any immediate analysis provided, thus making longitudinal data suspect.

A simplistic response, affirming the concerns of privacy advocates, is trying to collect ever more data from a widening range of increasingly intrusive sources. Potentially more acceptable solutions start by focusing on the identification of effective strategies that improve individual student outcomes. Then, providing

mechanisms that promote these to students and staff so that they are used, with analytics providing the evidence in justification of the value.

Learning analytics, like all quality systems, have the potential to provide cues for sense-making if they are constructed in a way that acknowledges the possibility of change. It is easy to create analytics that reinforce existing models, acting to discourage change by creating disincentives for staff to change their teaching approach. These changes disrupt the learning experience and generate behaviour that, while positive, may not be apparent to rigid analytics systems.

Shum (2012) notes the risk that extensive dependence on highly structured analytics might act as a disincentive to the ongoing experimentation and change of pedagogical practices. If monitored systems are required for assessment, then the scope of assessment practice may be defined by technological concerns and limitations rather than pedagogical concerns.

The diversity of stakeholders engaged with higher education (Chap. 4) means they will see analytics differently depending on their particular priorities and concerns. Very few measures will have a single interpretation, and the decisions regarding what is measured and reported involve a combination of pragmatic and political drivers.

Successful learning analytics initiatives must be supported by effective leadership, collaboration, policies and strategies able to engage with the dynamic environment of a university and recognise the limitations of purely rational and evidence-based change (Macfadyen & Dawson, 2012; Macfadyen et al., 2014). As with all forms of sense-making, the process of implementing analytics stimulates change. The exact nature of that change depends on the culture of the organisation and the wider change narratives sustained by the leadership (Chap. 21). This is apparent in the evolution of learning analytics, from its roots as a purely data driven activity, through recognition of the difference between learning and academic analytics, to the current understanding framing a range of analytics activities with specific contexts and the wider purposes of the university. The next major shift is a shift from focus on the average student to awareness of the individual student, supporting the ongoing development of systems to recognise and highlight the diversity of student learning pathways and provide dynamic responses to individual needs managed efficiently over large populations of diverse students.

12.5 Conclusion: The Role of Technology in the Systemic Change of Higher Education Organisations

Much of the current structure of a university is still traced back to the characteristics and limitations of older technologies. The modern lecture draws on an inheritance of monastic recitations and scientific demonstrations reflecting the historic limitations of books and audio–visual media. The need to be part of a campus community is a practical response to the costs of living and the expense of transportation, of

ideas and of people, providing a means of concentrating knowledge in libraries and the opportunity to engage with peers similarly exploring this corpus.

Despite these roots, the university is also a place where newer technologies stimulate change. Any modern university invests millions of dollars annually on technology, reflecting the expectation that increased use of technology will improve the quality and flexibility of learning (Bates 2001; Bush 1945; Cuban 2001; DfES 2003; Oppenheimer 2003; Ryan, Scott, Freeman, & Patel 2000). Maintenance of an effective technology infrastructure remains a key strategic focus for university leaders (Allen, Seaman, Poulin, & Straut, 2016).

The layering of technologies and their affordances, the experiences of students and staff described in earlier sections, all have the potential to generate a new set of cues to trigger sense-making and a revisiting of the roles and purposes of higher education. The creation of the cheap digital calculator forced mathematics educators to re-engage with their models of teaching mathematics, exposing the need to change the emphasis of their work and assist students learning in a world where complex calculations were no longer subject to the limitations of the human brain. Technology is starting to provide options for other cognitive activities, including the recall and organisation of information, by students and by teachers and institutions. The iron triangle framing the constraints linking cost, access and quality makes the assumption that the nature of the task—learning—is unchanged. If technology stimulates and enables a change the nature of learning, socially and cognitively, then a new relationship is established, dramatically improving the outcomes of all three dimensions simultaneously.

This is not technology in pursuit of transformation. It is a rational response to a range of potential benefits technology offers existing universities including (Bacow et al., 2012):

- Generation of new revenue by expanding scope or scale of education;
- Demonstrating relevance to students expecting to use Internet tools for their education;
- Improving learning outcomes for existing student groups, collectively and for specific groups with particular needs;
- Reducing instructional costs, to the institution and to individual students as the cost of key infrastructure components falls, and technology is used to remove or reduce the need for expensive facilities;
- Increasing access to specific courses, programmes of study and qualifications, in terms of enrolment into course opportunities and in terms of where and when course activities can occur;
- Providing access to world experts or iconic facilities.

Some of these are attempts to respond to other forces identified in earlier chapters by implementing technological solutions. Direct technological solutions are unlikely as many of the challenges are not simple, either in form or in the way they are redefined in response to change. Despite the substantial resources spent, use of technologies like the LMS and analytics are primarily sustaining existing

models. This investment has not redefined or transformed the institution. Much of the impact has been localised to specific activities: the administration and basic operations of the organisation; the modernisation of the audio–visual environment used to teach; and access to information for research and scholarship. The case of the clicker illustrates in some cases it can take decades to re-engage with a technology and achieve any significant impact on learning and teaching practices.

Organisationally and individually, sense-making processes position technologies in ways that minimise the impact of those technologies on the systems and experiences of higher education pedagogy (Conole, 2000; GAO, 2003; Kenny, 2001; Means, Toyama, Murphy, Bakia, & Jones, 2009; Radloff, 2001; Taylor, 2001b; Zemsky & Massy, 2004). While this is partly the result of poor research design and the challenge of collecting empirical evidence of improvement in student learning outcomes, it does mean sense-making cues supporting pedagogical change are harder to identify, leaving much of the pressure for change to the technologically more apparent aspects.

Using a technology infrastructure to support the operation of any modern organisation is routine and can seem strategically irrelevant (Carr, 2003; Chester, 2006). Having an infrastructure and using it in ways that reflect its concrete and core affordances is normal practice and reflects access to an appropriate capital base, rather than any discrimination or strategic insight. Given this experience, it is reasonable to suggest technology is not a force for change in higher education. This ignores the dynamic nature of technological progress and the way nonlinear changes in technological capability generate rapid and dramatic changes in how people live their lives. It fails to account for the expectation that many people having that technology will create change. New technologies can trigger new sense-making about the nature of education, particularly when coupled with leadership using the opportunity to reinforce the cues, strengthening that expectation for change. Roosevelt's Commission recognised the impact individual and organisational behaviour have on the adoption and use of new technologies:

> 'While a serious obstacle to considering invention in planning is lack of precise knowledge, this is not irremediable nor the most difficult fact to overcome. Other equally serious obstacles are inertia of peoples, prejudice, lack of unity of purpose, and the difficulties of concerted action'. (National Resources Committee, 1937, ix)

Taylor (2001b) observed the challenge facing universities innovating with technology is the execution of the change. The way technology is used to advance and inform organisational strategies and the manner in which it advances the goals of a change resilient organisation is now the factor that discriminates between organisations reacting to their environment and those leading and shaping it (Carr, 2003; Hamel & Välikangas, 2003). This is fundamentally a recognition of the need to respect the wicked nature of the changes enabled and catalysed by technology and to use sense-making to lead and stimulate a coherent set of organisational responses within the university.

Part III
Sensemaking and Change in Higher Education

Chapter 13
Part III Introduction

Abstract Universities are complex organizations that are often characterised as resistant to change. The conflicting narratives of change in the university are explored, and the challenge this presents to sense-making and leadership is identified. Leaders need to use the cues and opportunities generated by the forces of change to frame sense-giving activities to initiate and sustain improvements in the organisational structures, systems and processes meeting the needs of the important institutional stakeholders. Stereotypes of a dichotomy between technocratic determinism and faculty intransigence are rejected, and tools supporting alternative conceptions are introduced.

> …universities now seem less sure of themselves. They are constantly being reinvented yet are less capable of genuine self-production than before. The decline in robust, indigenous cultures and inventive forms of self-governance suggests a brash but brittle lurch into the world of enterprise. (Marginson & Considine, 2000, p. 6)

> We cannot live in a room of mirrors, claiming that we are so unique that nothing occurring beyond that room matters. Mirrors lead to delusions, e.g. that we already do what the major action lines of the Bologna Process call out for us to study, reflect on, and perhaps adapt to our own circumstances. Mirrors lead to short-term, positivistic bean counting and instant predictions of how many beans we can put in a bowl. We are mesmerized by the immediacy of "how much," absent a historical "how well." It's time to break the mirrors. (Adelman, 2009, p. 189)

The first section of this book focuses on the changing context of higher education in considerable detail. The sense-making procedure of identifying parallels between general forces for change influencing higher education and the specific challenges facing a specific educational organisation is critical in starting the process of effective organisational change. Leaders need to use the cues and opportunities generated by the forces of change to frame sense-giving activities to initiate and sustain improvements in the organisational structures, systems and processes meeting the needs of the important institutional stakeholders.

Fundamentally, change is hard. Significant life changes are listed amongst the most stressful things humans can experience, and the ambiguity of change in

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organisations generates high levels of discomfort emotionally and neurologically (Fugate, Kinicki, & Prussia, 2008; Sarinopoulos et al., 2010). Organisationally, the stress responses to the ambiguity of wicked problems compromise sense-making and creative responses to change. Organisations under stress emphasise control and compliance, adopting rigid models for problem-solving and fixating on a single course of action while reacting negatively to attempts to identify a range of alternative options (McCaskey, 1982). These behaviours are not well suited to wicked problems, mistaking action for strategic vision and leadership.

The university is responding to the increasing tempo of change in society by transforming at an increasing fast rate. The élite university of Newman (1853/1976) and Humboldt (von Humboldt, 1903/1970) changed over centuries, the mass university arose in the USA, Europe and the UK over generations (Geiger, 2011), and the transition to the universal model appears to be happening over decades or even years. In each case, the typical university response to accrete the new features and systems over the old, rarely completely erasing the sensibilities and affordances of the older form.

The post-war years were framed by the shift to a more technological society than the one preceding it. In the 1970s, the problem was how to prioritise resources and temper the autonomy of the individual faculty with systems and leadership able to make tough choices (Kerr, 1963, 2003; Marginson, 2016). Through the 1980s and 1990s, the rise of performance management and quality assurance regimes (Chap. 16) provided significant pressure on institutions, even as student numbers dramatically increased and participation in higher education widened in many countries. As the implications of mass education propagated through systems, these changes saw the university described as 'ruined' (Reading, 1996), corrupted by a shift away from élite values (Anderson, 1996) and at risk of being destroyed by the use of online delivery (Noble, 2002). The need to sustain institutions faced with increasing numbers of students but reducing revenues has defined the first decades of the new millennium (Chaps. 3 and 5). As funding and accountability changes propagate through higher education, the consequent focus on the economic significance of the university is now seen as destroying its role as a cultural institution framed by human values (Bok, 2003; Collini, 2012).

Despite the changing nature of the challenges facing institutions, the idea that change in higher education is inevitably a contest between institutional leaders and academics essentially defines the literature since the 1970s. Senior managers are cast as ineffective but benign figureheads or as representatives of a managerial business culture determined to make the university into a reflection of mainstream business culture. Academics are consistently described as focused solely on their own needs and the issues facing their own discipline, resistant to any change that impinges on their freedom and autonomy (Chap. 4). This is not a recent phenomenon. The challenge of change is repeatedly noted over recent decades.

Yarmolinsky (1975) describes universities as operating in a form of 'institutional paralysis' noting (p. 61) '[o]ne of the remarkable things about universities in the first three quarters of this century is that, with a few honourable exceptions, they have managed to survive, and even to prosper, without developing any conscious

process for making institutional choices'. He suggests the reason lies with the continuous increase in funding provided to the institution, particularly throughout the post-war expansion of higher education, and that institutions are now paralysed by organisational systems acting to prevent any change.

The starting point for Kotler and Murphy (1981) in their consideration of strategic planning in higher education in the eighties is that academic institutions are inflexible with a professional workforce expecting to participate in any planning decisions and acting to prevent change contrary to their interests. Change and growth are difficult because of these 'internal constituents' who are critical of business culture and opposed to ideas that planning should account for profit and market expectations. Scott describes the academic response as using the weapons of the weak, '… the ordinary weapons of relatively powerless groups: foot dragging, dissimulation, desertion, false compliance, pilfering, feigned ignorance, slander, arson, sabotage, and so on' (Scott, 1985, p. xvi).

The nineties were a time of significant change with the rise of the virtual university (Chap. 9) setting a narrative of necessary change and resisted by a cynical academia; 'passive resistance may pose serious challenges for academic leaders and policy makers' (McInnis, Powles, & Anwyl, 1995, p. 131). Trowler (1998) provides a detailed illustration of the power of academic staff to block change they feel is imposed upon them, which fails to respect the values, norms and cultures of the organisation. At the end of the old millennium, Marginson and Considine (2000) observed:

> The disciplines, and the collegial cultures and networks which sustain them, are often seen as a nuisance by executive managers and outside policy-makers. Partly inaccessible to control from above, they can be obstacles to the remaking of institutional structures, the recasting of courses in line with new requirements, and the freer movement of resources. (Marginson, & Considine, 2000, p. 10)

The primacy of the contemporary narrative that success in higher education is defined by scale is reflected in the observations of Martin, who casts academics as economic vandals and university managers as incapable of acting as a result of their focus on prestige:

> Faculty members fiercely resist attempts to end programmes with small enrolments, even though they may be costly to the school. This resistance causes controversy, and administrators and trustees avoid controversies because of their impact on that crucially important commodity, reputation. (Martin, 2011, p. 95)

The narratives of academic resistance to change, those that cast academics as impediments and those seeing academics as critics of the changes they are experiencing, create an unhelpful dichotomy:

> The balance of the literature suggests … that the relation between institutional organisation and academic cultures tends to be a zero-sum relationship. (Marginson & Considine, 2000, p. 67)

The result is often the simplistic search for technological solutions for change and a belief there are technological developments that will create an inevitable

disruption, sweeping the academics aside and delivering a new model of higher education devoid of the traditional university. Transformational thinking of this kind, as discussed in the introduction, mythologises change and the role technology plays, preventing it from generating meaningful cues and narratives for sense-making. As a result, much of the response to change in universities is framed by academics both as a battle with winners and losers and with the implication that technology delivers a transformative homogenisation of education:

> There is an urgent need to establish the use of digital technology in higher education as a site of genuine controversy and resistance, rather than an unthinking consensus. The fight back starts here. (Selwyn, 2014, p.141)

This is unhelpful and as Bok (2003) observes, fails to recognise that academics themselves need to reflect on the importance of relating their scholarship to the values and priorities of society as it changes over time.

Irrespective of its accuracy and applicability to any specific institution, the popularity of this narrative of change in higher education—driven by stereotypes, transformation myths and appeals to change resistance and parochialism—presents a challenge to any leader attempting to enact change. Returning to the language of sense-making, such widely held views on the nature of change mean any change initiative must also acknowledge the need to trigger a re-examination of the understanding of change. The challenge is how to use the various tools of sense-making and sense-giving to simultaneously influence the perception of change processes and change objectives.

The types of change undertaken and the mechanisms used to identify and sustain core values of institutions are matters of leadership and strategy. Exploration of the possibility of change can be used to make sense of the complex intersection of the forces described in the first half of this book, stimulating a re-examination and re-affirmation of the core goals and values of a university. Change offers the potential of greater clarity of organisational purpose by forcing the removal of extraneous and unnecessary accretions, activities undertaken out of historical inertia rather than institutional necessity.

Much of the literature on the changing university is framed by the political and economic histories of the university in a small number of countries: predominantly the US, the UK and Australia. The case studies and analysis already presented in this book examining the Chinese (Chap. 3), German (Chap. 5) and Korean (Secr. 6.4) experiences show there are many other ways the narrative of change can be framed and engaged with.

The chapters in this section examine mechanisms that support and frame change. They start by exploring the nature of the university as an educational institution of society. The concept of quality in higher education and the way that different stakeholder agendas influence quality systems are significant drivers for particular types of change often defined by external stakeholders. The argument is sense-making can be used to frame quality as a tool for understanding a university's core values and unique strengths in order to build upon these. The challenge of measuring the impact of change in ways that add value to all universities rather than

merely enabling a relentless pursuit of prestige by a small number of élite institutions is analysed. Finally, the various theories of change proposed as explanations of how change occurs and can be lead are explored, particularly the way that change is initiated and framed. The highly influential, but badly overused, model of sustaining and disruptive change created by Christensen and his colleagues is examined and its role as a tool for sense-making and sense-giving is explored.

Chapter 14
Making Sense of the University's Purposes, Values and Culture

Abstract Clarity of the core ideology of the university, recognising its institutional purposes, value and culture, and the willingness of leadership to enact an organisational change programme designed to strengthen these in a dynamic environment are critical to the ongoing success of a university. Understanding the complex and dynamic state of identity embodied in the core ideology is key to successful engagement with the wicked problem of university change. Universities are recognised as embodying a strong sense of shared values which can be in conflict with the pursuit of prestige and reputation that define some university leadership strategies. The sense-making implications of the organisational structures and management approaches of universities are explored. New Public Management and the associated neoliberal theories driving change in many universities is identified as another manifestation of transformational thinking that is damaging the culture and sense of shared values regarded by faculty as core to the identity of the university, and consequently compromising sense-making and contributing to elements of the wicked problem.

> The very idea of the university as an institution is essentially medieval, and it is curious to observe how largely that idea still dominates our modern schemes of education. [It is not necessary] that the teachers of different subjects should teach in the same place and be united in a single institution - still less that an attempt should be made to make the teaching body representative of the whole cycle of human knowledge. It is not necessary that studies should be grouped into particular faculties, and students required to confine themselves more or less exclusively to one. It is not necessary that a definite line of study should be marked out by authority, that a definite period of years should be assigned to a student's course, or that at the end of that period he should be subjected to examination and receive, with more or less formality and ceremony, a title of honor. (Rashdall 1936, vol. III p. 458)
>
> [The University is] a series of individual faculty entreprenuers held together by a common grievance over parking. (Kerr, 1963, p 20)

The analysis that has been presented so far in this book illustrates there is no single university that can be used as the definitive description and reference point for change. As with many things in modern life, there is a mythical university brand used to shape political and social engagement with the concept. Upon closer

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examination, the reality of study at university bears little resemblance to the marketing for all but the most privileged students.

Organisationally, universities are structured like fractals, increasingly harder to define as you examine them more closely. The unity of the university dissolves and an important institution of society becomes a confederation of smaller organisations, often acting at cross-purposes, creating interdependent wicked problems for change. A 'multiversity' in Kerr's terminology (Kerr, 1963). As universities disaggregate and outsource key functions previously considered core to the identity of the institution—such as the enrolment of students, the delivery of elements of the courses, and the examination of their work—it becomes less clear where the boundary of the university can be drawn and whether there really is a university to define.

One of the reasons for using sense-making as a tool for analysing the process of change in higher education is the strong alignment between Weick's sense-making properties (1995, p. 17) and the ways the university is constructed as an institution of society. Universities are social places where the participants engage as members of intellectual communities to construct identities, both individually and as members of professional and scholarly disciplines, which affect their sense of the value and purpose of the university and influence the cultures they enact within the organisation. The activities of the university include a rich mix of retrospective and ongoing sense-making enacted through scholarly work and in response to cues generated by the forces described earlier.

The competing viewpoints discussed in the introduction to the first section of this book represent different pathways the university can take in defining its identity:

- The framing of education in ways that reflect élite, mass and universal conceptions, including combinations of these operating at different levels or in different disciplines;
- The relationship between the programmes of the university and the structures of the economy of the society it sits within;
- The extent to which the university engages globally, including the importance of international students and transnational provision and the diversity of its scholarship;
- The balance of the disciplines of scholarship and the choice of which subjects are prioritised;
- The importance of scholarly activities associated with sustaining the civic and cosmopolitan life of society;
- The role the university plays in addressing social, political and economic inequalities and speaking truth to power;
- The significance of the role of the academic in the governance and operation of the university and the decisions of academics to operate primarily within a university or in other relationships defined by scholarly communities that transcend a single organisation;

- The importance of place in defining the university and the different roles physical campuses and online spaces play in supporting educational and scholarly communities of practice.

Clarity of institutional purposes, value and culture, and the willingness of leadership to enact an organisational change programme designed to strengthen these in a dynamic environment are critical to the ongoing success of a university (Clark, 2004; Shattock, 2003). The New American University model described by Crow and Dabars (2015), based in the experience of the Arizona State University, illustrates the alignment of values, purposes and context in a systematic manner. The decline of the University of Phoenix (Sect. 9.2.1) reflects a loss of that focus on their defined purpose of educating working adults. The ongoing success of the WGU suggests that they have remained focused on their purpose of building the local economy. A misalignment between values and purpose can happen over time and affect even the most successful of institutions. The UKOU may be at risk of losing that clarity by the way that its values drive it to offer programmes using particular models as a result of externally shaped purposes that are pushing it away from the open values it originally espoused.

Understanding the complex and dynamic state of identity is key to preventing the university shifting from its role as a social institution to a mere provider and certifier of educational products in a market not greatly different to any other offering personal services. The dominance of the 'Western Research University' model risks losing sight of the value alternative ways of constructing a university might play in sustaining different cultures (Chap. 3). A diversity of approaches provides a chance to identify more effective models for the university unencumbered by the history of the dominant élite institutions.

14.1 Organisational Values and Culture

> In one sense, the ferociousness of the argument *depends* on the fact that it appeals to shared values that have been, it is claimed, betrayed. What is in dispute is not values but the facts to which those values might apply. (Scott, 1985, p. xvii)

> What we cannot understand is respectfully assigned to the mysterious residual category of culture. (Marcus and Fischer, 1986, p. 39)

Higher education organisations are heavily infused with culture and values. Many employees define themselves through their engagement in higher education and regard themselves as custodians and shepherds of their society. The sense of personal ownership many academics feel for the university is evident in the widely quoted correction by Columbia Professor Isidore Rabi to then US President Dwight Eisenhower: 'Mr President, we are not employees of the university, we are the university' (quoted in Pollack, 2017). This resonates powerfully with academics but even within academia there is considerable diversity in the way scholarly values are constructed and prioritised. Consideration of the range of stakeholders indicates it

may not hold true as a statement encompassing all that a modern university collectively holds as important.

Values are not a consequence of the prestige of an institution, nor of the perceptions of its brand offered through typically superficial marketing. If reputation obtained through prestige or marketing is to have any integrity, it must be an expression of the university's values, celebrating them and encouraging others to work with the university in sustaining those values in new ways. Failure to recognise the need to place values above reputation risks eroding the social capital of the university generally. It will damage the university by eroding trust, both internally and externally, through what Alvesson and Berg call 'symbolic pollution' (Alvesson & Berg, 1992).

The consequence of failing to identify and sustain a healthy and vibrant university culture embodying a strong set of values is explored in the 'Spiritual Malaise' scenario (Sect. 20.2.12). In that scenario, the drivers for the university are purely utilitarian responses to the forces for change with the university choosing the simplest and most efficient way to educate ever more people as cheaply as possible. Other scenarios in Chap. 20 illustrate how different sets of values suggest widely different pathways and outcomes for the university.

To many at the heart of the university, the value of academic freedom illustrates the range of ways universities differ in their embodiment of values. Lehrfreiheit, with lernfreiheit (student intellectual autonomy) and the right of self-governance (Freiheit der Wissenschaft), are widely regarded as fundamental to the sense of academic freedom embodied in the Humboltian model of the university (Karran, 2009; von Humboldt, 1903, 1970; Metzger, 1988). The university as a wise critic of the powerful is at the heart of Kavanagh's (2012) characterisation of the university as a 'fool'; combining a degree of loyalty with pointedly foolish criticism leads the wise to reflect and consider the need for further sense-making.

Much of the narrative and engagement with academic freedom in the USA is primarily concerned with matters of employment (American Association of University Professors, 1970), which are seen as far less significant aspects of the concept in universities in Europe, Australia and New Zealand. The construction of academic freedom as enabling the university to improve society is framed in New Zealand legislation where academics are legally tasked with acting as the 'critic and conscience' of society (Jones, Galvin & Woodhouse, 2000). China may pursue a model of the university defined by Western values of academic excellence or by the scale of the MOOC but they remain clear that the university is also an institution of their society and must act in ways that demonstrate a shared commonality of values and that strengthen the state (Liu, 2017). The Chinese construct academic freedom as having a positive impact on social order, not the disruption of that order with 'foolish' intent (Chen & Ko, 2012; Fish, 2017; Zha, 2011).

Academic culture within a university is a complex mix of shared elements and of individual ones. It is influenced by the active agency of the participants with social and other external factors having as much impact as the epistemology of particular subjects (Trowler, 1998). This has been used to frame academic culture as 'tribal'

(Becher & Trowler, 2006) with all the associated implications of a closed society resisting and distrusting outsiders; and not all of the tribes are academic.

The growing importance of a range of non-academic professionals in modern universities suggests there are other cultures coexisting with the purely scholarly. The recognition of the existence of an important 'third space' (Whitchurch, 2008) in university organisations indicates the existence of a minimum of three cultures. There are likely to be more, given the different professional cultures of key groups including library staff, information technology specialists, finance and the clerical bureaucracy. Rhoades (2010) and others do not regard this as a positive development, seeing the recognition of these other cultures as an expression of managerial values and the existence of different intermediation spaces a symptom of the externally imposed culture of academic capitalism (Slaughter, 1990; Slaughter and Leslie, 1997; Slaughter & Rhoades, 2004). The tensions arising from this are explored in detail later in this chapter.

The analysis of the transitions between élite, mass and universal education and the impact this has on the salience of students and academics (Chap. 4) highlights the tension discordant perspectives can have on the collective sense of a university's values and culture. The values of an organisation operating consciously in the élite space, such as Oxford, MIT or Stanford, are very different to one owning its place in a mass system, such as the University of Phoenix or the UKOU, and different again to the values expressed by emerging universities operating in the universal space, such as the Peer2PeerU and OERu.

Élite universities have values and cultures defined by the nature of their élite framing, be it social, intellectual or economic. The articulation of these values and the inculcation of them into graduates are a dominant feature of the élite educational experience. This is very consistent with Becher and Trowler's tribal framing of academics and Rhoades' resistance of other subcultures. In contrast, mass universities are much less coherently or consistently defined by an explicit set of values or culture and may define their values by reference to the diversity and cultures of the expanding student population they are engaging with, or with the professional groups they educate students to join.

An interesting example of how values in the mass model can be manifested is illustrated by the culture of the US colleges with their active marketing of a collective identity; alumni are graduates of a specific college, not just people with degrees. Students of these institutions draw some meaning from their identification as members of a specific alumni community, even in the absence of the privilege similar associations provide for alumni of élite institutions. Defining the values and culture of universal mode universities is difficult as illustrated by the discussion in Chap. 11 of the different values associated with the various forms of openness and the shift towards the student as the primary actor, rather than the institution.

Culture reflects the ways values are expressed in social interactions within the organisation (McLaughlin, Rosen, Skinner & Webster, 1999). The various cultures of the university reflect the way different groups make sense of their own organisational position and the relationships they have with others. Acknowledging the

existence and importance of these cultures does not mean that they can be easily or directly influenced through 'functionalist' conceptions of culture:

> The potential danger of [distinct group conceptions of culture and multiple meanings and values] is lapsing into a naive voluntarism that assumes that each group simply adopts a cultural interpretation that it likes or finds appealing. This would be to suggest that different groups are free to decide on their own interpretation of a wider culture. Such as position would ignore the fact that organisational space is immersed in power relations. The unequal distribution of cultural and material resources, including members' positions within structural hierarchies, is an important factor shaping these relations. (McLaughlin et al., 1999, p. 128)

The emergent property of cultures means achieving change in organisations with strongly asserted cultures, such as universities, requires awareness of sense-giving strategies. Culture cannot be imposed by managers and the response of academics to attempts to do so forms the basis of the negativity towards any change discussed in the introduction to this section of the book (Chap. 13).

Middlehurst (1995) identifies a range of cultural narratives describing different ways university cultures and subcultures perceive themselves. These include the university as a community of professionals, as a political bureaucracy and as a complex system. The university as a place of professional communities is obvious, reflecting the academic and professional values of expertise and experience exercised by autonomous individuals but acknowledging the importance of seniority and self-regulation as tools for collective action and identity construction. The framing as a political bureaucracy describes the negotiated basis of leadership and decision-making arising in unstable cultures where goals are ambiguous and contested. This model is consistent with a dynamic environment and the presence of wicked problems requiring a diverse set of conflicting responses. The tension in the model is between the formality and simplification of bureaucracy and the pluralism and ambiguity of political processes.

Systems models also reflect the dynamic nature of higher education culture and are framed by the contextual drivers influencing the university. Cybernetic models (Birnbaum, 1988) emphasise the network structure of complex organisations (Lewis, Marginson, & Snyder, 2005) and the way changes propagate through systems in unpredictable ways. Depending on the nature of the network and the strength of the cohesion and coupling (Weick, 1976) between elements, changes propagate in ways that amplify their effect. In more disaggregated systems, changes rapidly attenuate at the boundaries between subcultures. Entrepreneurial cultures are also networked systems that emphasise individual action within a market framework imposing adaptive pressure through measures of success. Here the propagation of change is influenced by its impact on the success measures and the responses of individual actors within that system.

Other cultures may reflect national values and cultural norms translated within the university, such as the Confucian and communist values framing the culture of modern Chinese universities (Chen & Ko, 2012; Fish, 2017; Zha, 2011) or the values of German society prioritising public service and strongly respecting hierarchical systems (Chap. 5).

In any one university, all these different cultures may coexist with individuals participating in different cultures as they engage in various roles, such as the academic functions of education, research, administration and service. The leadership challenge is to engage with this complexity in ways that avoid threatening the value system while influencing it through sense-giving.

Trowler (1998) observes there is a complex relationship between the experience of change and the culture of the institution, particularly the complicated realities of that culture and the agency of the academics in constructing and remodelling their own version of it in response to a changing environment. Trowler argues that change in universities is driven by pressure from below combined with consensus from above, with senior leaders providing goals that are limited, achievable and open to negotiation. The role of the senior leader in this conception of the changing university is very much in line with the conception of leadership through sense-giving.

Smerek's five sense-giving modes discussed in the introduction (2009, pp. 135–146) include three that are particularly significant with regard to the values and cultures of the university: *Framing*, *Creating an Inspiring Future*, and *Re-labelling and Re-organising*. These will only succeed if they are cast in ways that reflect and acknowledge the values and culture of the different groups being influenced. The failure of virtual university initiatives Fathom, NYU Online, Virtual Temple and Babson Interactive discussed in Chap. 9 all reflect a failure to engage with the values and culture of the academics of the various university partners. The contrasting success of eCornell, UMassOnline and Penn State World Campus can be partly attributed to the decision to engage in a model explicitly aligned to the culture and values of the respective universities. In each case, the leaders successfully engaged in sense-giving approaches that framed the idea in ways that respected academic values, constructed a narrative that embodied a culture compatible with the rest of the university and ensured the language used was not shaped by the labels and structures of external organisations.

14.2 Organisational Purposes

> History grants no essential or eternal role to the modern research University, and it is necessary to contemplate the horizon of the disappearance of that University. Not to embrace the prospect of its vanishing, but to take seriously the possibility that the University, as presently constituted, holds no lien on the future. (Readings, 1996, p. 129)

> The university is a creation of a metaphysical viewpoint, an attempt to provide a site of higher learning that connected with universal and transcendent ideas of the relationship between humankind and the universe. (Barnett, 2011, p. 453)

Closely related to values are the way they are translated into organisational purposes, the shared sense of what the university can and should do for its stakeholders. Values are embodied in the actions of the university, many of which are undertaken in response to the forces outlined in the first half of this book. Collins

and Porras (1996, p. 68) state an '…effective purpose reflects people's idealistic motivations … it captures the soul of the organization.'

The existence of multiple stakeholders makes describing a single purpose for a higher education institution problematic at best. The wicked reality of the university means that any attempt to frame an institution in a single statement inevitably fails to capture all of the reasons why that institution exists. This reflects a typical academic conservatism and recognition of the limits of our knowledge. The material presented in this book argues that the common project of 'nation building' (Marginson & Considine, 2000, p. 238) or 'producer, protector, and inculcator of an idea of national culture' (Readings, 1996, p. 3) no longer describes the primary purpose of most universities and may now describe a very small minority. As Waks observes:

> …in the era of globalization the function of the nation-state has been transformed. As Readings states, 'the university no longer has to safeguard and propagate a national culture because the nation-state is no longer the major site at which capital reproduces itself' (Readings, 1996, p. 13). The university is no longer called upon to train national citizens and leaders, because the cosmopolitan world citizen of global society is attached to the modern corporate order more securely than to the nation-state. As a result, the idea of a national culture can no longer provide a secure and common external reference point for either knowledge production or cultivation of character in the contemporary university. (Waks, 2002, p. 280)

A cynic might describe the purpose of most universities simply as 'the certifying of higher education qualifications' reflecting the importance accredited qualifications now play in the economic life of many countries (Chap. 6). That purpose fails the test of those stakeholders interested in the wider intellectual and cultural life of their community. If Disney's purpose can be described as '[t]o make people happy' (Collins & Porras, 1996), then the stated purpose of educational institutions could be 'to educate people' but this misses the concerns of those stakeholders who seek an extension of human knowledge. It is also unbounded in terms of which people, which subjects and to what extent.

Restating the purpose of the university as 'educating people with useful knowledge and skills' merely shifts the question to 'what defines useful?' Postman (1992) points out that useful to Confucious meant sustaining tradition in order to maintain social order, Plato wanted rulers to be wise, Cicero saw education as a form of freedom from the present, while Jefferson saw it as a tool for freedom and liberty, Dewey saw education as a tool for coping with change and ambiguity.

The power of the forces for change described in the first two sections of this book is such that it is very easy to see any one or any combination of these as constituting the purpose of a university. The purpose of the university is necessarily a consequence of the mode or modes—élite, mass, universal—being engaged in but that does not in itself create a purpose. For many élite universities, the purpose is simply one of replicating and sustaining the conditions generating the privilege of the élite condition in the first place. For some mass universities, their identity is purely as a machine-generating, at ever-growing scale, a consistent product in the form of educated people certified to have met minimum expectations for their

qualifications. Universal education can have both a highly generic purpose giving all participants exactly the same opportunity to have an educational experience, as the school system does for children in most cases, and a highly individualised purpose that gives each person what they want.

The power of technology and the seduction of technological solutionism means it is very easy to define the purposes of the university technologically through reference to its infrastructure tools and systems, rather than recognising, as Readings does, that the form of the university 'as presently constituted' does not necessarily constitute its only, or even its most important purposes.

The complexity of articulating purposes for a university is further reflected in the way the scholarly function of the university is contested, with arguments about the role of the humanities versus sciences tangled up with conceptions of pure and applied knowledge and the importance of each. Many of these sit behind the impact the economic role of education plays as a force for change (Chap. 5). Collini illustrates the argument made by those resisting the economic argument by promoting a wider construction of the purpose of a university:

> …a society does not educate the next generation in order for them to contribute to its economy. It educates them in order that they should extend and deepen their understanding of themselves and the world, acquiring, in the course of this form of growing up, kinds of knowledge and skill which will be useful in their eventual employment, but which will no more be the sum of their education than that employment will be the sum of their lives. (Collini, 2012, p. 91)

The importance of the role of the university as an institution and guardian of society is similarly expressed by the Rectors of the European Universities (1988, n. p.):

> A university is the trustee of the European humanist tradition; its constant care is to attain universal knowledge; to fulfil its vocation it transcends geographical and political frontiers, and affirms the vital need for different cultures to know and influence each other.

Bell (1970) described this sense of the purpose of the university as 'classical' and identified the alternative or 'pragmatic' university with a purpose of being a service to society. These two roles are also apparent to Bok (2013) who identifies in the US universities whose purpose is the education of people in the liberal arts to produce well-rounded citizens and service of value to communities. More pragmatic purposes include the accomplishment of research, preparation of students for a vocation and economic development.

Barnett (2014) describes the conception of higher education as shifting from an internalist perspective, where the focus is on the impact on individual students and scholars developing their knowledge and capabilities, towards the externalist perspective, where the university is focused on the impact it has on society in various ways. This is more than an argument of scale reflecting the shift from élite to mass education. It also reflects an argument regarding the agency of the university. If the neoliberal market model is adopted, then the purpose of the university is to provide the services customers want, as efficiently as possible, while charging as much as the market can bear. On the other hand, if the university has wider social and

intellectual purposes reflecting the expert assessments of priorities made by academics, then these purposes may be much more complex.

Many universities have a sense of being under attack by performance measures, quality systems, economic rationalism and other forms of political interference aimed at asserting specific purposes. This plus the lack of clarity about the purpose of the university is at the heart of conflict between stakeholders. All stakeholders exert their influence to shift the purpose of the university towards one that serves their interests as currently perceived.

Ambiguity or conflict over purpose is seen in the debate about whether the university is a public institution of society, with a public benefit enacted through individuals, or merely a mechanism for perpetuating privilege through private benefits realised over a lifetime (Blöndal, Field, & Girouard, 2002; Chatterjee & Maira, 2014; Marginson, 2014a; Tilak, 2008). Treating university education as a private good ignores the public benefits of living in a society that provides a wide range of social and cultural experiences and support services. The ways that the university's activities reflect this understanding take us more closely to the purposes being pursued.

Bok (2013) identifies the risk of mistaking various moneymaking activities—including alumni activities, luxury accommodations and athletics programmes reflecting a sense of the private benefit of the university—as constituting purposes of the university. Purpose and income are not synonymous but serious misalignments ultimately lead to failure, a point explored in more detail and in relation to quality in the next two chapters. Bok warns of the risk that prestige-driven pursuit of growth can lead to the dilution of the relationship between purposes and activities, with leadership becoming distracted by high-profile ventures, 'grandiosity' in the terminology of Alvesson (2013), that ultimately do little to sustain the purposes of the university or the integrity of its values and culture.

14.3 Defining the Core Ideology of the University

Values and purposes combine to describe the core ideology of the organisation (Collins & Porras, 2004). Done well, a description of the core ideology captures those elements of the organisation that should remain in recognisable form even through the most significant changes and helps frame a coherent response to the wicked problem of university change. The core ideology is the foundation of the coherence and integrity of the university that ensures any strategic and operational choices are made in ways that sustain the organisation. It provides the spine to any sense-giving narrative and ensures that, despite the diversity and complexity of any particular university and the wicked nature of the problems it faces, there is still a firm basis for all of the people involved to use when engaging with each other. Absent such a core, the organisation is at risk of being defined by whatever stakeholder interests are currently powerful, without any regard for its ongoing success or for the need to balance less powerful but still legitimate stakeholder interests.

Core ideology shares many characteristics with the concept of a brand as a form of identity myth (Holt, 2004, p 8.). It may not be completely true and factual in its construction but it stimulates, through its creation and articulation, the imagination of stakeholders and works to alleviate their anxieties regarding the state and future direction of the organisation. The advantage of ideological myths is their ability to be reframed by different stakeholders within the university to reflect their realities. Provided the core is sufficiently rich in its conception, it encompasses these different needs and provides coherence in a complex and dynamically changing university context.

This awareness and respect for core ideology is not an excuse for stasis and strategic paralysis. Balancing the need to preserve and sustain the core is the need to stimulate progress and the renewal of the activities, systems and assets of the organisation that enable the core to have meaning (Collins & Porras, 1994).

This book is focused on the educational functions of the university and the forces for change in that space but there are also important questions about its evolving identity as a place defined by research, a source of new knowledge generating progress in a wide range of other areas affecting human well-being. For any individual university, there is the need to understand the relationship between these and how different functions are balanced in constructing an identity true to the purpose, values and culture that give the institution coherence.

Clark (2004) describes the need for a university to have a clear and 'strengthened steering core', an 'elaborated developmental periphery', a 'stimulated heartland' and an 'integrated entrepreneurial culture'. All of which speak to the ways the institution understands itself collectively and enacts that understanding of its core ideology through its organisational culture and systems.

The stimulation of progress is the goal of meaningful organisational change in response to wicked problems. Changes that do not stimulate progress in the achievement of the organisation's purpose are merely noise, distractions from that purpose and potential threats to its ongoing viability. These distractions are common, and one of the goals of strategy is to provide tools for the organisation to differentiate activities aimed at stimulating progress from those that distract from the core ideology.

The myth of transformation is built on the concept that an organisation is simply its activities and their affordances, that they lack a coherent core ideology worth sustaining. If the myth is believed, then significant changes in the affordances—such as the introduction of new technologies or different modes of education—are at best crutches for leaders unable or unwilling to use sense-making to understand their nature. At worst, they are threats to the identity of the organisation as transformation may reframe the purposes and values embodied in those affordances.

The sense-making argument is that new ideas are opportunities to explore how the values and purposes of the core ideology can be expressed in different ways and to assess the value this brings to the sustaining of the values and achievement of the purposes. The questions for leaders become how, and to what extent, do the structures of the university and the way it is managed assist in sense-making? How do they sustain the core ideology in the face of a dynamic new and uncertain future?

14.4 Organisational Structure and the Management of Higher Education

Angry criticism from faculty in response to change over the last few decades (Anderson, 1996; Aronowitz, 2000; Bailey & Freedman, 2011; Brabazon, 2007; Collini, 2012; Hersch & Merrow, 2005; Holmwood, 2011; Readings, 1996) reflects a disconnection between their sense of the values of the university and the values they see reflected in the changing organisational structures and management. This disconnection arises from a clash of realities. Many faculties frame the university on a set of values and management structures primarily drawn from élite education. Others, including numerous governments, apply a different reality; the 'common sense' (Marginson, 2012b, p. 355) of New Public Management.

New Public Management (NPM; Chandler, Barry, & Clark, 2002; Hood, 1995; Marginson, 1997; Marginson & Considine, 2000; Toscano, 2011) describes a mix of neoliberal business models and control systems driven by audit and accountability. NPM arose in several different countries during the 1980s and 1990s as the social structures established following World War II were dismantled in response to declining public wealth by governments influenced by hard-line market models (Dawkins, 1987; New Zealand Treasury, 1987). The NPM ideology had as its core the belief:

> … that public sector provision was inefficient and often ineffective; that it led neither to cost containment nor to quality improvement; that it opened the way to undue influence for employees (whether they were protected by virtue of their membership of professional associations or of mass trade unions); and that, if unchecked, it would see unacceptable growth in tax bills, an increasingly dissatisfied electorate and declining standards of public service. (Dawson & Dargie, 2002, pp. 34–35)

This ideological position is behind much of the characterisation of faculty as illegitimate participants in the governance and management of higher education, as asserted by Martin (2011) and others (Bowen, 2013; Vedder, 2004; Zemsky, 2009; Zemsky, Wegner, & Massy, 2005) and discussed in Sect. 4.2.

Pollitt and Bouckaert (2011) describe NPM as operating at two levels. The top level is the ideological doctrine that profit-oriented business approaches are inevitably more effective than systems operated by public sector organisations. In higher education, this lies at the heart of the ideology broadly described as academic capitalism (Slaughter, 1990; Slaughter & Leslie, 1997; Slaughter & Rhoades, 2004). The second level is the specific business practices are held to drive improvement (Pollitt & Bouckaert, 2011, p. 10):

- Competition through market mechanisms, including league tables and performance payments;
- Output-based performance measures;
- Customer service models, including the use of generic quality models such as Total Quality Management (TQM);

- A preference for lean and flat, disaggregated organisations over large multi-functional ones;
- Coordination of activity through contracts rather than hierarchical relations.

These practices, seen as common sense by external stakeholders who have particular salience in the mass model of education, have significant issues in their application to higher education. The belief that education can be managed as a market is comprehensively discredited by Marginson (2012b), who notes the problems caused by the positional nature of higher education (Sect. 6.1) and the consequent lack of any real market influence on the top élite institutions other than maintenance of prestige and artificially imposed scarcity.

The various quality systems and conceptions inherent in these practices, including ranking, output performance measures and tools such as TQM, are analysed in the next two chapters. It is worth noting that they contribute little to any improvement in the educational experience and outcomes of students or of the academics teaching them. This recognition lies at the heart of much of the anger expressed by students and staff when changes defined by these flawed practices are imposed on them.

The last two practices describe organisational structures very different to the historically conceived university of Humboldt (von Humboldt, 1903) or Newman (1853/1976). McNay (1995) suggests higher education organisations operate within four different models and often simultaneously in more than one at a time but with an overall trend of progression through the models in sequence. It is unclear, in practice, how effectively implemented any of these models are at any given institution.

The earliest model, now in decline, is the traditional collegial institution defined by a high degree of autonomy on the part of the faculty. The second is a bureaucracy with limited overall vision and purpose but very strong and rigid processes, regulations and rules. The third model draws on the stereotypical commercial corporation with strong central leadership aligning the organisation to a clearly defined set of goals. This model is in line with the sense the mass model university should operate as efficiently as possible and in line with a set of externally imposed performance indicators. This is stated as a key objective in the reform of the Australian higher education system undertaken in the late 1980s:

> The Government expects that chief executive officers will play the key role in negotiating educational profiles and that governing bodies will delegate responsibility accordingly so that changes to the profile can be made within the necessary time-frame. Mechanisms enabling a clear distinction to be drawn between the policy-making role of governing bodies and the policy implementation role of senior management are essential if appropriate accountability for performance is to be expected of these senior staff. (Dawkins, 1987, p. 53)

The final model in McNay's schema is that of the enterprise. It is based on the modern multidivisional business with an overall strategy and vision setting goals and objectives, and with considerable flexibility throughout the organisation in how these are achieved. This is closer to the NPM ideal and is consistent with the

growing influence of external vendors over an increasingly disaggregated university transitioning to a space where universal provision plays a larger role.

Lewis et al. (2005) suggest the model of the networked organisation can be used to understand the complexities of a modern higher education institution with its linkages to external organisations, flexibility of structure, worker autonomy and the importance of information technology in enabling the institution to function in its modern sense. This is similar to McNay's enterprise model but with an emphasis on the role networking and collaboration play in the performance of the institution. One challenge with this idealised model, noted by Lewis et al., is the organisational systems and activities of the institution are often re-interpreted by different stakeholders. Consequently, the political and power dimensions of the organisational network may not reflect the idealised description.

Lewis et al. (2005) argue that a networked model of higher education can potentially inform a more student-oriented model of education with students able to exercise greater choice and autonomy in study choices. They note networked technologies can impose systems of administrative control and reduce choice through the imposition of particular course modes delivered through centralised systems. This reflects concerns arising from the implementation of first-generation learning management systems, as discussed earlier, which are now less relevant given the ease with which substantial technology infrastructures are established in the cloud (Sect. 12.3.2).

Barnett (2011) suggests the 'ecological university' as an alternative metaphor to the network, linking ideas of complexity with sustainability and the motivation to make the world a better place. The essence of his argument is to go beyond the networks defining the relationships within and between universities and other organisations and consider the use those networks are put to. This is the heart of the analysis of purpose.

Metaphors are invariably inaccurate reflections of the concepts they relate to and Barnett's conception of an ecology, much like theories of evolutionary change (Sect. 17.2.2), bears very little resemblance to the ecological sciences. Setting that aside, it does lead to the following questions. If the university is framed ecologically, what type of ecosystem is involved? What, exactly, is the role played by the university?

It is not hard to imagine élite models of education as formal renaissance gardens, mass education as commercial monoculture farms and universal education as a fertile wilderness. In these examples, are universities individual plants? The ecosystem as a whole? Or gardeners? Is the purpose that follows from these one of simple pleasure at its appearance? Or does the ecosystem exist for a practical purpose, such as feeding people?

A more extreme model of the structure of universities reflects the disaggregated and contested nature of the relationships between the organisation and its various internal and external stakeholders under NPM. The quantum perspective of organisational structure states that rather than having different perspectives, stakeholders experience the university in different realities that simultaneously exist within the one university (Manning, 2013; Ogilvy, 2001). This model

acknowledges the vertical hierarchies but also considers the operation of a heterarchy, thus reflecting the existence of complex horizontal linkages (Hedlund, 1986; Stephenson, 2004).

The coexistence of different realities is a useful model when attempting to engage in sense-making of wicked problems, such as university change. By treating the engagement with different stakeholders as an acknowledgement of their realities, sense-making shifts from superficial marketing or patronising consultation to a genuine attempt to use the tools of their reality to achieve meaningful and positive change. The next section illustrates the experience of one organisation over time as it grappled with this challenge.

14.5 ITP-Z Case Study

ITP-Z is a mid-sized ITP (Institute of Technology, or Polytechnic) based in an urban setting. While not a university, it is a degree-granting institution that is comparable in scale to the smaller New Zealand universities and many US community colleges, although not funded at the same level. A successful institution, both financially and for its students as measured by government performance indicators, ITP-Z has the intention that technology play a significant role in its learning and teaching activities. Over the seven years of this study, the institutional strategy stated the goal that the institution use technology to drive new opportunities for students and for the institution in the future. One of ITP-Z's major strategies for coping with its economic environment is growing the number and quality of international—full fee—students it teaches. Technology is seen as operationally and reputationally important to achieving this goal.

ITP-Z used a benchmarking tool, the e-learning Maturity Model (eMM; Sect. 16.5) to assess its e-learning capability over the seven years (Marshall, 2012c). The eMM was used to identify potential areas for improvement and to assess progress towards the achievement of its strategic objectives for technology use. This resulted in the four capability assessments shown in summary in Fig. 14.1.

The eMM visualises capability as a 'carpet' of squares, summarising assessments over nearly 900 different practices (Marshall, 2006b). In these summary figures, dark squares indicate stronger capability as described in the legend. Each of the 35 key processes is described on five dimensions displayed as sub-columns within an individual carpet: *Delivery*; *Planning*; *Definition*; *Management*; and *Optimisation*. These dimensions are not hierarchical; they are synergistic and combine to holistically represent a robust and sustainable organisational capability for e-learning.

These assessments display a general improvement—darkening—in capability from 2005 to 2011. The changes from 2005 to 2008 show a strengthening of capability across most processes with particular improvement in the areas relating to student support. Most of the change over that period is situated within the

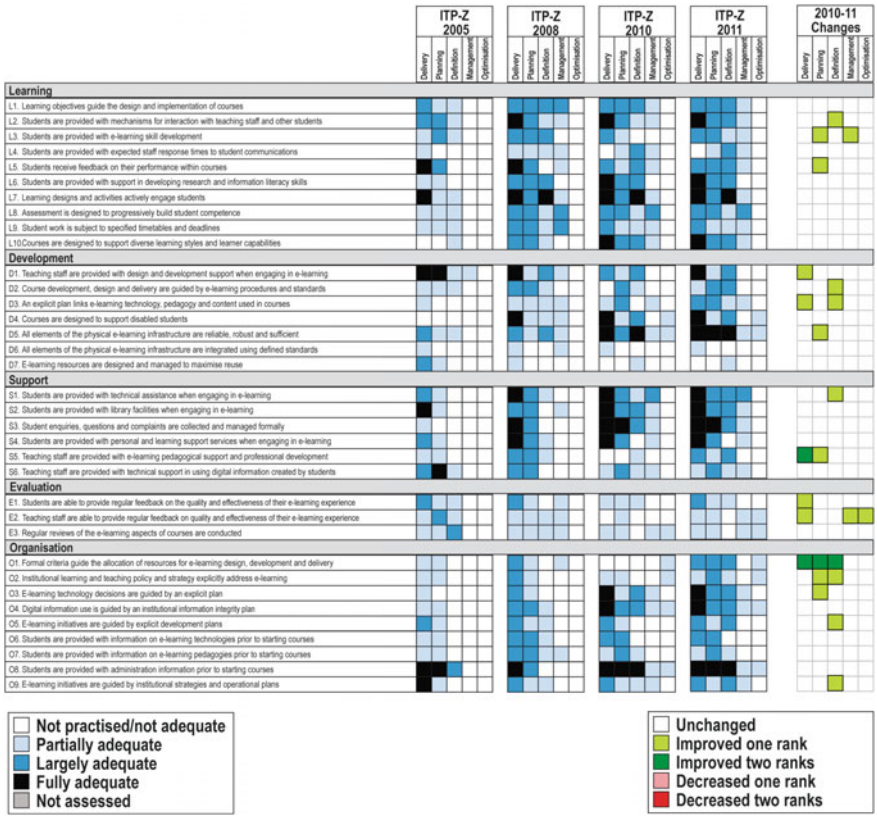

Fig. 14.1 ITP-Z eMM assessments, changed capability from 2010 to 2011 indicated in green on last carpet

Delivery dimension—situated on the left-hand side of the carpets—reflecting an understandable focus on operational activities and the initiative of individual staff.

The information in Fig. 14.1 also indicates a weakening of capability in some processes between the assessments. A reduction in capability can occur for a number of reasons. E-learning is a fast-moving field and activities that were *fully adequate*—black—in earlier assessments may no longer be so. This is particularly likely with changes between 2005 and 2008.

ITP-Z went through significant alterations to the way e-learning was supported during 2008 and 2009 that generated a decline in capability visible in the 2010 assessment. The change in support arose from a commercialisation focus and appears to have disrupted existing activities in a number of ways. Support for staff use of e-learning moved to a new, externally oriented, unit with a specific mandate to seek external commercial opportunities for the institutions' courses and capabilities. This resulted in a loss of internal support resources and staff concerns about loss of autonomy and control over their work, a key value for professionals:

> Alarm bells went off for us because we stood to actually lose [courses]. Because they would sort of get a patent – well patent's the wrong word – but they'd actually end up with like a franchise, I suppose. And actually then use those models commercially around the world. [Staff Member, 2010]

Management encouraged teaching staff to identify courses and materials that could be turned into products for sale by the external unit. This generated a sense that technology use was no longer being driven by the internal needs of students but by commercial opportunities. Not unexpectedly, some staff regarded this negatively:

> I think it's not so much an outside focus as a focus that's actually battened on to [institution] and that is sucking a lot of content from this institution and repackaging. [Staff Member, 2010]

A major issue identified in the 2010 assessment was the absence of a structured set of operational activities aimed at realising the broadly stated strategic goal of the institution regarding technology use in learning and teaching. This lack was identified in planning documents, including the need for greater development of staff skills and the use of technology to change the experience of students, but it had not been reflected in operational activities at that time.

> I think they've ticked the e-learning box and then moved on – on to something else. [Staff Member, 2010]

> I think about 4–5 years ago … around about that time there seemed to be a big institution sort of move towards e-learning. But that seems to have been a bit like a bell curve in that sense that it flattened off in recent years. [Staff Member, 2010]

The absence of operational systems engaging with the implications of technology was apparent in the weakness in the *Definition*, *Management* and *Optimisation* dimensions—the middle and right-hand side columns—seen in the 2010 assessment. ITP-Z lacked detailed information on the needs and capabilities of staff and students with regard to technology use. Feedback surveys failed to recognise the strategic intentions for technology or the operational and pedagogical choices made regarding e-learning. There were no formal reviews of the impact of systems or of changing support models. Staff and students received little encouragement to provide suggestions for improvement. There was also no evidence of monitoring whether the investments in technology were generating the intended outcomes for staff or for students.

Decisions about investment in technology and support were not systematically linked to the strategic and operational objectives of the institution as a whole but appeared to be subject to a mix of budget controls, management decisions and individual tutor or support staff interest and availability. There were no stated priorities for changes to courses using technology, and the policies and procedures of the organisation were silent on the expectations of how new tools should be used, other than in regard to conduct. Students were not told, either in advance or after courses started, how technologies such as the LMS would assist in their learning and there was little integration of the technology with assessment, feedback or other activities within courses.

14.5.1 Reversing the Decline in Capability

A workshop was held at ITP-Z in October 2010 to disseminate this assessment and to facilitate the identification of priority areas for improvement. A wide variety of management, academic and support role staff were invited, many of who had participated in at least one of the eMM assessment evidence-gathering processes. The intention of the workshop was to share the results of the assessment and use the collective experience of the attendees to generate an organisational response. This was deliberately not a workshop solely for managers but rather a sense-giving process intended to reposition thinking about technology as a collegial endeavour. The workshop provided an opportunity for reflection on the lack of progress since the previous assessment and the impact of the changes over the 2008–2010 period with the goal of collectively identifying priorities and projects for improving capability. This group identified the need to formally support both staff and student use of technology through training and an explicit recognition of the need for both groups to develop more skills in the use of technology for learning and teaching.

At the end of 2010, ITP-Z's chief executive initiated an externally facilitated strategic review of teaching and the role technology was playing in supporting the strategic goals of the organisation. These two reviews, combined with a survey of staff confidence in the use of existing technologies, led to the realisation by senior managers that existing operational actions were not generating the outcomes envisioned in the strategic plan.

The sense-making cues arising from these reviews and reports led to the creation of a strategic plan for e-learning at the ITP, expanding on the single goal articulated for the past five years in the overall strategic plan. The e-learning strategic plan contained four key activity strands covering content management, IT infrastructure, prioritisation of programme developments to use technology and the continuous improvement of existing courses to add new technologies.

Three main initiatives arose out of this strategy. These included strategic investment in key educational programmes, development of sense-giving models framing the potential offered by technology and an extensive programme of staff development and support.

14.5.2 Strategic Investment in Key Programmes

The targeted investment in educational programmes with strategic significance was particularly important in signalling the commitment the institution had for using technology to support growth:

> I think the fact that, as part of our quick win this year and also our going forward, is that each school has been given 160 hours to help achieve something. [Staff Member, 2011]

Actions taken in response to this plan were incorporated in individual staff performance plans, further enhancing the sense of importance attached to the changes. There was a clear suggestion in the comments that the sense-giving strategies adopted by management influenced staff perception of the changes being sought:

> I think there [is] be a better understanding of why we've got that strategic priority, how we're doing it, what support is being provided for staff and those sorts of things. I think prior [to the changes over the last year] there was something missing and it was the fact that staff heard about it and, knowing they didn't know how, wondered what [ITP-Z] was going to do for them. And I don't think that at that point in time that [ITP-Z] was visibly doing enough. [Staff Member, 2011]

14.5.3 Sense-Giving Models

An important part of demonstrating the relevance of technology to ITP-Z was the internal identification of the various sense-giving models of e-learning appropriate and useful to ITP-Z students:

> What we're really about with blended learning was to develop some models of learning that staff could use to help them develop blended learning programmes. Initially the conversations around that seemed to be that a lot of people were thinking we'd develop a model or some models and everybody would follow those but really we've kind of turned it on its head and we've developed the models of learning task force. We put together this task force made up of six academic staff and together we've developed the models of learning framework. [Staff Member, 2011]

These models were used to support the creation and training of champions who worked within a development framework to identify priority courses that used or were able to take advantage of e-learning. These champions were not early adopters (Rogers, 2003) but colleagues chosen for a combination of discipline and technical knowledge, trained and able to work collegially with other tutors.

14.5.4 Staff Skills Development

Addressing the gaps in staff skills and knowledge started with the creation of a self-assessment framework for staff to use to self-identify gaps in their own abilities and confidence in technology:

> [L]ast year in about June, we ran a month-long survey of academic staff asking them about professional development in general – what professional development they did, what they would like to do more of and then we specially asked about their technology confidence in a range of products including Microsoft products, some [ITP-Z] systems like our Student Management System, our attendance monitoring tool and [LMS]. The key questions were around [LMS] and those were the most shocking results. We had something like half of

> staff who were confident using [LMS] for web support and delivery, so just able to put some Powerpoints into [LMS]. Only half our staff were confident doing that. And we asked if they would you be confident teaching web-enhanced web-based, that was more like a third. So really out of alignment with [ITP-Z] strategic priority and the importance they're placing on flexible delivery. [Manager, 2011]

This raised a number of significant questions about the collective ability of the staff to support the strategic intentions of the institution for technology use. Teaching staff at New Zealand ITPs, as opposed to universities, are required to have teaching qualifications. ITP-Z, in common with most other ITPs, offer their own qualification to their staff. This requirement was used to add new professional development activities supporting and stimulating the use of technology but in a manner respecting the professional's sense of their own responsibility to self-regulate their practice:

> [W]e have these objectives to offer more flexible delivery, and we're going to teach more of our programmes flexibly, we didn't systematically develop staff skills in using these technologies. So we're all on the same page, to say it's just come from the CEO is not completely fair. Everybody saw the need but certainly [the chief executive] did decree, if you like, that we were going to do a compulsory training programme this year. [T]he approach we took was to give staff some ownership over what they did and didn't need to do so rather than to develop a low-level training programme to ensure that mostly everybody was at a certain level. We then gave people freedom to decide if they needed that or not. [Manager, 2011]

In response to the gaps in staff skills and knowledge identified in the self-assessment activities, ITP-Z organised a mandatory two-day 'technology festival' for all teaching staff at which they were given an extensive programme of workshops and opportunities to develop their knowledge, skills and confidence. Additional workshops were provided during the year to further support this, and a new qualification was developed for staff, specifically addressing technology use for learning and teaching:

> We pushed technology training as well as a key training initiative at the beginning of the year. We had the [technology] festival, which was two days, where we managed to showcase some of our own people, academic staff who are actually doing some stuff in e-learning. That just was another catalyst to get people inspired what others were doing. Other people became really interested and we got these hubs happening everywhere. [Manager, 2011]

Evidence gathered subsequent to training suggests the approach is starting to have a positive impact on staff skills and confidence:

> I think the time was right and to show that [ITP-Z] was serious. If we don't invest that time in our people, how can we expect them to invest time either in what they're employed to do or their belief in those strategic priorities. Seeing that they're adding value. [Staff Member, 2011]

> We've run the same survey, asked the same questions again, added a few other questions around student engagement, confidence working with groups of students. Basically we asked the same questions again about [LMS skills] specifically. We think it's looking like about a 25% improvement in terms of staff perception of their own confidence with using technology. [Manager, 2011]

14.5.5 Impact of the Change Activities

In total, the initiatives outlined above represent a substantial response to the challenge posed by ITP-Z's strategy. Teaching staff experienced a substantial re-engagement with their needs. The change projects and the development of the new qualification saw the creation of a substantial set of resources for staff. In combination, these influenced the perception staff had of the requirement to engage with the changing needs of students and the institution and with the models of learning and teaching:

> I think now other people are seeing a lot more support: there's the staff laptop scheme so people are getting equipped. And I think all of those things working together are developing, perhaps growing confidence, and people can see that it something that is achievable and that we will be supported in doing. [Staff Member, 2011]

The 2011 assessment in Fig. 14.1 shows the strengthening of capability over the year, addressing many of the processes that weakened between 2008 and 2010. This is highlighted in the right-hand carpet with green boxes indicating the extent of the change. Notably, most of the improvement is in the *Planning* and *Definition* dimensions, reflecting the creation of operational procedures and materials supporting both staff and students in making more effective use of technology.

It is apparent in the capability assessment (Fig. 14.1) that there was little improvement in the *Management* and *Optimisation* dimensions—on the right-hand side of the carpets. This reflected the relatively early phase of many of the new initiatives at that time. It also reflected weaknesses first noted in 2005—the leftmost carpet—with the general absence of systematic information gathering and monitoring activities and with minimal ability of the institution to self-critique the impact of the changes made while looking actively for further opportunities to improve (Neal & Marshall, 2008).

Most modern tertiary education institutions have in their strategies an acknowledgement of the need to support innovation and adapt to changing societal requirements. ITP-Z is not unusual in this respect and has essentially maintained the same statements about technology, student choice and innovation in their strategy over the seven years of this case. In common with most institutions, they initially saw this as a requirement for investment in infrastructure leading to modernisation of the information technology and the establishment of key systems, including an LMS, electronic student records and online library facilities, as reflected in the 2008 eMM assessment.

This investment did not substantively change the learning experience of students. The absence of any critical examination of the actual outcomes and systematic feedback from staff or students meant a perception of the success of the technology use developed, leading to a belief that this could support a new strategy of commercialisation. Unfortunately, while not a financial failure, the commercialisation strategy did not capture the imagination and support of the teaching staff. This appears to represent a conflict between the ethos of public education and the increasingly blurry line between the public sector and commercial activities.

The critical change point appears to occur in late 2010 when a small group of senior managers, not including the chief executive, independently realised that, based on the eMM assessment, the consultant's review and a survey of staff, ITP-Z was not able to deliver the type of continuous innovation and educational change aspired to in its strategy. This led to their engagement in a process of sense-giving and supported sense-making that was far more effective than existing operational management in stimulating change:

> The right people? Selling that message … having people championing the cause and beating the drum at a leadership level. … I think there's the fact that they've managed to connect the different aspects, because it isn't just about tutors, it is about [professional development], it's about the leadership, it's about IT. So bringing all those bits together. [Staff Member, 2011]

> Instead of imposing a change around e-learning we forgot about all that and really tried to get the schools to come up with their own ideas and into using their staff to make it happen. [Manager, 2011]

> [T]o truly be agile and change an organisation, which is very difficult, you've got to give the power to the people in a way. That's the only way it's going to happen. You've got to have these hubs or innovation, or whatever it may be, and to have strong links into the schools. But if you can truly operate in that chaos instead of trying to control everything, to actually get people fully engaged and get people to feel that they can be part of that journey, that's something good. We've got something like that happening but I'm not sure if we yet know how powerful it is or how we're going to channel that. [Manager, 2011]

The response led to a number of activities aimed at addressing the ability and willingness of staff to engage in the challenge of using technology effectively. The combination of an explicit acknowledgement of their needs, combined with a genuine opportunity to generate new ideas on how they might teach, resulted in a very positive improvement in the institutional culture:

> Well, I think we're well on track. There have been several abortive attempts in the past six or seven years where it's been given to someone but there hasn't been the support, the resourcing behind them and it's been deflected at some point along the way and then put aside as just another report that goes in the filing cabinet. [Staff Member, 2011]

14.5.6 Key Lessons

The observation that the same issues remained a challenge for the institution over the seven years covered here is an important message for any institution attempting to change and evolve in response to technology. Organisational change is hard. Shifting traditional public education institutions from a model of individual activity to a coordinated, collegial and sustainable system taking advantage of new technologies takes years of commitment and hard work by staff at every level in the institution.

The experiences of ITP-Z illustrate the need to combine clearly articulated strategic objectives with organisational endeavours that engage staff in

sense-making activities respecting their values and sense of organisational culture. The role of leadership in enabling these is apparent in this case study. Managers set goals and provided resources, including new staff, but then stepped back and let much of the detail be determined by the staff. The staff directly involved, rather than their managers, primarily made the decisions about priorities for courses, teaching models and other changes to be made.

> It's been an uphill battle to get it framed and know enough about it. The way I feel is that we finally have this emergence to happen. The right people are getting involved and them feeling passionate about their area. [Manager, 2011]

This is not an 'early adopter' model of innovation (Rogers, 2003), driven by transformation thinking (see Chap. 17). The systems put in place involved everyone. The 'technology festival' was mandatory for all staff, not a special event for a small number of early adopters. The models and frameworks for development and pedagogical change were used by all, and substantial resources for professional assistance were available to ensure courses were redeveloped because of their priority to the organisation and not because of the passion or skill of an individual teacher.

This case differs from transformation thinking as the work undertaken by ITP-Z was not driven by a technological transformation and innovation but by a sense-making process aimed at ensuring existing technology was used effectively. This helped the organisation frame its goals and target resources in ways that supported staff and built their engagement, rather than threatening a radical transformation that further isolated staff from the organisation. It is worth observing that the one specific technology identified in the last ITP-Z strategic plan for e-learning, content management, was the one part of that plan that saw little evidence of uptake or consequential change. The general focus on improvement of infrastructure was not identified by staff as significant in their changes in attitude or in their engagement with the use of technology for learning and teaching.

The impact of a range of leaders acting in sense-giving roles is evident in this case study. The staff responsible for the engagement activities, including the staff development event, the identification of the teaching models and the instigation and support of champions, were acting as change leaders. The positive impact of these staff cannot be underestimated, and any organisation initiating changes in learning and teaching is strongly advised to identify or appoint people with the requisite skills as the first step towards change (Flutey, Smith & Marshall, 2017).

Senior leaders must be confident in their use of sense-giving strategies, maintaining a consistent goal for seven years in this case but also recognising when the mechanisms and capabilities of their organisation are failing to support progress towards that goal.

> We're on an endless journey. … It's about that whole modernisation side. You can't stand still; if you're not modernising all the time, you're gone next year. [Manager, 2011]

14.6 Conclusion

There is a diversity of various academic disciplines, of modes of scholarship and of pedagogical norms in the university. Combine these with the various stakeholders, and it suggests a strong set of shared values is needed to provide the organisation with coherence, particularly given the limited scope for anything else that might sustain a unifying impulse. The need for a strong and nuanced core ideology is even more important as the boundaries of the university start to blur. Disaggregation of functions beyond the traditional organisational boundaries suggests that sustaining a coherent set of values and culture is a major challenge for leaders (Middlehurst, 1995, p. 82). The consequence of disaggregation is the need to be more explicit regarding exactly what the core values and culture are at the interfaces between the different elements constituting the collective entity perceived by external stakeholders as 'the university'.

Much as investment companies have to develop ethical products aligned to the needs investors concerned about funding weapons, tobacco, environmental destruction and a host of other sensitive commercial activities, those engaging with universities in order to offer services need visible consistency with the values espoused by their clients. Considering the complex web of vendor relationships discussed in Sect. 4.6 and the range of universities they engage with, this is not a simple proposition.

Clarity of values and culture defines many aspects of the university's engagement with society. There is a fundamental inability to accurately and reliably measure the nature of learning in anything other than general terms. This means choices about quality systems and the inevitable impact they have on the viability of a university coalesce around what is valued and whether the systems of the university are purposeful in sustaining the achievement of those values.

If the university is defined purely by its core values and culture, there might be justification in resistance to external measures applied through various quality systems. Centuries of war show how humans actively resist externally applied threats to their sense of the values and culture of any society or group. Organisational purposes, however, provide the context for a legitimate assessment of the success of the university at any point in time. Values and culture should be aligned to the purposes of the organisation. Negotiation between the university and those providing resources, while framed by agreement over purposes, needs to respect that relationship.

The failure of NPM is not a failure of management tools or a reflection of the illegitimacy of the underlying market model. It is a failure driven by the myths of transformational thinking leading external stakeholders to believe the technologies of management designed in one context have value in a completely different context. The Virtual University was driven by a mistaken belief that content distribution models used in the music industry would transfer to education. NPM asserts management tools designed for commercial, profit-driven and competitive contexts add value to an endeavour with very different values and cultures.

The challenge facing university leaders is how to ensure the various stakeholders of any given university understand the alignment between the purposes of the organisation and their values, given that the values of the different stakeholders are unlikely to be in complete agreement. The key is shifting the understanding of quality from a NPM narrative of accountability and compliance, to one enabling and supporting sense-making, as will be seen in the next chapter.

Chapter 15
Quality as Sense-Making

Abstract The quality of a university cannot be defined in absolute terms despite repeated attempts to create models that capture the university in a measureable form. Failed quality models compromise higher education by damaging trust, creating a system described by Gresham's Law where poor quality models drive out better ones through misaligned regulation. Instead, a quality conversation should address how much risk society and institutions are prepared to tolerate, identify and sustain wider educational priorities, and ultimately enable higher education to support social and economic change. Different conceptions of quality applied to higher education are reviewed, and the concept of quality as sense-making presented as a means of avoiding externally imposed models that are driven by vested interests or transformational thinking.

> …the appeal to excellence marks the fact that there is no longer any idea of the University, or rather that the idea has now lost all content. (Readings, 1996, p. 39)

Defining the quality of higher education may, in reality, be impossible. It is certainly a highly contested concept (Newton, 2010) with a vast literature attempting to provide some form of structure and definition to the concept (Vlăsceanu, Grünberg, & Pârlea, 2007; Schindler, Puls-Elvidge, Welzant & Crawford, 2015). The quality of a system of higher education cannot be defined in absolute terms, reflecting as it does the creation of something inherently intangible, more akin to a conversation (Bergquist, 1995) than a product. It reflects the broader issue that quality, or excellence—which is frequently used as a synonym for desired but often unachievable qualities, is not a 'thing' with an independent existence.

Language introduces significant challenges when considering what is meant by quality in education. The place language and sense-making play in developing knowledge about quality is apparent in the process of exploring quality on an international stage:

> … gathering some related nouns opens on to a common field: le critère (criterion) and le principe (principle) in French; die Höhenmarke (benchmark) and die Echtheit (integrity or authenticity) in German. From this field, a transcendent spirit called 'quality' grows: in

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> institutions devoted to education, the spirit is evidenced in public, transparent, and ever-higher criteria and benchmarks for all aspects of the processes and provision of knowledge, and, by observance of common principles of judgment, is executed with integrity. Large abstractions, yes, but concrete in execution. Ideally, what came to be called 'quality assurance' is a case of language becoming a way of life. (Adelman, 2009, p. 107)

Quality is inherently a description of something else, shaped by the nature of the activity evaluated, its concrete affordances, and the intent of both the evaluator and of those involved in the activity itself. As Biggs (2001) notes, when speaking of quality in education we may be referring to the nature of the outcomes achieved for students, the attributes of the process of education, or the affordances of a specific educational resource. Gibbs (2010), in his extensive review of quality in higher education, identifies the need to be clear about the purpose of engaging with quality. He distinguishes between quality models framing education as having specific outcomes, such as employment, and models focusing on the enhancement of students in more holistic terms, placing the learner at the centre.

Meaningfully engaging with quality in a global context introduces complexity (Van Vught, van der Wende & Westerheijden, 2002). Achieving a common international understanding of educational quality is essential given the role qualifications play in international commerce and as an enabler of migration by skilled workers (Sect. 6.3). It also enables the provision of transnational and international education provision (Chap. 3). This challenge was identified during the European Bologna process:

> … the principal reason [quality assurance] assumed a large profile in Bologna was to establish full trust across borders. It is assumed that if you and I, from different countries, use roughly the same public procedures and criteria to officially warranty that our institutions of higher education do what they are supposed to do and have the organization and means to continue doing it, then we trust that the credentials awarded by those institutions have integrity. And when we focus on academic programs *within* institutions, we offer the same warranties. With trust and integrity comes recognition. (Adelman, 2009, p. 105)

Defining quality in an international context is difficult when some fundamental ideas are unable to be directly translated between countries:

> Indeed, virtually everyone who has addressed quality assurance raises this issue. For the most critical terms on this field—"standards," "guidelines," and "assurance"—do not translate easily across the language landscape of Bologna. As Patricia Pol of the University of Paris XII (and an active Bologna "promoter" in France) reflected, "it's a concept issue: 'standards' doesn't mean anything in French, whereas 'norms' does, but 'norms' is a different concept." German recognizes "standards, but offers a more congenial home for "norms." (Adelman, 2009, p. 106)

The issues of clarity around meaning, purpose and context for language are so fundamental that a European workshop and report were undertaken, specifically with the purpose of identifying a vocabulary and epistemological framework for international collaboration and engagement (Crozier, Curvale, Dearlove, Helle, & Hénard, 2006). This type of activity is essential if conceptions of quality are to avoid the cultural bias that almost inevitably arises from the dominance of English language perceptions and the national contexts of Western countries. Elements of

this dominance were noted in the influence, it has on the Chinese national strategy for the expansion of their higher education system (Chap. 3).

Reflection on the diversity of the modern university, with academic staff drawn from the international pool of scholars, leads to the realisation that within the institution there may be a plurality of meanings given to quality and the associated terminology. Bergquist (1995) asserts this diversity, including the growing diversity of the student population and of the disciplines constituting the various faculties of the university, has the potential to increase the quality of the institution through engagement with differing perspectives, communities, contexts and paradigms. Sense-making emphasises the importance of language as a tool for engaging with and motivating a group to commit to changing systems. It is essential this process includes an explicit recognition of the need to develop a common vocabulary and consensus around valued qualities.

Despite the ambiguity regarding what is actually being addressed, the quality of education is undergoing an international resurgence of focus. This reflects the pressures on educational systems discussed in the first section of this book and the consequential responses implemented by governments and institutions (Hénard, 2010). As Blanco-Ramírez and Berger (2014, p. 99) note, the key questions facing governments and educational providers include:

1. What is educational quality?
2. Who defines the criteria?
3. Who provides answers to the question of quality?
4. Who benefits from existing definitions of quality? Who does not?

These questions are rarely directly and explicitly engaged with. Westerheijden, Stensaker and Rosa (2007) make the point that national education systems are prone to adopt quality schemes through a process of isomorphic change, mimicking the policy direction and initiatives applied in other contexts without a detailed assessment of the implicit and explicit assumptions validating the quality system or management fad being promoted (Birnbaum, 2001). This is particularly apparent in the efforts to apply commercial quality models such as Total Quality Management (Chap. 16), and in the adoption of research quality frameworks such as the UK's Research Excellence Framework (REF; http://www.ref.ac.uk/; Waitere, Wright, Tremaine, Brown, & Pausé, 2011; Stahl, 2015) into other systems such the New Zealand Performance-Based Research Fund (PBRF; TEC, n.d.).

Engagement with quality through specific initiatives that change institutional systems and processes is frequently stimulated by the actions of external accrediting or assuring agencies acting as part of a growing 'agentification' of quality (Stensaker & Gornitzka, 2009). Hénard (2010) reports that 92% of their sample of international institutions undertook specific quality initiatives in response to external agency evaluations. The efforts of these agencies often lack a strong evidence base or underlying theory that can be tested and validated. They are instead strongly linked to direct economic and political outcomes, particularly the management of the direct financial cost of higher education (Forstenzer, 2016) that are

aligned to the interests of specific stakeholders (Harvey & Newton, 2004; Martin & Stella, 2007; Skolnik, 2010; Ramírez, 2013). Consequently, questions of quality are rarely dispassionate and objective. The choice of quality model and the focus placed on specific systems or measures is usually an attempt to pre-define the landscape within which education can be situated, and the likely nature of the outcomes resulting from any measures of quality undertaken.

Engagement with the quality of education, particularly at a national or sector level, is dominated by those aspects that can be explicitly changed or that support political agendas for change (Chalmers, 2007). Unlike other contexts, such as commodity products, a national educational quality strategy in countries like the UK, Australia and New Zealand cannot achieve better outcomes by disregarding social and demographic inequalities—a key distinction between mass and élite systems—to select only the very best 'quality' inputs, even if some in the sector might wish to do so (Pitman, 2014). Nor can simple financial performance measures be used as a proxy for quality. The reality is that directly measuring learning is almost impossible, and thus the impact of expenditure on learning is at best unreliable (Knight, 2006; Coates, 2007).

Quality in higher education is significantly influenced by the role qualifications play as social signals of worth. Much as birds invest in fantastic plumage, degrees are used as signals to others of the relative desirability of a potential employee (Arrow, 1973; Spence, 1973; Hussey, 2012). At the heart of this, signalling is the 'positional' nature of educational qualifications (Harrod, 1958; Hirsch, 1976; Brown, 2003; Leney, 2009) arising from the duality of purpose apparent in educational systems with conflated and conflicting absolute and relative dimensions of quality (Sect. 6.1).

As an aside, it is worth noting that the decision by countries like Germany to manage access to education on the basis of merit results in a different dynamic. Their system (Chap. 5) means the quality conversation is modified by a context allowing greater control of inputs to the system. It is unclear whether this fundamentally changes the holistic quality of education or if it simply moves the locus of control to a different point in the system.

The political solution to these challenges is driven by pragmatism. Internationally, the quality of higher education is primarily measured by simple indicators associated with the scale and scope of activity (Hénard, 2010). Auvinen and Peltonen (2004) suggest multiple viewpoints need to be considered simultaneously when engaging with quality in education, including technological, economic and pedagogical perspectives. All too often, a simple binary model develops instead with different approaches used for research and for education.

The high profile international ranking measures of universities are dominated by research aspects. Mechanisms such as the UK's Research Excellence Framework have exhaustively measured research while proposed measures of teaching and learning (BIS, 2015) are rather less sophisticated, if potentially of greater consequence to institutional finances. Teaching quality activities are framed by accountability and audit agendas rather than engaging a wide range of stakeholders directly in improvement activities (Lewis, Marginson, & Snyder, 2005; Stensaker,

& Harvey, 2011). Internationally, education institutions face an expanding set of performance measures and accountability frameworks that dominate the discussion of quality. These frame education purely in terms of the economic impact of qualifications and problematise the sector in financial terms dominated by concern with debt management and cost-benefit ratios.

It is interesting to contrast the different cultures of quality apparent in the treatment of research and education in universities. 'No university manages research by explicit direction from above' (2000, p. 152) Marginson and Considine note but the research activities of individual academics are nonetheless extensively measured. The techniques are generally reliable, such as the number of outputs produced, the value of external research grants awarded and the success of graduate students supervised. In contrast, teaching is increasingly subject to directive management approaches, imposed internally and externally, which prescribe the structure and focus of teaching. The measures used for success are less reliable and arguably difficult to ascribe directly to the work of individual academics.

An additional complication is that quality in higher education is constantly changing. This is a consequence of the dynamic economic, political, social and technological environment education operates within. The changing expectations made of educational systems and institutions mean any attempt to describe the desired qualities of a system will, at best, be of historical interest. The needs of society will have moved on while the quality measurement was first created and then applied. Bourdieu (1973) distinguishes the 'opus operatum' or finished view, from the 'modus operandi', or process of doing the task. He suggests weaving both these perspectives into an analysis, providing a means of understanding the qualities of a thing changing over time while also maintaining an awareness of the messy unresolved dilemmas that characterise it at any given time. Quality then becomes a tool for managing and shaping change in a dynamic environment. As a starting point for understanding quality in this way, it is worth considering the impact of misaligned quality systems.

15.1 Gresham's Law, Trust and the Unintended Consequences of Misaligned Quality Systems

To understand the drivers that result in quality misalignment, it is worth reflecting on the question asked by Srikanthan and Dalrymple (2003, p. 132); 'what would be the justification for a higher education institution to embark on a major organisational transformation' given the environment of growth and general success of higher education models to date? The obvious answer, noted above, is that engagement with quality is typically driven by the agendas of external agencies. Given the obvious motives of external funding agencies to exert control over institutions and drive improvements in efficiency—producing more graduates for

the same or less money—it is not surprising there is evidence of 'virtual adoption' of quality tools and models by universities (Birnbaum, 2000).

Hénard (2010) suggests universities engage in learning and teaching quality initiatives for a mix of reasons, including:

- Evaluations by external assurance or audit agencies;
- Institutional missions or purposes with strong pedagogical drivers such as links to specific disciplines or industries;
- Concerns about the teaching skills and knowledge of faculty employed by the institution;
- Decisions to make teaching excellence a distinctive feature of the institution's reputation;
- As a tool for management oversight and engagement in complex and devolved institutions.

New technologies offer universities an additional reason in the opportunity to take stock of the wider educational system they are part of and consider how they are meeting the needs of all stakeholders effectively. A conversation about quality can then occur aligned to the future needs the system will have to respond within the role played by the university and reflecting an understanding of the complexity of its current context. It is easy to see the existing structures of higher education and therefore focus on systematic improvements and efficiency gains without asking whether these are directed at relevant outcomes needed for the future.

An alternative perspective, developed in this chapter, suggests a quality conversation is a conversation about how much risk society and institutions are prepared to tolerate, about wider educational priorities, and ultimately about the contribution higher education can make to support social and economic change. Framing quality activities in this way recognises the potential they play as instruments to strengthen universities, not merely as organisations but as institutions of society (Teixeira, 2010).

Risk management pervades modern society. Concerns about liability and probity are high in the priorities of any leadership team reflecting the awareness of the various forms of corruption affecting all forms of commerce, including higher education (Chapman & Lindner, 2016). Systems to manage the consequences of any risk are a normal feature of most large organisations (Power, 1997) and considerations of quality are part of these systems. On the other hand, quality systems can themselves introduce new risks simply by attempting to manage and mitigate risk. Misaligned policy and quality frameworks have the potential to prevent the development of a more flexible tertiary education system, one capable of realising the greatest possible benefits from technology and other changes in the wider environment. This lies at the heart of the concept of Gresham's Law (Ricketts, 2015).

Gresham's Law is the economic proposition that if there is uncertainty about the quality of something, then poor quality versions will tend to drive out higher quality versions. Named after Sir Thomas Gresham, Tudor financier and agent for Queen

Elizabeth I, the Law is commonly expressed as 'bad money drives out good'. It is based on the observation that coinage made from precious metals such as gold or silver is debased below its intrinsic value if no action is taken to prevent it, or worse still, if some agency such as a government mandates recognition of the debased currency at its face value.

Ricketts (2015) argues that Gresham's Law is apparent in situations such as the market for used cars (Akerloff, 1970) or in education where the buyer—student—is acting with minimal or incomplete information, so-called inscrutable markets (Gambetta, 1994). Any situation where the qualities of something are hard to determine without specialised or insider knowledge are prone to the negative effect identified by Gresham's Law. Those without the requisite knowledge invest in something that can be compromised without their realising it.

The educational implication is the operation of dysfunctional quality, and accreditation regimes enabling the existence of poor educational provision. Either by concealing the issues or by validating the degradation in ways that are difficult to detect or not in the interests of those involved to address. This can be an entirely innocent process if those defining and operating the quality regime are themselves unable to reliably discern the comparative qualities of different educational processes and outcomes. As Bourdieu (1973, pp. 142–143) notes:

> This attachment to an anachronistic idea of the value of qualifications no doubt plays a part in the existence of markets in which diplomas can (apparently, at least) escape devaluation. The value objectively and subjectively placed on an academic qualification is in fact defined only by the totality of the social uses than can be made of it. Thus the evaluation of diplomas by the closest peer groups, such as relatives, neighbours, fellow students (one's 'class' or 'year') and colleagues, can play an important role in masking the effects of devaluation.

This misalignment of interests is seen in the operation of the reputational measures of quality dominating international university rankings (Chap. 16), particularly those depending substantially on the evaluation of reputation and impact by insiders without reference to empirical evidence. Even the comparatively robust measures used for research productivity are subject to insider influence as a result of the dependence on journal ranking measures dominated by historical and reputational effects.

Good regulation ideally lowers the threshold needed for access to information about 'good' options. This can be challenging if the information is hidden sufficiently that experts and regulators struggle to discern the differences. A related issue is the intersection of perceptions of quality with culture. Success, or otherwise, of groups such as indigenous students may be affected by their different experiences and expectations of education. This may further exacerbate the challenge they face when selecting and engaging in tertiary education and recognising when its quality or value may be declining (Bourdieu, 1973).

Responses to this issue depend on context. If there are opportunities for multiple transactions, then the buyer can make their own judgement and share it with others. Over time, this reputational mechanism encourages an alignment of quality with buyer needs. In education, it requires a significant shift away from the monolithic

qualification to a more disaggregated model allowing for easy transition between providers. This is an option in some models of universal provision and is plausibly achievable in very structured mass education models.

An alternative is to provide a monitoring facility to oversee multiple transactions and penalise suppliers that reduce the quality of their activities. This is the dominant model in international tertiary education, operationalised in the work of accrediting and quality assurance agencies. This model is problematic as it depends on the effectiveness of the monitoring function, which may be compromised if the information is difficult to identify reliably or if other considerations influence the monitor's behaviour. This can result in a growing hierarchy of monitors, regulated by their own monitors, and a never-end cycle of trust bestowed on those that guard trust (Shapiro, 1987).

The application of external regulatory mechanisms can disrupt established quality mechanisms. An example is seen in the impact research assessment activities, such as the UK REF, Australian ERA and New Zealand PBRF, have on the peer review and editing process of journals. Many highly ranked journals struggle to cope with a combination of the increase in the number of submissions, a steady decline in the quality of submissions, and a reduction in the willingness of academics to review the work of others (Creagh, 2011; Anderson & Tressler, 2014; Graur, 2014). It is also seen in the way such systems displace other approaches to quality that might provide alternative measures or viewpoints. An example is the way the New Zealand PBRF system led to a disengagement with research quality by the New Zealand Academic Quality Agency (AQA) despite AQA's use of a different model of quality that provided a more holistic assessment of research activities than the PBRF with its predominant focus on individual researcher publications and activities.

The most problematic aspect is whether the operation of external regulation can respond effectively to organisations attempting to make significant changes to their learning and teaching approaches that are not within mainstream practice. The tension between the agency priorities, such as clarity, specificity and efficiency, are not well aligned to the rapid pace of change offered by technology and sought by organisations attempting to be agile in their adoption of new ideas. External quality assurance activities driven by government and quality agency stakeholders, such as the UK QAA and the New Zealand TEC, have resulted in compliance approaches, a lack of awareness of the heterogeneity of institutions, and little attempt to support the ongoing evolution of learning (Harvey & Newton, 2004; Harvey, 2005; Chalmers, 2007; Westerheijden et al. 2007; Gibbs, 2010; Hénard, 2010; Law, 2010). An example of this is provided in the case of PTE-A (see box).

PTE-A Case Study

PTE-A is a private training establishment (PTE) in New Zealand providing vocational training to approximately 1500 students engaged in full-time study and part-time study (Marshall, 2012a). PTEs are commercial organisations,

operating as either for-profit or non-profit educational providers under a national quality assurance and accreditation framework. PTEs are funded through a mix of student fees and public funding. PTE-A's students are predominantly mature, are based throughout New Zealand, and are usually in either part-time or full-time employment in a single very tightly defined and regulated industry. PTE-A has been in operation for more than 25 years, initially as a face-to-face provider but in the last decade offering distance options as well.

A unique feature of the pedagogical model once used by PTE-A was the flexibility they offered students around commencement of the programme and the way the PTE supported the development of a community of learners. Courses were structured in modules of several weeks. Students could commence the programme at any time during the year and immediately join the first module. A consequence was that at any one time the cohort of students taking a particular module would be distributed evenly, some new to the module, others in the middle, and some close to completion.

Students close to completion were encouraged to act as mentors to students starting the module, sharing their experience and insight and helping the new students join the online forums. This model, while pedagogically excellent, also had the advantage of aligning well to the workplaces the students were intending to enter as a similar work pattern is normal in that industry.

This excellent model failed through an unintended consequence of the New Zealand quality system managing funding. In order to ensure student numbers are managed by institutions to maximise the completion and retention rates, the TEC imposed student number limitations on providers through the operation of an annual funding plan with severe penalties for providers who exceed the allocations.

The perception this creates among students is that access is limited to those who enrol early. Consequently, most students applied to start immediately in the academic year, a single cohort all in lock step replaced the continuous flow of previous years and the qualities of the model were compromised.

Skolnik (2010) suggests the solution to the risk of quality assurance imposing a harmful conformity on education is to be found by framing quality in a collaborative process respecting different stakeholder positions and responding to their needs. A key component of this process is the development and maintenance of trust between the institution and its stakeholders through the action of impersonal trust agents (Shapiro, 1987; Hoecht, 2006). Stensaker and Gornitzka (2009) distinguish between the *rationalist-instrumentalist* perspective, which asserts that accountability mechanisms are essential for the maintenance of quality through the assertion of control, and the *normative–cognitive* perspective, which assumes that social mechanisms built on trust and the sense of the obligations that arise from this act to maintain and build quality. The latter perspective reflects the conception of

trust by Rousseau, Sitkin, Burt and Camerer (1998), where the positive social expectations of the behaviour or intentions of others lead to the deliberate acceptance of consequent vulnerability.

Complex activities such as education, with benefits that are realised well after the decision to invest resources into them, are inherently dependent on the operation of social networks of trust. Many of the activities contributing to a successful education depend on the direct and indirect contribution of others, including various support services, teachers, and even the commitment by employers and by society to value the resulting qualification. The vast majority of students and their families cannot verify every element of the system themselves and consequently, they must depend on others to act as guardians of trust, even as those guardians are themselves subject to yet more layers of trust (Shapiro, 1987).

The transition from a system of mass education to one of universal education may generate a student-led solution to the problem of misleading quality frameworks:

> Paradoxically these pressures will cease only when people lose faith in the ability of government agencies to ensure consistency of standards across the sector and when students and employers begin to deconstruct and interrogate the components of league tables. This involves significant costs and it does not immediately follow that consumers will find it expedient to act on privately acquired knowledge since the value of a degree will depend on other peoples' perceptions of the institution rather than the reality. Reputations can be lost, but they can also be resilient for long periods in the face of gradually developing scepticism. Reputations can be acquired, but they can be sluggish to develop even as private awareness of varying quality is becoming more extensive. (Ricketts, 2015, pp. 118–119)

In the absence of trust, it is natural to see dominant stakeholders imposing quality control mechanisms, such as audits, in order to verify the operations of the organisation and provide accountability mechanisms aimed at managing risk through the assertion of control (Power, 1997). This can further degrade trust by other stakeholders if they perceive the quality system has been captured in this way to manage risks that disproportionately represent particular stakeholder interests.

A natural response by individuals within a system of declining trust is their increasing concern with how they are perceived by others within formalised hierarchies (Roberts, 1991; Day & Klein, 1987) with a consequent rise in stress (Waitere et al., 2011; Shin & Jung, 2014) and reluctance to engage with change (Chap. 14).

The resulting loss of trust generates a range of organisational pathologies. These represent the misalignment between the culture and values of the quality system being imposed and the culture and values of the university itself (Ehlers, 2010). Power (1997) observes the pathological responses to this misalignment play out along an axis of two extremes. At one end is the decoupling of quality activities into isolated functions. This leads to what Birnbaum (2000) calls 'virtual adoption' and Van Kemenade and Hardjon (2010) call 'dramaturgical compliance', where the superficial affordances of quality are adopted in 'rituals of verification' acting to deflect rational questioning of organisational conduct (Power, 1997). The situation decouples quality from reality. The act of engaging in quality activities, such as

audit, becomes the goal of the system rather than the positive impact that such activities have on the wider outcomes.

The other extreme pathology is a form of colonisation of the educational system generating a situation where academics feel obligated to adopt an inauthentic quality discourse without any sense of autonomy or ideological engagement. Part of the drive towards this 'counterfeit reflexivity' (Morley, 2003, p. 70) or 'Façade Maintenance' (Weick, 2009, p. 13) is the perception that such activities are imposed as part of a wider process lacking in integrity:

> So why is auditing and the accountability it appears to provide so much in demand, in particular in the public sector? One reason may be that it is ideally suited to serve a legitimation need of governments. Faced with an erosion of generalised trust, governments can respond by making their own subordinate public institutions more accountable. In doing so, they can act as the guardians of the public interest, distract from any deficiency they may have in terms of their own accountability and gain better control over their subordinate and dependent institutions. (Hoecht, 2006, pp. 544–545)

The motives of the government are similarly challenged by Vidovich (2001) who asserts that a series of quality policies have been pursued in Australian higher education in order to assert control by the government and compromise the autonomy and independence of universities.

A counter narrative is that academics, in common with all professional groups delivering public services (Day & Klein, 1987, p. 238), have a vested interest in ensuring they operate within an inscrutable market (Gambetta, 1994) that, intentionally or serendipitously, obscures the processes of academia in order to sustain the privileges of the profession:

> A certain obscurity in the professional craft gives the practice its aura and sustains its monopoly privilege. … In other words, the legitimacy of the practice requires some publicity of the operational process but not so much that it could be readily replicated by outsiders. One could extend this thesis to the problem of audit objectives too. The objectives must be sufficiently concrete to be perceived as usefully satisfying programmatic needs, but not so clear that outsiders can readily judge the success or failure of the process in meeting its objectives. (Power, 1997, pp. 30–31)

Preferable to this environment of distrust and cynical compliance is a system where a diverse group of stakeholders is recognised and able to act on the qualities of the system. Building trust and strengthening the institution through an effective quality system capable of generating the cues for sense-making and then sustaining the sense-making processes. The challenge of stakeholder engagement in quality is explored in more detail in the next section.

15.2 Stakeholder Influence on the Definition of Quality

Involvement of a diverse group of stakeholders in the quality conversation is a key to the development of effective quality systems. The need to involve stakeholders is repeatedly emphasised in the European standards for quality assurance (European

Association for Quality Assurance in Higher Education, 2005). As well as helping generate a wider range of ideas regarding the qualities valued by these groups, involving different stakeholders from an early stage helps build a sense of agency and ownership by those involved. This can assist with the change processes needed to implement the resulting quality system and respond to the information it provides on areas for improvement. It can also lead to conflict and disagreement over priorities, particularly when stakeholders have different perceptions of the relative value and importance of different qualities (Ehlers & Pawlowski, 2006; Newton, 2010). As Harvey and Green observe:

> …quality is relative to the user of the term and the circumstances in which it is invoked. It means different things to different people, indeed the same person may adopt different conceptualizations at different moments. This raises the issue of 'whose quality?' There are a variety of 'stakeholders' in higher education … [e]ach have a different perspective on quality. *This is not a different perspective on the same thing but different perspectives on different things with the same label*. (Harvey & Green, 1993, p. 9, emphasis added)

'[D]ifferent perspectives on different things with the same label' is worth emphasising. Much of the debate about quality occurring within institutions and in the literature relates to language and the use of different terms to imply different qualities. Attempts have been made to define lexicons of terminology to mitigate the ambiguity in vocabulary and its meaning (Crozier et al., 2006). The fundamental issue is the need to build consensus and trust (Santiago, Tremblay, Basri, & Arnal, 2008) so a consensus can be built around changes that are perceived and valued differently by each stakeholder.

Building trust is challenging when dealing with academic perceptions of the quality of teaching and learning within universities. Many studies report evidence of academic disenchantment with quality systems (Anderson, 2006b; McInnis, Powles, & Anwyl, 1995; Newton, 2000, 2002; Chalmers, 2007). The act of probing the nature of education and testing the value and impact of its systems and outcomes is inherently confronting to academics used to operating autonomously in a traditional élite university model. As noted in the discussion on stakeholder salience (Chap. 4), the shift from élite to mass education has seen a shift from the priorities and values of academics, alumni and students, to an increasing focus on the qualities desired by employers, governments and administrators. The sense of a diminishing salience and the decline in control over definitions of quality is apparent in the many books written by academics lamenting change in the university, as mentioned in the opening of the first section of this book.

In a series of interviews conducted with academics, Newton (2000, 2002) identifies that they perceive organisational engagement with quality negatively for a number of reasons. These academics identified a variety of issues with quality systems and engagement including:

- Ritualism and tokenism, with academics complying with systems to the minimum extent possible and without any belief that the outcomes have any meaning or impact;

- Impression management, or the sense that the objective of the quality system is the external impression of quality without any depth or substance recognising the complex and diverse nature of university education;
- Both of these first two issues generating to a sense of passive acceptance and the absence of ownership by academics in the quality system and its impact;
- The burdensome nature of complying with the processes used to collect quality information;
- A failure of quality systems and the managers running them to 'close the loop' or demonstrate ways which the collected information is used to make meaningful improvements valued by academics and their students;
- A general suspicion of management motives fuelled by a sense of disengagement from university management following the rise of New Public Management models (Sect. 14.4) and the growth in numbers of professional managers.
- The sense that quality systems embody a discipline and technology aimed at validating, monitoring and scrutinising academics rather than improving their ability to teach and students' ability to learn.

The concerns expressed by these academics reflect the élite tradition that casts quality in tacit collective and collegial terms (Giertz, 2000), embodying a high degree of institutional coherence and a strongly value-driven university culture (Chap. 14). This results in the establishment of an unhelpful dichotomy contrasting a supposed 'quality' perspective, also characterised as 'objectivist' (Barnett, 1992, p. 46), with a 'higher education' or 'nominalist' perspective (van Vught, 1997, p. 83). The 'objectivist' perspective is positioned as concentrating on standards, evaluation and measurement aligned to the interests of stakeholders such as employers and governments and their agencies. The 'nominalist' perspective focuses on the purpose of higher education and its myriad aims and functions, taking the position that there is no definitive and final description of quality and trying to find such a description is fruitless. This latter perspective leads to observations like that in the 1983 Leverhulme reports on higher education in the UK; 'it is difficult to determine how well an academic is carrying out his teaching activities except in cases of serious dereliction of responsibility' (Berrill et al., 1983, p. 18). Astin (1980) describes the sense of the indefinable nature of quality in higher education as 'mystical', suggesting its disconnection from reality. The nominalist perspective on quality arises from the risk noted by Marshall:

> A risk of a pluralist construction of [quality] is that by allowing a multitude of perspectives and possible meanings of quality, the entire concept becomes meaningless, or at least less useful as a tool for change. (Marshall, 2012d, p. 2)

Valuing a diversity of views of educational quality implies university staff in non-academic teaching and support roles have a contribution to make to the organisational conversation. These views are not commonly engaged with except in vocational or technical providers (Hénard, 2010). Perception that the views of

academics are biased or inherently negative (Marginson & Considine, 2000; Martin, 2011) may explain the lack of engagement with academic and support staff perspectives on the impact of technology on education found in detailed benchmarking analyses (Marshall, 2013c, see also the eMM in Sect. 16.5).

One approach to the management of a range of quality viewpoints is conveyed by the characterisation of stakeholders as internal or external (Amaral & Magalhães, 2002). By implication, such a description positions the salience of one group relative to another. Internal stakeholders are seen as directly and personally involved and consequently more informed, capable of directly influencing outcomes but potentially conflicted. External stakeholders are seen as dispassionate, engaged with the wider benefits of higher education beyond the university and more objective and rational in their judgements. Such distinctions speak to the legitimacy of faculty views on educational quality (Sect. 4.2).

An alternative is to consider what perspectives are influencing institutional leaders. From a leadership perspective, an important distinction is the options for engaging with internal stakeholders are likely to be quite different to those available when engaging with external stakeholders. Internal stakeholders are more likely to be directly engaged with and influenced, even controlled. This is in contrast to external stakeholders where the opportunities for engagement and influence are much more indirect and less certain.

Bjørkquist (2009) suggests there are four different regimes operating to influence the way leaders engage with stakeholders; the *expert*, the *welfare*, the *bargaining* and the *entrepreneurial* regimes. Under the *expert* regime, stakeholder relations are defined by cultural values. Internally, academics retain a high degree of salience. The *welfare* regime focuses the conversation on the utility value of education and is associated with high levels of external intervention in governance and operations. The *bargaining* regime reflects institutional independence of action, moderated by negotiation with stakeholders but with a focus on sustaining collective cultural values. Finally, the *entrepreneurial* regime reflects independence but with an emphasis on activities engaging directly with wider economic and societal changes through entrepreneurial initiatives and leadership. Adoption of a specific regime follows from the context of the institution and the corresponding salience of the different stakeholders (Chap. 4) and will influence the processes of organisational change and sense-giving (Chap. 17).

The choice of a quality model and the associated tools and frameworks embodying a quality system and shaping the experience of quality management are strongly influenced by these perspectives and regimes. Often this is not explicitly recognised but arises from implicit change. The first step in taking control of these tools and using them to explicitly drive systematic change is to understand the quality conceptions embedded within the tools and frameworks.

15.3 Quality Models and Frameworks

> A diversity of functions requires a variety of qualities. Higher education has diversity of functions. It must start to recognize a variety of qualities: not quality but qualities. (Ball, 1991, p. 103)

Examination of the quality models used in education is an obvious way to discover which qualities have meaning for the various stakeholders in higher education systems and organisations. Such an analysis ascertains the definitions of quality implicitly or explicitly incorporated into these models and considers the ways these can influence the perceptions of stakeholders.

The most commonly cited framework for considering the quality of education is provided by Lee Harvey who continues to exert enormous influence on the field in his role as editor of the journal *Quality in Higher Education*. Harvey and Green (1993) proposed that educational quality can be framed as falling into five different conceptions, which often coexist:

- *Quality as perfection*. Describing the state of flawlessness or excellence, this conception is exemplified by the use of the Total Quality Management (TQM) methodology (Sect. 16.4) and management concepts such as quality as defect avoidance (Crosby, 1979).
- *Quality as exception*. The definition of exception is in relation to some form of standard or norm, which is exceeded. Exemplified in the quality model inherent to accreditation systems used by the US regional accrediting agencies and specialist e-learning systems like the EFQUEL UNIQUe Certification of EFMD Certification of E-Learning (Ehlers, 2012).
- *Quality as fitness for purpose*. Potentially, the most inclusive model of quality, fitness of purpose refers to the degree of utility or impact, assessed in education through the use of performance measures such as the UK TEF indicators (Forstenzer, 2016) or the Australian Quality Indicators for Learning and Teaching (QILT; http://www.qilt.edu.au/).
- *Quality as value for money*. This conception focuses on the provision of an adequate return on investment, as measured by cost-benefit tools focusing on the financial input costs, reflected in activities such as the New Zealand TEC Investment Planning process (TEC, 2015).
- *Quality as transformation*. Describing quality as a mechanism supporting qualitative change and continuous improvement activities, focusing on quality as improvement rather than quality as assurance.

The definition of *quality as perfection* focuses on consistency and the removal of all defects. It requires an unambiguous description of perfection and the ability to act directly on aspects representing defects. The dynamic and evolving diversity of disciplines, qualifications and students represented in a typical university and the sense that a stable, coherent and consistent definition of perfection can be expressed seem inherently improbable (Brink, 2010). The co-production of educational outcomes (Ehlers & Pawlowski, 2006) suggests this definition is problematic in

educational settings, as achieving perfection requires action on the part of the student as much as by the teacher, and demonstrating perfect consistency is an educationally inappropriate expectation of both students and institutions (Lomas, 2002).

The conception of *quality as perfection* includes the sense where quality is used interchangeably as a synonym for excellent (Peters & Waterman, 1982). This is evident in the alignment of quality with historical cultural and architectural achievements by some in the field (Elshennawy, 2004). The conflation of quality with excellence is apparent in the work of those critiquing the move from élite to mass education (Anderson, 1996; Collini, 2012; Kirp, 2003; Hersch & Merrow, 2005; Hil, 2012; Readings, 1996; Selwyn, 2014). The weaknesses of the term 'excellence' as a guide for organisational behaviour are founded on the inherent ambiguity of what is meant:

> [T]he mistaken belief that 'excellence' must mean 'academic excellence' has led to the widespread phenomenon of academic drift, especially among 'colleges', i.e. mainly teaching- only, polytechnic types of higher education institutions. This tendency threatens to pervert excellent higher education institutions aimed at educating highly skilled but also reflective 'practitioners'. (Westerheijden et al., 2007, p. 10)

With regard to quality, Lomas (2002) makes the point that excellence is often further conflated with exclusivity. This can lead, for example, to the claim that growth in the scale of education automatically results in a reduction of quality, as described by Bergquist's expedient perspective on quality (Bergquist, 1995). Conceiving quality as excellence or exclusivity is dependent on education being defined in very specific ways, which inevitably results in conflict over definitions between different stakeholders:

> Excellence is a term more compatible with a highly selective 'elite' system, whereas the system is taking on 'mass' characteristics so giving rise to issues of quality as a matter of public interest. Issues of quality arise where there are doubts about the capacity of the system to sustain an acceptable level of quality; it is the expression of concern that the general level of performance in higher education may be slipping below an acceptable quality. Excellence, on the other hand, is perhaps more an expression of confidence that the very highest standards are being maintained, at least in some institutions. Quality, we might say, is an inclusive term; excellence is an exclusive term. (Barnett, 1992, p. 59)

Excellence in an exclusionary sense reflects a focus on a single model of quality benefiting a narrowly defined population, rather than recognising that a diversity of educational contexts and outcomes, each excellent in their own ways, can provide quality at scale. Armstrong (2011, n.p.) notes:

> 'Dumbing down' suggests a tragic split: either you are serious but speak only to insiders, or you speak to the rest of the world but talk nonsense … If the power of the humanities depends upon their integration with the life of a society and their capacity to speak to the experience of large numbers of individuals, then a conviction that this is impossible is a serious impediment.

Excellence is often used entirely without any specific reference point to describe quality in education:

> As a non-referential unit of value entirely internal to the system, excellence marks nothing more than the moment of technology's self-reflection. All that the system requires is for activity to take place, and the empty notion of excellence refers to nothing other than the optimal input/output ratio in matters of information. (Readings, 1996, p. 39)

Finally, the use of excellence as a model for quality can see the focus shift from ensuring and improving the quality of education, to whether one institution is better than another (Brink, 2010). Attention shifts from improving the student experience to improving the rank of the institution in some form of subjective league table (Sect. 16.3).

Definitions of *quality as exception* depend entirely on the robustness of the standards proposed as measures. This model is seen in the management literature in a variety of related forms, such as conformance to specifications (Gilmore, 1974) or requirements (Crosby, 1979). Defining standards is complicated and subject to political and stakeholder influence, while validating non-trivial standards for education is almost impossible (Chap. 16). A further weakness of this model is the tendency, particularly when faced with financial and other constraints, for standards to define what is sufficient or good enough (Perry, 1991; Brink, 2010). This leads to a culture of compliance with a focus on checklists (Harvey, 2005; Kushimoto, 2010; Langfeldt et al., 2010). It reduces attention on stimulating further change and improvement, other than on the specific aspects of the organisation measured by the standard, when it should be encouraging a variety of approaches to the evolution and improvement of learning (Chalmers, 2007; Gibbs, 2010; Harvey, 2005; Hénard, 2010; Law 2010).

Quality as fitness for purpose is consistent with the alignment of courses and programmes to specified learning objectives and graduate attributes. It has become a feature of mass higher education systems, such as in Australia and the UK (Spronken-Smith et al., 2013), and in the use of learning analytics (Sect. 12.4.1). A fitness for purpose model of quality underlies the AACSB accreditation framework used for business (Mabin & Marshall, 2012) and the work of the Measuring College Learning project in the USA (Arum, Roksa, & Cook, 2016) with its focus on essential concepts and competencies supported by strongly aligned assessments.

Although fitness for purpose is the most inclusive and least confronting model of quality, it is the conception most subject to political influence, particularly when conflated with the model of quality as excellence. When using it as its main goal for the UK eUniversity initiative, the UK government discovered its weaknesses (Sect. 9.1.6):

> The main aim given for the concept of the e-U is to provide the opportunity for the flagship provision of UK higher education excellence using digital channels, primarily abroad but also at home. Our interpretation of 'excellence' is that it should mean 'excellent fit for purpose': each e-U offering must be the best of its kind and best suited to its target market. (Thompson et al., 2000, p. 8)

Nothing in this statement provides any definitive or measureable outcome, almost certainly by design. The words 'excellence' and 'best' are used interchangeably to avoid any specified accountability, probably because there is no

politically safe consensus on what the initiative would be held to account for. In practice, 'best' meant 'delivers large numbers of new international students', as was illustrated by the speed with which the UKeU was disestablished when it became apparent it was not immediately delivering a flood of revenue from new enrolments.

Critics note this conception of quality leads to a reduction in the diversity of approaches and measures of success being used. The set of forces outlined in the first section illustrates there is inevitably a multitude of possible purposes capable of being addressed by an educational system and the nature of these is constantly changing. Westerheijden, Stensaker and Rosa observe that '"fitness for purpose" and "fitness of purpose" are empirically empty terms: they can mean anything, depending on what is given as purpose'. (2007, p. 3).

Finally, as Barnett observes, the separation of fitness from purpose acts against holistic conceptions of quality in education:

> … unpacking the notion of 'fitness for purpose' reveals that, in this terminology, the institution's purpose is tacitly seen as separate from its fitness; in other words, the purpose is extrinsic to the fitness. The fitness is achieved in order to be able to do something else. 'Fitness for purpose' turns out to be a coded form of educational instrumentalism. (Barnett, 1992, p. 87)

An example of the way that the fitness of purpose conception of quality is enacted through a regulatory compliance operating in mass education systems is seen in the Australian Higher Education Standards Framework (Tertiary Education Quality and Standards Agency, 2015) overseen by the Australian accrediting agency the Tertiary Education Quality and Standards Agency (TEQSA). This framework includes a range of mandated standards and associated guidelines that address student participation and attainment, the learning environment, teaching, research, institutional quality assurance, governance and information management. Rather than created by the agency, these standards were created by the Higher Education Standards Panel which is a legislative advisory body operating under the oversight of the Australian Department of Education and Training with a membership appointed by the Minister. The approach adopted is very clearly a fitness for purpose one, with the standards described as 'thresholds' that must be met for a tertiary provider, including universities, to be accredited.

Positioning *quality as value for money* addresses the challenges facing society in resourcing education appropriately (Chap. 5). The importance of this conception of quality is consistent with Trow's (1973, 2006) sociological predictions that mass education generates a focus on accountability for public expenditure on education. This includes a shift in the underlying organisational model from one of public service, to one dominated by commercial structures and models (McNay, 1995; Tapper & Palfreyman, 1998) such as the New Public Management framework (Hood, 1995; Marginson & Considine, 2000; Toscano, 2011; Sect. 14.4).

Under a value for money quality conception, evidence of the decline in public funding for higher education suggests the quality is improving, provided the capability and knowledge represented by the resulting qualifications is maintained. This reservation is the major issue, given the uncertainty of the value of the

qualifications (Chap. 6). It is also silent on concerns regarding value to whom and how the costs are allocated within society. This ambiguity in who bears the costs and which benefits are valued is a key to criticisms of cost-benefit analyses that note their silence on issues of social inequality:

> Cost-benefit analysis is also mute with regard to the distribution of wealth in society. Therefore, a project designed solely to redistribute a society's resources would, if analyzed, be found to be all costs (those involved in the transfer) and no benefits (since total wealth remains unchanged). (Fischhoff, 1977, p. 179)

Although Fischhoff is speaking about wealth, the argument is equally applicable to education when value is defined in purely economic terms.

A currently popular political response to this issue of defining value and purpose is to place the onus upon the student and to treat education as a private good rather than acknowledge the wider social benefits. The ideologically framed pressure to shift to customer-driven models of quality is seen in Australia where the demand driven model of funding without caps is controlled through application of market forces and competition (Pitman, 2014).

The value for money conception is influenced by the shift from élite to mass education. A further shift in the idea of value occurs when a system evolves to a more universal model, as may now be happening in the US college sector:

> In institutions of universal access, there tends to be a different criterion of achievement: not so much the achievement of some academic standard, but whether there has been any 'value added' by virtue of the educational experience. That is the justification of universal higher education, as it is of the non-academic forms of primary and secondary schools; obviously, this changes in a fundamental way the basis for judging individual or institutional activities. For example, if the criterion of success is 'value added,' it may be better to admit students who are academically very weak, rather than those with a strong record, since presumably it will be easier to raise the performance of those who start low than of those who are already performing well. That argument is in fact made for the principle of 'open access.' Whatever substance it has, it does suggest how fundamental is the shift to 'universal access.' (Trow, 2006, p. 258)

This shift in the focus of value helps explain the interest in fully open models (Chap. 11). The inability of some to recognise the distinction between value for money and value-added complicates the recognition of the strategic impact a universal education model can have on an organisation (see Sect. 19.3 for a detailed discussion of the strategic positioning of models such as the MOOC).

These four conceptions of quality share a common weakness. In their different ways, they define and limit the scope and outcomes of education by establishing thresholds that can justify a slow decline in educational quality by relentlessly rewarding 'good enough' approaches (Perry, 1991). In each case, they fail to consider what might be missed, what qualities might not be explicitly described but which different stakeholders nevertheless value. In many respects, they establish and reinforce the divide between those who participate in élite education and those educated in the mass model.

Quality as transformation is the most ambitious and the most challenging model of quality. It frames quality as a process allowing the diverse interests of different stakeholders to be represented, addressing the weakness of the first four conceptions. Harvey and Green (1993) identify two key elements to this conception: the extent to which value is added to the student and the way in which the educational experience can empower them.

Ehlers (2012) argues for a shift in educational quality thinking to respond to the way technology changes the relationship between the learner and teacher. E-learning implemented using Web 2.0 technologies is less about delivery of educational material and more of a conversation where students create their own understanding through a process of enquiry and collaboration with other learners and their teachers (Waks, 2013). This leads to a sense of transformation enabled by technology, which needs to respond to a range of complementary factors:

- The student's intentions rather than learning objectives;
- The extent to which learners are supported in taking responsibility for their own learning;
- The ability of the learner to personalise and adapt learning experiences to suit their own goals and preferences;
- The support of learners as creators and developers of their own learning materials;
- The support of flexibility and collaboration by learning systems; and
- The development of learner capability to engage in self-reflection and evaluation of their own performance.

Some in the sector sees the transformative model as one of the most important conceptions of quality (Lomas, 2002). There are, however, issues defining the nature and focus of the transformation. If it is conceived in intellectual terms, it can be problematic to demonstrate the outcome (Newby, 1999), particularly given that the student is themselves an important determinant of any potential transformation and may not recognise or benefit from an educational experience until much later in their life (Ehlers & Pawlowski, 2006). Intellectual transformation is not the only form that can be enabled by education. Cheng (2014) identifies a further six possible transformations including critical capabilities such as the ability to judge and to cope with ambiguity; personal opinions, behaviour and attitudes; emotional attributes including motivation and resilience; physical changes reflecting the passage of time; social and spiritual changes reflecting the influence of the educational community and its values. These are hard to measure systematically and therefore difficult to include in any quality system.

Although it is true that not all possible transformations are desirable (Rowan, 2003), a positive aspect of this conception is the focus of transformation is the student rather than the institution, course or programme. The different aspects contributing to quality are a result of activities undertaken by the student in multiple institutions, at the very least reflecting the extent to which secondary education prepares the student for subsequent tertiary education.

A key aspect of quality that Harvey and Green's taxonomy is silent on is the focus and granularity with which quality is measured under the different conceptions. Value for money means very different things to a student—and their family—in comparison with the view of an institution or a government agency. As a sector, quality is often framed in terms of the students as a generalised cohort, aggregated by demographic characteristics and designated qualifications and contextualised to specific educational providers. The student as an individual with complex needs is lost in the homogenisation, with at most a passing recognition of those constituting politically privileged cohorts.

The use of qualifications acts as a form of closed discourse (Filippakou, 2011) preventing consideration of a wider set of qualities potentially of value to society. The growing importance of generic attributes as a measure of educational outcomes (Gibbs, 2013; Sproken-Smith et al., 2015) and the abandonment of specific qualification requirements by employers such as Ernst and Young (2015) suggests the limitations of qualifications in their traditional sense are increasingly apparent to the sector and its stakeholders (Chap. 6).

Harvey and Green's taxonomy is limited by the implicit framing of quality in a holistic and relativistic manner (Gibbs, 2010) rather than acknowledging the need to recognise a range of qualities, acting together but defined individually in ways that speak to different conceptions of quality transcending the categories identified in the taxonomy (Ball, 1991; Blackmur, 2007).

In addition to the quality aspects included in Harvey and Green (1993), Cheng and Tam (1997) identify at least four additional conceptions framed in terms of the educational organisation's connection to a wider societal context. These include achievement of stated goals for society; the satisfaction of strategic constituencies; and the maintenance of the educational institution's legitimate position or reputation. This latter model speaks to the strong influence ranking systems play in defining educational quality for institutions (Chap. 16) and in national strategies for education (Wang, 2013). These additional quality ideas recognise the dynamic nature of quality and the interrelationship between quality ideas and the nature of the organisational engagement with these ideas.

In their review of e-learning quality models and frameworks, Ossiannilsson, Williams, Camilleri and Brown (2015, p. 10) suggest that any effective quality system needs to possess a range of characteristics. While based on a review of systems aimed at individual institutions, these can also be framed as operating at the level of an entire education sector. They suggest a quality framework needs to be:

- Multifaceted. Using a multiplicity of measures including strategy, policy, infrastructure, processes and outputs to achieve a holistic measure of quality.
- Dynamic. Avoiding specific technologies so as to respond to rapid socio-technological change.
- Mainstreamed. Designed to support direct application in improvement activities at a local level as well as providing high-level oversight.
- Representative. Balancing the diverse perspectives and requirements of different stakeholders.

- Multifunctional. Providing signals of quality for stakeholders, supporting engagement with quality concepts, informing quality improvement priorities and mapping the pathway for targeted future improvement.

Any framework, however well designed, must deal with the reality that it will be implemented or applied within an organisational context that is inevitably subject to social and political influences, internally and externally. Gordon and Owen (2009) identify four different ways in which organisational cultures influence the engagement with culture. Under the *responsive* quality culture, the organisation is governed primarily by a positive response to external demands or challenges. Rather than owning or controlling the quality activities and strategies, the organisation sees these as externally defined activities that it participates in. In contrast, the *reactive* quality culture responds to external activities and strategies by seeking rewards, using responses defined by compliance and accountability and normally delegated to defined responsibilities within the organisation, such as quality offices. The *reproductive* quality culture takes this delegation strategy to further extremes by seeking approaches that minimise the disruption from externally driven quality initiatives in order to maintain the status quo. Quality may be regarded as important, but it is defined by internal norms and routine practice and conduct. It is resistant to any external attempt to impose or redefine goals. Finally, the *regenerative* quality culture recognises the importance of continuous re-engagement with improvement and organisational learning. It incorporates external initiatives within that culture, often subverting these into ways of achieving organisationally defined internal goals and plans.

Blanco-Ramírez and Berger (2014) identify the need to consider the wider organisation and sector context framing the engagement with quality. They suggest that there is need to consider the *bureaucratic*, *political*, *symbolic*, *systemic* and *collegial* dimensions as well. *Bureaucratic* aspects reflect the structural and formal elements of the organisation, including the roles and responsibilities for different aspects and how these are organised. The *political* dimension recognises the implications of stakeholder contention and the consequences these have on access to resources and influence that affect the impact of the quality system. The *symbolic* dimension counters technological rationality by recognising the place organisational culture, symbols, rituals and metaphors play in resolving ambiguity and conflict. The wider context of higher education drives the systemic dimension of quality and the recognition of the importance of context. Finally, the *collegial* dimension reflects a combination of these as expressed in the academic collegial ideal with its framing of organisational activities as collectively owned by the faculty.

The questions posed by Blanco-Ramírez and Berger for each of their quality dimensions (Table 15.1) provide a sense of the complex and interacting scope of the qualities a modern institution must engage with if it wishes to understand its quality context thoroughly.

The combination of elements identified by Ossiannilsson et al., (2015), the cultures identified by Gordon and Owen (2009), and the dimensions identified by

Table 15.1 Questions testing holistic quality dimensions (Blanco-Ramírez and Berger, 2014, p. 97)

Bureaucratic	What are the formal structures and regulations that guide the pursuit of quality in higher education?
Political	What interests are served by varying approaches to and definitions of quality. What power bases are being used to further which agendas?
Symbolic	What meanings and values are associated with different approaches to quality and how are those transmitted through symbolic norms and representations?
Systemic	What broader forces beyond higher education institutions influence the construction, delivery and assessment of quality?
Collegial	Who is involved and what voices are invited to engage in the important peer-reviewed processes used in determining quality at the ground level of higher education delivery?

Blanco-Ramírez and Berger (2014) illustrate the need to see quality as a living and evolving activity responding to a complex and dynamic environment. Managing this complexity requires recognition of the importance of, and potential for, sense-making processes in understanding quality, an idea elaborated in the next section.

15.4 Quality as Sense-Making

> [Quality:] a continuing process of critical self-examination that focuses on the institution's contribution to the student's intellectual and personal development (Astin, 1980, p. 8).

The framing of quality as a mechanism for organisational sense-making (Marshall, 2016; Weick, 1995, 2000) provides a model of quality that responds to the complexity identified in the previous section. In this conception, the engagement with the qualities of education is done in order to develop a deeper understanding of education and its implications for learners, teachers, educational organisations and society. Defining and measuring the qualities of education can then be seen as providing a lens for re-evaluating and exploring the activities of students, organisations and the sector as a whole. It proposes new ideas and possibilities building on the intrinsic qualities of the existing system and suggests new qualities not previously considered or valued.

For an individual student, this conception of quality is embodied in the pedagogical processes driven by feedback and the scaffolding of assessment. Organisationally, quality as sense-making is evident in the processes used by teachers in the constructive alignment of courses and programmes (Biggs, 1996) and in the way effective, quality systems inform strategy and operational decision-making. For a sector or national system, the sense-making conception is apparent when quality activities expose the diversity of educational contexts, pedagogical models and outcomes achieved by students, teachers and universities.

Adopting the conception of quality as sense-making emphasises the possibility that we may not know all there is to discover about quality in education. Lagging measures dominate many discussions of quality (Coates, 2007) and risk providing inaccurate information about the current situation and about future trends. Models that are too rigidly defined around historical forms of provision or too focused on measuring narrowly defined outcomes run the risk of failing to notice substantial changes inconsistent with that world view. Such misalignment is apparent in framing the quality of MOOCs in terms of traditional qualifications or with completion measures being used to assess the quality of an educational experience that may have no explicit or necessary endpoint.

Elements of the sense-making conception of quality are apparent in the self-assessment portfolios used in New Zealand higher education although with some limitations given the way the reflection is focused by the assurance processes (Boswell, 2015). There are aspects of sense-making apparent in the local institutional approach used by the European quality assurance agencies under the Standards and Guidelines for Quality Assurance in the European Higher Education Area (European Association for Quality Assurance in Higher Education, 2005) although again with some limits imposed by the use of defined standards and accrediting agencies and the way accountability for outcomes is evidenced.

The seven sense-making properties identified by Weick (1995, p. 17; see also Chap. 1) provide the basis for the quality as sense-making framework.

15.4.1 Social

Collective and social engagement in sense-making helps frame the analysis of technology, and its impact on quality more widely than the purely technical affordances. It helps to avoid an overly rational and deterministic view of organisational behaviours and experience. Perceptions of the qualities technology needs to enhance are influenced by the roles different participants have and seek in the organisation. This social engagement with the qualities of technology can occur directly through the engagement of teachers and learners in e-learning experiences or more indirectly though organisational sharing of experiences through case studies or professional development activities.

15.4.2 Identity

As discussed in the chapter on stakeholders (Chap. 4), education is strongly driven by the construction of individual identities and reputations within groups of peers, both by students as well as by academic faculty. Any attempt to make sense of quality within educational organisations, including the impact of technological innovation, must respond to that individual imperative as well as the organisational

defensive routines (Argyris, 1990) enacted as policies or actions preventing threats to the prestige or status of particular groups within the organisation. Construction of professional identities is a key role for education and consequently, technological qualities that enhance the identity formation and acculturation process will be seen as advantageous.

15.4.3 Retrospective

Quality is based on a foundation of experience and reflection. Quality as sense-making is no different in considering the consequences of past actions in understanding the current state of being. The emphasis is on the way this reflection supports future actions, rather than simply providing a historical account.

15.4.4 Enactive

Quality as sense-making is defined through and by action. It is understood through attempts to create new experiences that provide opportunities for further reflection and that generate an ongoing set of cues to stimulate continuous sense-making. In this way, the sense-making conception avoids an overdependence on standards or pre-defined models and continually provides evidence to challenge the status quo and discourage complacency. An extreme description of this is expressed by the Silicon Valley motto 'fail fast, fail often' but more practically, this property encourages the development of organisational agility and the disposition to act with urgency rather than complacency (Kotter, 2008).

15.4.5 Ongoing

Sense-making is driven by the recognition that the world is dynamic that the forces described in the first five chapters of this book continue to generate new challenges for individuals and organisations. Expectations of quality need to be constantly re-evaluated in response to the new opportunities arising from this constant change if they are to avoid fragility and irrelevance.

15.4.6 Cues

The previous properties of sense-making, retrospection, enaction and ongoing action, all generate and respond to the existence of cues. Cues are events that trigger

engagement with the qualities of education revealed in new ways by changing events such as technological evolution or through engagement with diverse views of stakeholders or other organisations within a sector. The quality as sense-making process is driven by a proactive response to these cues that attempt to overcome the natural tendency to disregard the cues and sustain existing conceptions of capability and quality. Evidence of this latter behaviour is seen in the way MOOCs quickly become dominated by a model very similar to formally taught courses and the awarding of pseudo-qualifications.

15.4.7 Plausibility

The cues that drive sense-making often arise from ambiguity. A common response to ambiguous situations in complex organisations with competing stakeholder interests is a form of active paralysis where alternatives are endlessly examined and bureaucratic approaches used to avoid the risk of committing to an ambiguous outcome. Quality as sense-making respects the need for solutions to possess nothing more than face validity so plausible and reasonable actions can be taken. This reflects the priority given to action inherent in this model of quality.

15.4.8 Sense-Giving

Quality as sense-making depends on leadership prepared to stimulate and support the engagement by others in sense-making activities. Sense-giving encompasses the properties listed above but does so in the context of persuading and influencing others in an organisation. This will be developed further in Chap. 21, but for now, it is important to emphasise that leadership processes of sense-giving are not only the responsibility of organisational managers or senior leaders. Sense-giving leadership is as much about people with insight leading upwards and outwards, as it is downwards. The quality improvement process under this conception is not hierarchical but collegial.

Sense-giving is performed externally as well as internally. Stakeholders can provide sense-giving narratives expressing their priorities and understanding. Under this conception, quality agencies are less focused on auditing and compliance, providing cues and narratives aimed at persuading and stimulating changes in line with wider social, political and economic priorities.

15.5 Defining a Framework for Quality as Sense-Making

Sense-making is not products or artefacts such as strategies, plans or scenarios. It is the process of engaging with information on the qualities such artefacts reveal. It arises from the interplay of action and interpretation. By adopting a sense-making approach when considering technological innovations on education, focus is maintained on understanding the nature of the individual and organisational experiences. The sense-making process connects the abstract potential of technology with the concrete experiences and reality of the enacted technology.

The advantage of using sense-making as the frame for engaging with quality is it is responsive to the dynamic nature of quality in complex organisations. Many forms of quality are essentially historic in focus, speaking of the organisation as it has been rather than as it might be in the future. Even quality as transformation is anchored in the process that has been experienced rather than describing potential future outcomes. The enacted and ongoing nature of the sense-making process explicitly recognises that the qualities of something need to be continuously re-contextualised if they are to retain meaning. As Dill (1995, 105) notes, 'the potential danger with an audit mentality is an overemphasis on inspection, on "policing-in" quality, rather than an attention to "building in" quality though the design and redesign of core processes that underlie the quality of products and services'.

Van Damme (2004) identifies in their CIPOF framework five categories that provide clarity and structure to a framework for quality as sense-making embodying the properties discussed in the previous section: *Context*, *Input*, *Process*, *Output* and *Feedback*.

Context measures may not be amenable to direct influence but provide information that can contextualise any analysis of the educational activity being assessed. They include information on demographics and economic activity, the history of an organisation and other factors that influence the measures in other categories. Failure to properly consider context information is a serious flaw in any quality system because it leads to invalid comparisons that can damage capability, as seen in the section on Gresham's Law above.

Input measures are the resources that support educational processes. In addition to financial and personnel measures, they include information on the students, such as prior educational success, which may guide selectivity and consequently influence the starting point for future educational development. Information drawn from engagement with other stakeholders, including other organisations within the same sector, also influences the inputs by defining acceptable parameters or approaches. *Input* quality measures are popular with some stakeholders as they speak to the adequacy of the level of funding provided or to the élite nature of the education delivered.

Process measures speak to the dynamic state of educational activities. The level and type of activity undertaken, the pedagogical structures used and the ways feedback mechanisms affect the decisions made. *Process* measures focus on the

mechanisms of education, avoiding any need to address the often much harder questions on the quality of the outcome. E-learning quality frameworks, such as the ACODE benchmarks and the eMM (Chap. 16), focus on process as this is the area most directly under the influence of the organisation and arguably, improvements in process should be apparent in the externally more important output measures.

Output measures increasingly dominate international quality frameworks as they speak to the dominant quality narratives of accountability and value for money while avoiding any need for governments and employers to take direct responsibility for the educational process. Educationally meaningful output measures are challenging to define (Gibbs, 2010), and under mass education models are dominated by the use of economic measures such as employment rates.

Feedback measures of quality are the hardest to identify. This category encompasses measures reflecting holistic judgements by stakeholders in the educational process that are able to, directly or indirectly, subsequently influence the measures in the other categories. Examples include the impact of reputation or the good will of alumni.

Applying the CIPOF framework to a sense-making conception of quality suggests a series of sense-making questions posed from a variety of stakeholder perspectives (Table 15.2). These questions provide a starting point for engaging in sense-making activities.

An important point to emphasise is the role of university in this analysis is not limited to existing educational institutions and may reflect collaborations of universities focusing on different elements of the quality framework as well as engagement with organised stakeholder groups. The university in this analysis is positioned as having an important nexus with individual learners, other universities or stakeholder groups within a specific social and educational context, and with the education system as a whole.

The questions shown in Table 15.2 are designed to act as sense-making cues, triggering a re-evaluation of existing conceptions of quality and challenging organisations to reflect on their quality systems, policies and thinking. They are framed to address the earlier holistic dimensions identified by Blanco-Ramírez and Berger (2014) in Table 15.1. The *Bureaucratic* dimension is addressed by the System and University-System foci most explicitly in the *Context* category but also in the systems used to address the questions in the other four categories and also in the *Process* category for all the foci. The *Political* dimension is addressed in the University-University/Stakeholder focus and in the *Context* category of the *System* focus. The *Symbolic* dimension of quality is reflected in all the foci in the *Output* and *Feedback* categories, with questions that test and explore the values represented in the organisations activities. The *Systemic* dimension is represented in operational terms, both in the System and University-System foci and in the *Context* and *Feedback* categories. Finally, the *Collegial* dimension is present explicitly in the University-University focus. The interweaving of these dimensions, foci and categories, is a complex but inevitable and necessary consequence of a holistic conception of quality.

Table 15.2 Quality as sense-making framing of quality concerns by focus and interface between CIPOF foci (modified from Marshall, 2016)

	Context	Input	Process	Output	Feedback
Individual learner	What is the personal situation of the learner and what is motivating their desire to learn?	What is the learner bringing to the educational process that is enabling their successful engagement?	What activities sustain the learner, motivates their learning, and generates outcomes they value?	What evidence is the learner using to demonstrate the value of their experience?	What helps the learner understand the impact of their experience and motivates them to continue learning?
University-Individual learner	What is the university doing to understand the context of the individual learner?	What is the university doing to guide learners into appropriate programmes of study? What defines the contribution the university makes to the learner population being served?	What is the university doing to efficiently and effectively enable learning? What is the university doing to enable learner autonomy?	What evidence is the university using to demonstrate the impact of their activities on the learner?	What is the university doing to help the student choose the next steps for their education? How do learners influence the priorities for change and continuous improvement by the university?
University	What is the university doing to understand its strengths, weaknesses and values?	What resources are being invested into educational activities?	What is the university doing to maximise the effective and efficient use of the resources invested in educational activities?	What evidence is the university using to show that resources were used effectively and efficiently?	How is the university continuously re-evaluating their activities? What is the university doing to improve its capability to educate learners now and in the future?

(continued)

Table 15.2 (continued)

	Context	Input	Process	Output	Feedback
University-University/ Stakeholder	How do other universitys and stakeholder groups contribute to the targeted learner population and educational context?	What differentiates the university from other universitys? What synergies with other universitys or stakeholders contribute to learner success?	What is the university doing to maximise their own and other university or stakeholder contributions to the success of the targeted learner population?	How are a range of stakeholders experiencing the outcomes of educational activities? What evidence is there of a collaborative contribution to learner success with the university drawing on the strengths of other universitys and stakeholders?	How are a range of stakeholder's views on the activities engaged with? What are universitys and stakeholders doing to strengthen their collaboration and address gaps in the services provided to the targeted learner population?
University-System	What role is the university playing in the system and how does that role relate to those of other stakeholders at a system level?	What capabilities, systems and resources are contributing to the role played by the university?	What is the university doing to effectively operate within the system?	What evidence is there of the nature of the impact the university has had on the system and the value of its role within that system?	What helps the university continuously re-evaluate their role in the system and respond with systematic improvements?
System	What does society need from its educational system and which stakeholder's interests are being met?	What capability and resources are contributing to the range of societal needs made of the system?	What is enabling learners and universitys to operate effectively and efficiently within the system? What is being done to enable experimentation with new or different approaches?	What evidence demonstrates the impact of the system on individual learners and the value contributed by specific universitys?	What helps learners identify effective learning pathways enabled by the system? How are university roles sustained while encouraging diversity and change?

The three primary foci shown in Table 15.2—individual learner, university and system—form one possible unit of analysis but are also capable of being aggregated in meaningful ways to help manage the complexity of the resulting body of quality information:

- Learner as cohort by context: school-leaver, employment/profession, community/citizen.
- Learner as cohort in the institution: diversity of qualifications/contexts.
- Organisational perspective by articulation to sector: diversity of types.
- Sector by articulation to international systems.

The questions focusing the quality and sense-making conception in Table 15.2 do not mention technology. This reflects the place of technology as a catalyst for change and improvements in quality, generating sense-making cues rather than as a dominant factor defining education. Inevitably, technological systems will provide options and mechanisms to address these questions but technology cannot provide meaning and purpose to education, nor indeed to any other aspect of human life.

15.6 Conclusion: Starting the Quality Sense-Making Conversation

The framework developed in Table 15.2 depends on a number of assumptions and predictions, the basis for which is established in the first five chapters of this book. These statements scope the qualities developed and sustained in a sense-making quality framework. Each of these should be seen as a form of sense-giving and a starting point for reflection by organisational leaders and external quality agencies.

1. Educational organisations need to proactively manage the consequence of growth in the scale of engagement with higher education (Chap. 3). This has been problematic in the first decade of this millennium as unmanaged growth failed to engage with the implications for qualifications and the funding models in many countries. An education system that meets the needs of the entire population needs to be defined by that diversity, not focused on homogenising it. Individual organisations need to be clear about their role in contributing to growth management strategies.
2. Education has a diverse group of stakeholders consistent with the importance it plays in our society (Chap. 4). The context of a particular organisation will influence the composition of their specific stakeholder groups and any substantive change will affect this mix, potentially adding new stakeholders. The needs of any particular stakeholder group must be balanced against those of the others. The salience of the student as the definitive stakeholder needs to be genuinely valued. Many current quality models are dominated by the interests of employers at the cost of being able to address other legitimate concerns and the changing model of employment in the future.

3. A formal model of education, delivered in a classroom setting, is important as a form of structured education helping people transition into adult life, but the costs of using the current model to engage in further and ongoing higher education are unsustainable for the majority of countries (Chap. 5). The university-individual learner questions in Table 15.2 frame an ongoing engagement with the learner population and stimulate a strategic evaluation of which learner groups form the priority populations for the organisation.
4. The qualifications model has strengths and provides a useful mechanism for people to efficiently communicate their skills and knowledge, nationally and globally (Chap. 6). The conflation of that function with the use of qualifications as signals of positional status is damaging to the integrity of the qualification system. Unless addressed, this will devalue existing qualifications through an unsustainable escalation in qualification levels and attainment. The University-System questions in Table 15.2 help maintain focus on the strategic priorities of the organisation and avoid a tendency to genericise the educational activities in response to stakeholder pressure.
5. The educationally effective use of technology must be a major component of higher education systems and organisations if it is to be relevant in a world dominated by the impact of technology (Chap. 8). This is not just a challenge in terms of sustaining investment in a suitable infrastructure but also requires a shift in capability to cope with rapid technological developments that continuously redefine our understanding of what is possible.

Reflecting on these propositions leads to the conclusion that there needs to be a shift in educational quality away from a focus on qualifications and institutions and towards the people who are learning. Technology is a fundamental enabler of this shift. It supports flexibility in the models of provision, their time and place. Technology provides the mechanism for a student to access education from multiple universities and supports the gathering of quality information on their experience and outcomes. The need for an individual focus on quality means that learning analytics in their fullest sense become critical. A great advantage of e-learning is the direct involvement of the learner with systems that are capable of generating a rich corpus of data at minimal cost and, most importantly, without any disruption of the learning process.

The flexibility of place enabled by technology means that education must shift from isolated educational spaces into the community at large. The cause of many of the problems motivating current models of quality in higher education is the disconnection of learners from the social and economic life of their community. Much of the effort supporting learner engagement, particularly supporting minority groups, is the result of a model of education that extracts people from a supportive context and then attempts, at great cost, to create an artificial replacement.

The shift of focus of quality and accountability to the level of the individual, rather than the dominance of educational mechanisms, means some universities can specialise and concentrate on particular capabilities as service providers to students and other universities. This will see a disaggregation of existing educational

institutions and greater collaboration between different organisations, including community groups, NGOs and employers.

The most important and challenging task facing any educational institution may be identifying for itself a definition of the valued qualities of education rather than accepting externally imposed ones. As discussed earlier in this chapter, the process is inherently political, contested by the different stakeholders, ambiguous and ultimately unachievable given the dynamic nature of the context and processes of education. The complexity of engaging in positive change in educational institutions (Chap. 17) is most visible when engaging with quality. As with any wicked problem, the most effective strategy is not one of seeking final and complete solutions but identifying actions that act to reduce complexity and support the ongoing sense-making process.

Sense-giving narratives that help the organisation's stakeholders understand key features of the context are a useful starting point and these can be built through collective engagement with the questions in Table 15.2. Responses to these questions need to be generated in a transparent manner that engages with stakeholders and generates awareness of the dynamic environment. Undertaken successfully, this helps different stakeholder groups understand the need to balance their own concerns with those of other stakeholders and to recognise the important priorities driving the organisation's strategies.

Strategic plans and associated activities, including scenarios (Chaps. 19 and 20), are important sense-making tools that need to be aligned with the growing consensus narrative and visibly seen as driving the allocation of inputs. If the organisation's resources and priorities are well aligned with this narrative, it will gain considerable credibility, particularly if explicit measures and accountability mechanisms are identified that also align with the narrative. This constitutes an initial, somewhat implicit, definition of quality that has meaning to the institution.

The processes the institution uses to implement its quality strategy are essential. The ongoing nature of sense-making means that the approach needs to be open, recognising a diversity of opportunities for leadership and ways the organisation's strategic goals can be achieved. If done well, this builds organisational capability in a loosely coupled and agile manner that will help as the context continues to change. In reality, this is likely to be a process with missteps and challenges.

Success in this model of quality is apparent in the diversity of educational initiatives attempted. Any one initiative is highly unlikely to respond to the diverse range of qualities possible under this model, and a diverse range of approaches increases the likelihood that one of them will anticipate an unexpected shift in the context. Recognising the value of this diverse approach and actively engaging with it, means the organisation is more likely to encourage further engagement and learn how to develop in ways that respond to the context in real time. An important element to this process is using quality tools that support sense-making by generating evidence about the institutional context and priorities and this is the focus of the next chapter.

Chapter 16
Using Evidence to Guide Sense-Making

Abstract Sense-making is driven by cues and successful quality systems go beyond confirming existing models to generate information that can challenge the status quo and support creative leadership. Many quality systems lack a strong foundation in theory and merely operationalise stakeholder power or act to confirm existing models. The use of performance indicators as ranking systems is an example of such a flawed representation of university quality. Three theoretically founded frameworks such as Total Quality Management, organisational maturity and collaborative benchmarking are reviewed and critiqued. TQM is shown to have significant failings in higher education, while examples of the use of the e-learning Maturity Model and ACODE benchmarks are used to show how the other models can support sense-making aligned to the wicked problem of university change.

> …if there could be anything approaching a general theory of quality, it would have to be called the 'emotive theory': the use of the term quality simply betokens an expression of positive inner feeling towards the feature being picked out. If this is not an adequate characterisation of quality, then we should be prepared to identify some entities or features of higher education that would command general assent as examples of quality. (Barnett, 1992, p. 3)

> Given the growing complexity and diversity of higher education, and the varying information needs of students, let alone the needs of other stakeholders, it is curious that political pressure is being applied to require higher education institutions to give most attention to reporting on the least reducible aspect of their work—the quality of learning—through simple metrics and simplistic comparisons. The times call for more sophisticated transparency tools. (Gallagher, 2010, p. 177)

Sense-making is triggered by cues that stimulate a re-examination of the known. For that to happen, there need to be mechanisms generating cues from behaviours of systems that are inconsistent with normal expectations. This seems to be a simple proposition but organisations are like people, preferring to look for confirmation of their initial models rather than for evidence that they are flawed. Most people are not persuaded by evidence contrary to their beliefs. They rationalise troublesome information and focus on evidence that supports those beliefs, a process known as confirmation bias (Nickerson, 1998).

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The organisational equivalent of confirmation bias is using measures of activity framed by a predetermined model of success rather than using information to suggest multiple lines of possible action. A strategy is particularly unsuited to the wicked problem of change in higher education. It is often only when some wider shift occurs, such as the European decision to engage in the Bologna process, that universities and quality agencies confront the possibility that many of the 'truths' of quality reflect the history of higher education in the local context, rather than any absolute definition of quality able to be applied to any student, qualification or institution (Adelman, 2009).

There are often good reasons why some quality systems, standards and measures remain in place well beyond any empirical evidence of their value. An example is the use of imperial measurements. Although more complex and increasingly anachronistic than the metric system, their use is retained because of the high cost of replacing an entire infrastructure built around the less rational measure. The ongoing use of imperial measurements reflects how social inertia can arise with evidence that metric measure is resisted in the USA because it is seen as a visible sign of externally motivated change. The use of measures of educational quality, such as student-staff ratios and class contact hours, even qualification completion rates, may be similarly retained out of inertia and sunk investment rather than reflecting any actual evidence of their utility as drivers for improved educational outcomes (Hattie & Marsh, 1996).

The problem arises when these measures or systems become significantly disconnected from the reality they represent leading to a condition of 'brittleness'. An example of brittleness failure appeared in the early days of computer vision and expert systems development, where an artificial intelligence dermatology program was created to review skin images and make diagnostic recommendations. When this system was shown the picture of a rusty car, it happily analysed the image and proceeded to recommend ways to treat the disease (Lenat & Guha, 1990). Organisational quality systems that are misaligned to the realities of the changing activities they are assessing will generate similarly unhelpful guidance, often without any sign that they are failing.

Avoiding organisational confirmation bias requires constant attention to the aspects being monitored and measured and to the creation of analysis systems generate questions rather than predefining a limited set of outcomes. Such systems are needed, as any modern university is sufficiently complex that it generates a vast amount of data requiring some form of simplification and structure to manage the continuous flood of new information.

One approach is learning analytics (Sect. 12.4.1) where the data is examined for patterns. These systems, however, only measure patterns arising from current activities; they cannot place this activity in a wider context. The quality systems supporting sense-making provide a means by which managers and leaders can imagine the future of their institution. They can assess existing and potential future capabilities, which the organisation might use to sustain and grow operations in that future environment.

The range of responses made by universities to information regarding higher education quality is frequently limited by the use of easily available, low cost, measures (Bormans, Brouwer, Veld, & Mertens, 1987) and by the framing of quality systems by accountability and audit agendas rather than improvement of learning and teaching and the support of change. Examples include the simplistic measures in the UK TEF (Forstenzer, 2016), the Australian QILT (QILT; http://www.qilt.edu.au/), and the New Zealand TEC EPIs (TEC, 2016). As Collini observes:

> What is asked for now is not any insight into how learning happens or how minds may be enlarged, but the confirmation to third parties that the announced procedures have been followed. It is another example of the fallacy of accountability - that is, the belief that the process of reporting on an activity in the approved form provides some guarantee that something worthwhile has been properly done. (Collini, 2012, p. 108)

Chalmers (2007, p. 7), in her review of performance indicators, described the measures as falling into five broad categories, which appear to have little value as guides for improving the outcomes experienced by students and the effectiveness or efficiency of institutions:

- Institutional indicators mandated by audit and accreditation;
- Performance data collected nationally or regionally;
- Student employment, satisfaction and experience data;
- Generic tests of learning used to guide readiness and admission; and
- League tables.

This is a particular problem when an organisation tries to do something out of step with the wider system's sense of the models and expected outcomes. Garrett (2016) shows the way this acts negatively in the case of institutions engaging in open and distance learning (ODL). The problem ODL institutions have is reporting student success in systems assuming students are completing full-time qualifications when they actually provide a more granular and flexible model. The challenges facing UKOU (Sect. 11.1.2) reflect the disconnection between their potential and the expectations of the system responding to government and agency agendas.

A subtler problem for leaders using quality tools to stimulate and sustain change is the atheoretical nature of many of the tools used and a lack of strong evidence for the validity of the measures and analyses as a tool supporting change (De Bruin, Freeze, Kulkarni, & Rosemann, 2005). Table 16.1 lists the major tools and frameworks currently in use internationally to engage with e-learning quality. They fall into two major types, theory-based quality frameworks and pseudo-standards or heuristics.

The three European frameworks, University Quality Exchange (UNIQUe), E-xcellence (from the European Association of Distance Teaching Universities) and Collaborative E-learning (CEL), are similar in scope and significance to the formal accreditation activities undertaken by organisations such as The Association to

Table 16.1 Major international e-learning quality frameworks

Framework/tool	Theory of change	Validation	References
ACODE benchmarks for technology enhanced learning	Collaborative benchmarking	Face validity supported by expert review. Revised following experience in implementation	http://www.acode.edu.au/course/view.php?id=23 Sankey et al. (2014)
EADTU E-xcellence next	Collaborative benchmarking	Face validity supported by expert review. Revised following experience in implementation	http://www.projects.eadtu.eu/e-xcellencenext Ehlers (2012) EADTU (2012)
EFMD certification of E-learning (CEL)	None	Face validity supported by expert review	https://www.efmd.org/accreditation-main/cel Ehlers (2012)
EFQUEL UNIQUe certification	None	Face validity supported by literature review and extensive reviews undertaken by experts and various quality assurance bodies	http://unique.efquel.org EFQUEL (2011) Ehlers (2012)
e-Learning Guidelines (eLG)	None	Face validity supported by expert review and literature review. Revised following experience in implementation.	http://elg.ac.nz Suddaby and Milne (2008)
e-learning Maturity Model (eMM)	Maturity model	Process and practice set identified and revised through three rounds of expert consultation conducted internationally, extensive set of cases and peer-reviewed publications including empirical study of confounding factors (Neal & Marshall, 2008) and longitudinal studies of impact on change (Marshall, 2012a, 2012b)	http://e-learning.geek.nz/emm/ Marshall (2006b) Neal and Marshall (2008)
OLC quality scorecard	None	Face validity supported by literature review and case studies	https://onlinelearningconsortium.org/consult/olc-quality-scorecard-suite/
Quality matters (QM)	None	Face validity supported by literature review and case studies	https://www.qualitymatters.org Varonis (2014)

Advance Collegiate Schools of Business (AACSB) and European Quality Improvement System (EQUIS). The value of the formal processes is in the self-reflection and in the formal external audit. It is unclear whether the

accreditation credentials are currently significant to prospective students and collaborative partners in international markets.

Theory-based frameworks have an underlying model of change, implemented by the measures and used to justify the scope and selection of the measures employed. An explicit theoretical foundation provides a testable argument in support of their validity and frames the model in which they should be applied. The two theoretical models used in the frameworks in Table 16.1 are collaborative benchmarking (Camp, 1989) and organisational maturity (Paulk, Curtis, Chrissis, & Weber, 1993). These two, plus TQM in its various incarnations, are the major approaches organisations use in the systematic engagement with quality. They are examined in detail in this chapter.

In most cases, there is very little evidence that most of the tools proposed as quality frameworks, including those not shown in Table 16.1, have extensive validation through the use of empirical evidence such as correlation studies or longitudinal case studies. Inglis (2008) observes that the validation methods in use include:

- reviewing the research literature;
- seeking input from an expert panel;
- undertaking empirical research;
- undertaking survey research;
- conducting pilot projects; and
- drawing on case studies.

This chapter starts by exploring the range of organisational measures used in various quality systems and analyses them using the CIPOF framework (Sect. 15.4). This is followed by a consideration of the validation of measures, highlighting the significant issues existing with even the collection of basic information. The subsequent sections explore the different purposes these measures are put to in different quality systems.

Ranking systems have a significant impact on the reputations and funding of universities and influence national strategies and priorities for higher education. Despite this, they do nothing to improve the educational impact universities have on society or on individual students. They may even be harmful (Dill & Soo, 2005; Vaugn, 2002). Their purpose is to provide a ranking and consequently, that is all they support.

Three systems with greater potential to support improvement—Total Quality Management (TQM), maturity modelling and collaborative benchmarking—are analysed and their affordances and purposes considered. Each of these has a history of application in higher education, with mixed success in enabling change of different forms to occur. These three approaches embody quality in three distinct ways; as a management tool defined by a focus on measureable outcomes; as a collaborative exploration; and as a process of organisational development.

16.1 Quality Indicators

> Performance Indicator: an authoritative measure - usually in quantitative form - of an attribute of the activity of a higher education institution. The measure may be either ordinal or cardinal, absolute or comparative. (Cave, Hanney, & Kogan, 1991, p. 24)

Accepting the proposition outlined in the previous chapter—quality is defined by a range of characteristics—naturally leads to the question 'what indicators are there that can speak to this range?' If the intention is to engage with issues of quality for sense-making and continuous improvement purposes, it is necessary to identify:

- What is measured?
- How it can be reliably and accurately measured?
- What are the implications for the university or the sector? and,
- How does that information support improvements?

An important distinction is the view that quality improvement can only occur through measurement (Deming, 1986; Dill, 1995) and the sense-making view that improvement is generated by cues that may be unmeasureable but nevertheless raise questions. As discussed earlier in the section on learning analytics in Sect. 12.4.1, there are now many ways data can be gathered from educational activities. More information is theoretically a good thing as Sizer (1988, p. 155) notes:

> Performance indicators and management statistics should inform decisions, they provide a starting point from which academic and managerial judgements should be made. They are no substitute for such judgements, but the fewer the indicators the greater the gap that has to be bridged by such judgements.

There is no shortage of educational and e-learning quality measures identified in the literature (Butcher & Wilson-Strydom, 2013; Chalmers, 2007; Gibbs, 2010; Udam & Heidmets, 2013; Van Damme, 2004; Westerheijden, 2007), particularly when it is recognised that tools such as the e-learning Maturity Model contain hundreds of indicators drawn from extensive reviews (Marshall, 2006b). There are absolute dimensions of quality relevant to e-learning: the cost of purchasing and maintaining software and hardware; technological measures of performance such as bandwidth or resolution; reliability measures such as uptime; functional measures such as the affordances; interoperability, security and maintainability which influence the sustainability and affordability of the technology. Other measures are qualitative and therefore require judgement and discernment in their use.

Sense-making cues come from many different sources but they are unlikely to be generated when only easily available, low cost, measures are collected, often as proxies for more complex outcomes (Bormans et al., 1987; Law, 2010). An example of the way convenience trumps any attempt to gain insight or generate cues is given by Johnston (1989), who lists performance measures used in the UK that included the amount of time staff spent talking on the telephone. This parallels much of the current use of learning analytics, where all too often the data are gathered because they are available, rather than reflecting a purposeful attempt to gain new insights. Judgement must be exercised in selecting a range of measures

able to address the scope of activities and to provide sufficient diversity of evidence to stimulate sense-making.

Table 16.2 categorises a small selection of possible quality measures, arranged according to the CIPOF framework and the different conceptions of quality described in Chap. 15.

The items listed in Table 16.2 are only a starting point as each of them can be assessed using a variety of approaches to create specific measures. Given the vast array of possible measures, it is important to heed the warning given by Coates (2007, p. 92):

> Performance indicators shape quality considerations, in many ways, and it is important to ensure that they are salient, sufficient and sound. An important part of enhancing the quality of teaching and learning is enhancing the measures on which quality judgements are made.

A key feature of quality measures is they reflect an organisational and individual context that provides meaning to the absolute values of the measurement. A measurement without such context is merely a simple indicator and subject to different interpretations by various stakeholders (Cave et al., 1991; Law, 2010). As Trow notes:

> Teaching is not an action but a transaction; not an outcome but a process; not a performance, but an emotional and intellectual connection between teacher and learner. Therefore, it cannot be assessed as an attribute or skill of a teacher or a department, independent of the learners who have their own characteristics that affect whether and how much the learn (about what) from a particular teacher, and indeed, how much he learns from them. That also means, among other things, that teaching cannot be assessed along any single dimension of quality, nor can it be assessed at all without deep knowledge of its setting, of the styles and orientations of the teachers, of the character and diversity of students, and of its long-term effects, effects that may be very different from what students report about teaching as they experience it. (Trow, 1994, p. 14)

This leads to the thorny problem of validation and the need to consider the rationale driving the selection of specific measures, the quality models linking them and providing justification and legitimacy to the analysis they enable, and the recognition that any system is inevitably flawed but nevertheless be useful.

16.2 Validation of Quality Frameworks and Indicators

> all models are wrong; some models are useful. (Box, 1979, p. 202)

> … as we know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns – the ones we don't know we don't know. … it is the latter category that tend to be the difficult ones. (Rumsfeld, 2002, n.p.)

The literature is filled with lists of benchmarks or heuristics proffered as models for e-learning quality (Abdous, 2009; Butcher & Wilson-Strydom, 2013; Ireland,

Table 16.2 Quality measures aligned with different phases and conceptions of quality

Quality model	Context	Input	Process	Output	Feedback
Functionality (direct utility)	• Institutional purposes and educational objectives • Coherence between strategic objectives and existing means (institutional and sector) • Socio-economic and demographic composition of the student population • State of the local economy, including the mix of public and private sector activities • Cultural attitudes to education • Institutional history and traditions • Black Swans	• Condition of infrastructure • Number of study programmes • Diversity of qualifications • Technology specifications and features • Technology selection criteria	• Intellectual challenge • Student retention • Cooperation with employers • Student support systems • Technology ease of use • Integration between systems • Staff development and support • Mode of delivery	• Employment rates (in relevant job sectors) • Graduates' knowledge, skills and competences	• Success in attracting funding for postgraduate research projects
Adequate return (cost-benefit)		• Staff: student ratios • Funding (per student) • Facilities (per student) • Competitiveness of teacher salaries • Cost of technology	• Class size • Class contact hours • Staff workloads • Cooperation with other universities • Organisational management focus on operational priorities • Technology sufficiency	• Time to degree/ six-year graduation rate • Qualification completion rates/ graduation rates	• Government funding accountability measures
Exception (standards)		• Admission requirements • Qualifications of students • Qualifications of teaching staff • Planned student qualifications • Study Hours (workload) expected of students • Content of study programmes • Support for industry standards	• Integration of courses within programmes • Curriculum alignment • Curriculum design • Student assessment design and implementation • Recognition of prior learning • Security and privacy of information • Processes for maintenance	• Alignment of qualifications with industry, national and international frameworks	• Accreditation or recognition of teaching programmes
Perfection		• Quality of teaching staff • Quality of students • First preference rates for students selecting institutions • Existence of centres of excellence	• Quality of teaching • Technology selection methodology • Technology availability • Technology failure rates	• Graduate attributes and capabilities • Vendor certifications	• Institution's position in ranking or league tables • Reputation of teaching staff
Transformation		• Quality of students • Selection of students	• Research-teaching nexus • Student engagement • Community involvement	• Progression to higher levels of study	• Alumni support • Alumni feedback on strong and weak points of the study

(continued)

Table 16.2 (continued)

Quality model	Context	Input	Process	Output	Feedback
		• Strategic objectives for learning and teaching • Strategic objectives for technology involvement in education	• Feedback to students • Student experience • Feedback from students • Study-life balance • International and global perspectives • Interdisciplinary study programmes • Technology flexibility and customisation • Learning analytics	• Student employment in selective or prestigious roles • Ability of students to conduct independent research • Entrepreneurial activities of graduates • Intellectual, critical, personal, emotional and physical development	programme from the point of view of their early career;
Sense-making	• Dynamic environment • Rapid changes in stakeholder expectations • Transition from Élite to Mass or Mass to Universal	• Sense-giving narratives aligned to strategy	• Open communication • Diversity of leadership • Diversity of approaches • Agility of organisation	• Diversity of educational initiatives attempted	• Recognition of innovative activities • Identification of new educational activities, contexts and priorities

Chalmers (2007), Gibbs (2010), Udam and Heidmets (2013), Van Damme (2004), Westerheijden (2007)

Correia, & Griffin, 2009; Masoumi & Lindström, 2012; Neuhauser, 2004; Nichols, 2002; SREB, 2006). Many of these are described as maturity models as they have stages of complexity (see below). In practice, such heuristic models are essentially lists used within quality models such as TQM that lack any theoretical structure. The absence of a substantive theoretical model of quality means most are suspect as the motivation for selection of the specific measures is probably biased by specific stakeholder perspectives or the needs of a specific organisational context (Law, 2010; Yorke, 1998). Atheoretical lists easily generate what is known as the McNamara Fallacy:

> The first step is to measure whatever can be easily measured. This is OK as far as it goes. The second step is to disregard that which can't be easily measured or to give it an arbitrary quantitative value. This is artificial and misleading. The third step is to presume that what can't be measured easily really isn't important. This is blindness. The fourth step is to say that what can't be easily measured really doesn't exist. This is suicide. (Handy, 1994, p. 219)

The vast majority of 'quality' frameworks in the literature are pseudo-standards depending on 'face validity', drawing on an expert assessment of the literature and on the judgment of key organisational stakeholders and researchers to define lists of heuristics. These are often presented as lists of questions or statements, with a focus on self-reflection—the e-Learning Guidelines for example—or on auditing—i.e. Quality Matters. Much of the data collection behind international ranking schemes is of this type. There are many examples of collections of heuristics, indicator lists and frameworks defined by practitioners, consultants and researchers.

Hagner (2001, p. 31) identifies the risk of poor choices of measures:

> …the author had envisioned the presentation of a wide range of 'best practices' that would resemble a menu-like opportunity for interested institutions to choose from. This original intent was misguided. … 'cherry-picking' a variety of practices is not recommended. Instead of focusing on 'best practices', a more profitable emphasis should be placed on 'best systems.'

Accreditation frameworks, the EFQUEL UNIQUe Certification, for example, provide some confidence through their association with expert bodies but this does not specifically ensure validity. A significant weakness is there are no unambiguously successful models of e-learning that are generalised to other contexts and the research literature in the e-learning space is considered weak and lacking in empirical evidence. Dependence on expert reviews merely ensures consistency rather than driving improvement, particularly when improvements require levels of disruption to incumbent models.

A major issue in the field is validation of the quality tools and frameworks. Coates (2007) observes they need to be salient, sufficient and sound. The complex context and range of activities undertaken by universities means this is more easily spoken than achieved and a number of detailed tests must be applied to any quality system before it can be depended upon. When looking at the measures proposed for any quality framework, the following questions should be asked (Chalmers, 2007; De Bruin et al., 2005; El Emam, Drouin, & Melo, 1998; Inglis, 2008):

1. *Is each measure within scope for the domain being assessed, does it have 'content validity'?* Measures should have relevance to the organisational mission, core ideology and strategic and operational directions. Focusing measures in this way speaks to Coate's criterion of salience and the need to manage information overload but also introduces the risk that confirmation bias will creep into a quality system.
2. *Does the measure satisfy completeness?* The set of measures should comprehensively address the characteristics of the domain being assessed. This is essential to avoiding the issue of Rumsfeld's unknown unknowns and addresses the risk of confirmation bias.
3. *Does each measure have 'face validity'?* Does it embody an idea or key understanding accepted generally within the domain by experts?
4. *Does the indicator measure what it claims to and is it logically appropriate?* A common mistake is to conflate scale or complexity with increasing capability. It is worth noting that even when an organisation or process has major quality flaws, it can still be sophisticated and complex in its application. It is easy to mistake this technical complexity for the features of higher quality activities.
5. *Is each measure singular in focus, defined independently of other measures and describing only one aspect of an activity?* This ensures the measure can support disaggregation allowing it to be considered in multiple dimensions and visualised in ways reflecting different contexts—student groupings, time frames, etc.—relevant to strategic and operational sense-making processes.
6. *Does each measure describe an important and necessary outcome or characteristic of an activity?*
7. *Does each measure avoid specifying a particular technology, process or mechanism for undertaking the activity?*
8. *Measures must discriminate; does it support the application of judgement and decision-making by those using the model?* This requires clarity of language in the choice of practice texts and supporting glosses. It is easy to incorporate ambiguity in practice texts through the use of adjectives describing nebulous qualities of the practice. A common mistake is to include value-laden but content-free terms such as 'excellent', 'high-quality' and 'efficient' in describing the characteristics of an activity. An important element supporting discrimination is the provision of coherence across different sources of evidence reinforcing triangulation as part of assessments.
9. *Is the measure able to be reliably used?* Can the indicator be measured accurately over time and is uncertainty in the measurement quantifiable and acceptable? Is it able to be consistently assessed or discriminated as either done or not done? Has it been tested to ensure reliability is maintained in normal use, particularly in the hands of non-specialist users?
10. *Is the measure consistent over time and location?* Indicators should be stable in the absence of material changes. This can be complex if there are underlying assumptions that change the meaning of the measured indicator, classroom contact hours as a measure of staff or student workload for example.

11. *Is the measure timely?* Is it current and punctual? Indicators need to reflect a timescale compatible with action. This is an issue with attractive indicators, such as employment outcomes, as these often take decades to become apparent and consequently are essentially irrelevant to institutional strategic and operational planning.
12. *Does the measure have clarity and transparency with respect to known limitations?* This is an important contributor to the reliability of measures. A major challenge with many indicators is their reuse for different purposes that are invalid given the collection mechanisms. This is a particular challenge for learning analytics systems (Sect. 12.4.1) where the individual student and course context can easily be lost when examining data such as system activity logs.
13. *Is the measure accessible and affordable?* Is it cost-effective? A particular challenge is recognising when an indicator is efficiently assessed using a sampling approach as opposed to a comprehensive census. The growing use of 'big data' approaches risks the unthinking use of census approaches without recognition of the underlying costs. Indicators should enable productive use of resources to support staff, student and institutional success.
14. The measures used within a system that aggregates the results should be semantically equivalent to the abstraction of the activity concerned. This helps maintain reliability and transparency when subsets of data are used for different organisational purposes.
15. *Is there evidence supporting the importance of the measure and validating its inclusion?* Ideally, validity testing involves the collection of empirical evidence for the measures demonstrating the importance and nature of their impact on the activity being assessed. Unfortunately, empirical evidence for individual items can vary significantly in quality, often as a consequence of the dynamic state and immaturity of the domain investigated but also because not all aspects of complex work are amenable to easy and unambiguous collection of evidence of quality.
16. *Does the measure enable improvement to occur?* There is little point collecting data if there is no ability to act on the information, particularly if the inability to act generates a climate of negativity and suspicion regarding the motives for not addressing the results of a measure.

These tests reflect the expectation that each item be chosen carefully and with an understanding of its relationship to the underlying model of quality, the quality enhancement mechanisms that respond to the analysis, and the organisational sense of the legitimacy of the resulting quality narrative. The questions create tension within a quality system as many act against each other in a 'wicked problem' manner. This is an inevitable consequence of the complexity of the domains being assessed and reflects a major challenge to Total Quality Management models, which assume every important aspect of quality is amenable to measurement.

16.3 Quality Ranking of Educational Institutions

> Trying to rank institutions of higher education is a little like trying to rank religions or philosophies. (Diver, 2005, n.p.)

A consequence of measuring the qualities of education is the temptation to use this information to make comparisons and construct ordered lists. This is not unique to higher education with similar tendencies apparent in other service industries including accommodation and health care (Espeland & Sauder, 2016).

Ranking has a particular influence on universities due to their global reach, the importance of reputation in their marketing to students and new staff, and the recognition of degrees as international qualifications. Engagement with the metrics defined by the ranking organisations positions universities within dominant global networks acting to impose a common model of education on institutions irrespective of the needs of their cultural and national contexts (King, 2011). For academics, the importance of research performance reflected in these schemes is one of the factors driving a massive growth in the number of scholarly works created by individual academics desperate for recognition and employment (Werner, 2015), even as new technologies start to raise serious questions about the traditional models for publishing and sharing such work.

Traditional conceptions of quality in tertiary education are framed by the assumption that existing measures of reputation and prestige define quality. A residual effect is the persistence of reputation, in the ranking of universities in particular but acting to sustain the status quo in education (Astin, 1980; Blanco-Ramírez & Berger, 2014) rather than stimulating an engagement with the diverse groups of students not well served by the current system (Chalmers, 2007). The ranking of the top ten universities in the three major ranking tables has consequently remained effectively constant for decades and is dominated by US and UK institutions (Fig. 3.5 in Chap. 3).

The three major international ranking systems are the Shanghai Academic Ranking of World Universities (ARWU, 2016), the Times Higher Education World University Rankings (THE, 2016) and the QS World University Rankings (Quacquarelli Symonds, 2017b). They are complemented by a vast array of national ranking systems including the US News and World Report Best College Rankings (US News and World Report, 2017), the Australian Good Universities Guide (Good Education Group, 2017), and the Indian government National Institutional Ranking Framework: India Rankings (NIRF, 2017).

Despite describing themselves as university ranking schemes, the three main international systems have very little to say specifically about learning and teaching activities (Table 16.3). The weighting schemes are dominated by reputational surveys, which in practice simply represent an elaborate restatement of university prestige (Bekhradnia, 2016; Blanco-Ramírez & Berger, 2014; Hazelkorn, 2015). The national systems include greater focus on teaching, particularly the ones aimed directly at students and their families making decisions about which university to study at but as Table 16.3 shows, the measures in all of the schemes are dominated

Table 16.3 University ranking systems proportional weight given to learning and teaching by CIPOF phase

Ranking system	Teaching	Measure	Weight	Quality phase	
Shanghai Academic Ranking of World Universities	0%	N/A	N/A	N/A	
Times Higher Education World University Rankings	30%	Staff-to-student ratio	4.5%	Input	15%
		Doctorate-to-bachelor's ratio	2.25%		
		Doctorates awarded to academic staff ratio	6%		
		Institutional income	2.25%		
		Reputation survey	15%	Feedback	15%
QS World University Rankings	70%	Employer reputation survey	10%	Input	30%
		Staff-to-student ratio	20%		
		Academic reputation survey	40%	Feedback	40%
USNWR Best College Rankings	100%	Class size	8%	Input	43%
		Student-faculty ratio	1%		
		Faculty salary	7%		
		Faculty qualifications	3%		
		Full-time faculty ratio	1%		
		Selectivity of admission	12.5%		
		Spending	10%		
		First-year retention rate	4.5%	Process	4.5%
		6-year graduation rate and graduation performance	25%	Output	25%
		Alumni giving	5%	Feedback	27.5%
		Undergraduate reputation survey	22.5%		
Indian NIRF	60%	Number of students	6%	Input	30%
		Student-faculty ratio	9%		
		Faculty qualifications	6%		
		Spending	9%		
		Graduation outcomes	20%	Output	20%
		Perception surveys	10%	Feedback	10%
Australian Good Universities Guide	100%	Social equity	n/a	Context	
		Faculty qualifications		Input	
		Selectivity of admission			
		Student-faculty ratio			
		First-year retention rate		Process	
		Graduate salary		Output	
		Graduate employment rates			
		Student surveys		Feedback	

by input factors and feedback primarily from surveys. Few measures consider the context or process of learning and those few are either proxies associated with employment influenced by a wide range of contextual factors, or graduation rates inherently unreliable as measures of educational quality (Hazelkorn, 2015; Marginson, 2007). The Australian Good Universities Guide appears more balanced but is dominated by student survey responses providing a superficial listing and minimal opportunities for actual improvement by universities (Baldwin & James, 2000).

As discussed in the previous section, any quality system needs to consider potential misuses arising from the information it provides and ideally ensure the data collected is reported in a manner that explicitly addresses the validity of any comparison being made. Invalid comparisons arise when the ranking process fails to address the inherent uncertainty of some measures, or weight individual measures arbitrarily when combining them in a summary total. For students, such invalid comparisons sit behind the educationally discredited practice of grading students against a predefined curve, for universities they lead to the production of league tables.

In both cases, the consequence is the prioritisation of those qualities leading directly to better ranking outcomes at the detriment of others, a rise in competition and a strong disincentive towards open collaboration. Internationally, this sees institutions misrepresenting the employment status of academics in order to improve their results in the international league tables (Gingras, 2014), and serious issues with the management of students and qualifications by individual universities (Chalmers, 2007; Marginson, 2014b; Morphew & Swanson, 2011; Pérez-peña & Slotnik, 2012). Even when ranking universities relatively similar in context and structure, there are anomalies and inconsistencies in the results that reflect issues with the way individual measures are collected and aggregated (Bergseth, Petocz, & Dahlgren, 2014; Soh, 2013; Williams & de Rassenfosse, 2016). Fundamentally, the problem with rankings is they do not encourage improvements in teaching quality and may actually discourage improvement, particularly if universities pursue priorities aligned to the research component of the ranking schemes (Adams & Baker, 2010; Dill & Soo, 2005; Hazelkorn, 2015; Vaugn, 2002).

Another limitation of the ranking approach to quality is the way it obscures the underlying variation and error in the aggregated measures to generate a score and then over-emphasises insignificant differences. An example is apparent in the ranking of New Zealand universities by educational performance indicators (Tertiary Education Commission, 2016) including course completion figures (Table 16.4).

The successful completion of courses data for universities is presented in a table ranking them from the University of Auckland to Massey University. The problem is the data range reported for the first seven universities spans a total range of 5%. The magnitude of this difference, relative to the overall scale of the measure, is effectively meaningless given the likely variation due to uncontrollable aspects is in the order of 2–3%. Arguably, this list should be presented with the top four universities in first-equal place with the others at second equal.

Table 16.4 Successful completion of courses for New Zealand Universities (TEC, 2016)

University	2009 (%)	2010 (%)	2011 (%)	2012 (%)	2013 (%)	2014 (%)	2015 (%)
University of Otago	87	87	89	89	89	88	89
University of Auckland	87	87	88	89	88	88	88
Victoria University of Wellington	84	83	85	86	86	87	88
University of Canterbury	83	85	88	87	87	87	87
Auckland University of Technology	81	81	83	84	84	85	85
Lincoln University	84	84	82	80	83	85	84
University of Waikato	84	87	82	86	85	85	84
Massey University	77	78	80	80	80	80	82

The position of Massey University, a university with a high proportion of distance students, consistently in last place in the TEC EPI data illustrates the final inequity of this ranking. It completely fails to acknowledge the impact distance education has on course completion rates. An obvious strategy for Massey is to abandon all such delivery in order to maximise their improvement in this measure. In an example of the Gresham's Law problem (Sect. 15.1), such a strategy would arguably diminish the quality of the system as a whole as it reduces the diversity of options available to students.

One solution is to collect and report quality data in a manner respecting the limitations of the available evidence and directly communicating the complexity and inconsistencies in the information. The visualisation used by the eMM (e.g. Fig. 14.1 in Chap. 14) illustrates how data can be presented in a way that respects the limitations of the evidence and collection mechanism. The eMM uses a four-point ranking scale consistent with the limitations of human discernment and a colour-coded display that discourages simplistic comparative ranking of the resulting assessments.

Despite being widely criticised for methodological issues such as those discussed above (Goglio, 2016; Marginson, 2007; Marginson & van der Wende, 2007; Soh, 2017; Stolz, Hendel, & Horn, 2010), ranking systems remain politically and economically important to many university leaders operating in the mass education model. Hazelkorn (2015) observes that in many Asian, Middle Eastern and Australasian countries, university leaders and governments are highly influenced by the three major ranking schemes and actively pursue strategies aimed at improving ranks. Many university leaders report that rankings nationally influence their position and funding. The argument made by politicians is rankings are influential for local employers and for international students and their families considering potential universities, despite the evidence not supporting any substantive linkage (Marshall, forthcoming; Souto-Otero & Enders, 2017).

This style of ranking system distracts from sense-making, replacing analysis of the university's context and operations with generic measures and a model unlikely to represent a viable pathway for success for any university not already at the top of the rankings (Hazelkorn, 2015; Stella & Woodhouse, 2006; Tight, 2000). The reification of measurement systems leading to poor outcomes is variously described by Campbell's Law: 'The more any quantitative social indicator is used for social decision-making, the more subject it will be to corruption pressures and the more apt it will be to distort and corrupt the social processes it is intended to monitor' (Campbell, 1976, p. 34) and by Goodhart's Law: 'when a measure becomes a target, it ceases to be a good measure' (Elton, 2004; Fischer, Ritchie, & Hanspach, 2012; Werner, 2015).

16.4 Total Quality Management

Rankings illustrate the problems caused by poor measures and the absence of a robust framework informing and supporting sense-making. Total Quality Management (TQM) is an example of how quality frameworks also need to espouse a set of values and sense-making narratives aligned to the core ideology of the university if they are to have a positive impact.

TQM arose in the mid-1980s as the first major quality model (Martínez-Lorente, Dewhurst, & Dale, 1998). TQM is strongly framed by the management ideas of Deming (1982, 1986) and uses a conception of quality defined primarily by customer requirements. It is an important model, reflecting the experience of quality improvement over the twentieth century but remains a collection of expert wisdom rather than a coherent theoretically derived model of organisational change (Ackoff, 1999; Asif, Awan, Khan, & Ahmad, 2013; Houston, 2007). As Venkatramen (2007) notes in their review of TQM, it is more a philosophy than a formal system. Specific implementations of TQM combine the goals of continuous improvement, customer focus and integrated management with the use of specific tools and sets of performance measures relevant to the specific organisation and its customers.

Challenges in the application of TQM to higher education include (Rosa & Amaral, 2007):

- Multiple organisational purposes and objectives without clear mechanisms for determining relative priorities.
- Definition of a mission and identification of the needs and expectations of the customers is challenging given the existence of multiple stakeholders.
- Multiple actors contributing to the achievement of outcomes, notably the need for students to act and be accountable for their own learning.
- Institutional and disciplinary disincentives and barriers for large-scale teamwork, particularly across disciplinary boundaries.
- Poor measures of results, dominated by institutionally assessed quantitative performance measures.

- Weak organisational communication channels and management information systems (typified by the relatively recent adoption of tools such as learning analytics and their limited impact to date).
- Complicated mechanisms of leadership and authority, particularly in the university sub-sector.
- A perceived misalignment between the value systems of TQM, particularly in the forms encountered in mainstream commercial and political discourse, and the strongly value-driven culture of education.

The disconnection between TQM and education is most apparent when considering Deming's definition of quality: 'a predictable degree of uniformity and dependability at low cost and suited to the market' (Deming, 1982, p. 229). As well as this philosophical difference, a major issue with applying the TQM philosophy in tertiary education is the centrality of the customer's requirements in the definition of quality.

The student might seem to be the obvious customer of tertiary education institutions—and students regard themselves as the only customers (Helms & Key, 1994)—but it is unclear if they are the only customers or even what type of customer they might be (Sahney, Banwet, & Karunes, 2004; Quinn, Lemay, Larsen, & Johnson, 2009). The list of possible customers suggested by Quinn et al. (2009) is essentially the list of stakeholders discussed in Chap. 4. Some have even suggested the student should be regarded as a product purchased by a distinct customer, presumably the government acting as proxy for employer and societal interests (Stensaasen, 1995; Venkatraman, 2007).

Many critiques on the conception of students as customers of education are found in the literature (Baldwin, 1994; Luizzi, 2000; Svensson & Wood, 2015). Most have as their foundation the issue that students are, by definition, not in a position to know the quality of learning they need. The challenge students face in assessing the quality of their education is further complicated by their role as participants in and consumers of an experience, the quality of which cannot be assessed other than through the experience of consumption (Nelson, 1970). Learning requires agency on the part of the student (Long, 2003), expressed by Biggs (1999) as 'learning is what the student *does*' (emphasis supplied). This shared responsibility for outcomes means, that in education, the commercial distinctions of supplier and customer are unclear (Helms & Key, 1994; Meirovich & Romer, 2006). Other stakeholders position themselves as proxies for the student in their customer role(s), with the result that outcomes are biased by other concerns and the individual impact lost in the aggregation of data from a cohort.

Despite its dominance in many commercial contexts, TQM has failed to have any substantive impact on education (Birnbaum, 2000; Cruickshank, 2003; Harvey, 1995; Houston, 2007; Koch, 2003; Meirovich & Romer, 2006), although it may improve administrative functions TQM shows no evidence of improving academic outcomes (Quinn et al., 2009).

TQM philosophy is expressed in ways that are alien to many educators, which also causes a problem. The quality culture and values expressed by some TQM

advocates, such as an error-free workplace (Deshmukh, 2006), appear inconsistent with the pedagogical models, strong values, autonomy of academic action and the culture that define educational organisations (Bergquist, 1995; Dill, 1995; Jauch & Orwig, 1997). An example is seen in one list of critical success factors for education identified in the TQM literature (Sahu, Shrivastava, & Shrivastava, 2013). These vary from the unmeasurable—senior management commitment—to the educationally irrelevant—hygiene in toilets.

The centrality of management to TQM sits uneasily with the higher education model. The challenge this represents is apparent in the mention of leadership as an often ill-defined critical success factor for TQM in higher education (Asif et al., 2013; Sahu et al., 2013; Venkatramen, 2007). Other models of tertiary provision are less affected by the need for fully integrated management systems and this has contributed to the success of some universities (Marshall, 2012b).

The most significant barrier to adoption of TQM in education is the intangible nature of any improvement (Harvey, 1995; Venkatramen, 2007). The measures used to define the educational quality of outcomes are complex and contested. The impact of any improvement can be hard to quantify. This leads to the problem noted by Weick (2000) that TQM tries to mechanise decision-making rather than promoting and enabling sense-making.

16.5 Capability Maturity Models

Quantifying the impact of improvements and sustaining the development of organisations is a feature of the maturity model. The Capability Maturity Model (CMM), arguably the most successful formalised maturity model, was developed by Watts Humphrey based on experience at IBM developing software and supporting complex software projects (Humphrey, 1987; Curtis, 1994). Humphrey created a framework that defines five staged organisational maturity levels supported by an assessment methodology and a management system.

The maturity model approach posits that organisations, like people, can learn explicitly from experience if systems are created encouraging organisational sense-making. Progression through the maturity levels reflects the extent to which ideas of organisational learning (Senge, 1990) and continuous improvement are reflected in the organisations systems.

Andersen and Jessen (2003) define maturity ‘as the quality or state of being mature’ having reached a full or maximum state of development. They suggest organisational maturity describes the state where an organisation is perfectly conditioned to achieve its objectives. This is aspirational and ultimately unachievable but it can motivate a focus and intention to continuously improve an organisation which is a useful goal supporting the achievement of a wide variety of organisational objectives and is highly compatible with a sense-making approach to change.

Mettler, Rohner and Winter (2010) identify the mutability of a maturity model as an important characteristic of models intended to be maintained over time to

support the evolution and growth of maturity in the entity using the model. They discriminate between mutability of form, 'the underlying meta-model or model schema, the description of the maturity levels or question items' and mutability of function, 'how maturity is assessed' (p. 338).

Organisation or process change and improvement models incorporating the concept of maturity are a particular example of 'stage models', also known as 'stages-of-growth models' or 'stage theories' (Röglinger, Pöppelbuß, & Becker, 2012). Staged models are a popular mechanism for organising complex activities or bodies of knowledge. They are used to describe phenomena as diverse as geological epochs, the impact of tool-making technology on human civilisation, cognitive development and the use of technology in higher education. This apparent preference for such models should act as a caution to the researcher. Their use implies the existence of some discriminating factor or attributes dominating the experience of each stage and which can be used to understand activities placed within that phase.

The use of the stages of tool making by archaeologists illustrates the complexity of defining and using these divisions. Most people are familiar with the separation of human history into the Stone Age, Bronze Age and Iron Age. The Stone Age covered many hundreds of thousands of years of human, and indeed pre-human, development. This was followed by stages defined by the discovery of metal-working with bronze and then iron. Arguably, we have now left the Iron Age and entered a new stage that of steel or plastic or silicon. Defining the end point of the scale is a problem with many staged models. By implication, it is always incomplete and requires constant re-evaluation.

It can be difficult to identify the characteristics of the highest stage as it is unclear how new technologies or knowledge will influence outcomes. Taylor, for example, in his staged model for distance education technologies (Table 16.5), identifies the use of 'computer-mediated communication, using automated response systems' in his fifth generation (Taylor, 2001) when, with hindsight, it is not the automatic responses that were of value but the ability for humans to interact with each other more flexibly. Social media and the social construction of knowledge online, also described as Web 2.0, now have a significant influence on education but automatic systems have languished despite the early promises made by MOOC advocates. Arguably, Taylor's fifth generation is at least the sixth, with Web 2.0 technologies characterising much of the so-called fifth generation.

Taylor's model shares another problem with the use of metalworking to define human history. Both imply an inaccurately tidy view of progress. Modern studies of stone tools reveal that Stone Age stone working was extremely sophisticated and of much higher quality than tools produced by later generations. Stone-worked tools were mostly abandoned by Bronze Age civilisations, which led to a loss of knowledge about working stone, which led to the decline in quality of any stone tools produced. Then invention of iron working became very significant but the practicalities of making iron meant that bronze was still extensively used well into the Iron Age.

Table 16.5 Taylor's five generations of distance education (Taylor, 2001)

First generation: The correspondence model
• Print
Second generation the multimedia model
• Print
• Audiotape
• Videotape
• Computer-based learning (e.g. CML/CAL/IMM)
• Interactive video (disk and tape)
Third generation: The telelearning model
• Audio teleconferencing
• Video-conferencing
• Audiographic communication
• Broadcast TV/radio and audio teleconferencing
Fourth generation: The flexible learning model
• Interactive multimedia (IMM) online
• Internet-based access to WWW resources
• Computer-mediated communication
Fifth generation: The intelligent flexible learning model
• Interactive multimedia (IMM) online
• Internet-based access to WWW resources
• Computer-mediated communication, using automated response systems
• Campus portal access to institutional processes and resources

All of the technologies described by Taylor remain in common use. It can be argued that rather than stages, they represent alternative contexts and constraints and that is without contemplating the vast array of technologies developed over the last centuries that he failed to consider (Saettler, 2004). As the development of communication technologies such as ideoglyphs, writing, the codex and the printing press can be used as alternative models for identifying stages of human civilisation, differences in pedagogy and social context can provide alternatives to technology in understanding the development of distance education (Heydenrych & Prinsloo, 2010).

Another problem of staged models is progress which is obtained through recapitulation of the history of development within the domain. There is no particular reason why an institution cannot jump immediately to the top level or beyond in Taylor's model. The example in Chap. 1 of the African fisherman using a cell phone to check the market for his product illustrates how modern technologies are directly adopted and used effectively without any need to engage with older models.

Avoiding many of these issues with the identification of stages starts with a theoretical model that predicts the systemic and progressive changes necessary for improvement of the key characteristics of the domain studied. These key characteristics form the basis of the descriptions of the stages. Maturity models have an implicit or explicit theoretical basis of organisation evolution and change similar to

that suggested for human learning (Biggs, 1979). Early stages reflect knowledge gathering, experience and sense-making. These are followed by attempts to impose order and structure. Then, in the final stages, by the creation of flexible frameworks incorporating experience and knowledge but also able to cope with ambiguity and support innovative growth.

The utility of the maturity model concept is suggested by the array of different models proposed in various domains as descriptions of 'maturity' and relevant to organisations situated in those areas of activity (Curtis & Alden, 2007; Mettler et al., 2010; Röglinger et al., 2012). De Bruin et al. (2005) have attempted to bring some order to this vast array describing themselves as 'maturity models' by identifying the three key functions they serve: descriptive; prescriptive; and comparative.

Descriptive models allow an organisation to position themselves in a particular domain to complement activities in related areas. The majority of proposed maturity models fall into this category (Curtis & Alden, 2007). Without prescriptive or comparative elements, these models do not support systemic quality improvement and primarily have informational and publicity value. At best, they provide a limited form of internal diagnostic (Maier, Moultrie, & Clarkson, 2009). Staged models, such as Taylors Five Generations of Distance Education (Taylor, 2001) or Monson's (Monson, 2005), fall into the category of descriptive models. The flaws of these models reflect the same issues identified above with ranking systems and the TQM approach.

Prescriptive models have an in-built model of quality improvement. They describe aspirations for the future capability of a process, organisation or entity and include guidance on what must be done to achieve and measure that level of quality. The capability maturity model is the most well-known and well-emulated prescriptive maturity model.

Comparative models support internal or external benchmarking. Benchmarking is the structured comparison of a process or organisation with others engaged in similar activities relevant to the domain being measured. Benchmarking has expanded in definition to include many forms of structured comparison, including those where the qualities of good performance are defined separately based on research, such as the ACODE benchmarks discussed below. Benchmarking may also measure compliance with regulatory or statutory authority performance indicators (Cave et al., 1991). Unlike maturity models, benchmarking systems can be 'closed' with standards of absolute performance defined.

These three conceptions of maturity models can be used as a description of the lifecycle of a successful model (De Bruin et al., 2005). A new maturity model is necessarily descriptive. It evolves to being prescriptive as the descriptions are revised to better support measurement and improvement activities, and as evidence of the reliability and validity of the model is obtained. Repeated applications of the model will then enable its use for benchmarking or comparative activities, as is illustrated in the ITP case study below.

As tools supporting organisational improvement, maturity models are generally recognised as containing six features (Fraser et al., 2002; Mettler et al., 2010). The first feature is a set of levels, predominantly five but ranging up to six in the current version of SPICE (ISO/IEC 15504-7:2008; Peldzius & Ragaisis, 2011), which

describe maturity progression of the entity, organisation or process being assessed. The maturity levels describe the growth in capability of the entity for the given domain. In the second feature, each level is provided with a descriptor for the maturity achieved. The third feature is a set of characteristics for each maturity level that are used to identify the scope of practices relevant to that maturity level.

The maturity levels are based on the assessment of processes organised into key process areas aligned with the domain goals. The fourth feature of maturity models is the domain goals or objectives of the model, also commonly known as the process areas. Fifth are the individual elements or processes within the process areas that are defined and assessed through the practices. The processes themselves need to occur for the implementation or institutionalisation of the domain and are defined by the sets of key practices organised by maturity level.

The practices are the sixth and most important feature of the maturity model. They enumerate what is valued in the model and what should be developed for maturity improvement to occur. The practices are defined within the scope of the process and they contextualise the maturity level for that process. These key practices form the heart of the maturity model and are the item that is actually assessed when determining capability of processes and the overall maturity level of the entity for the given domain. The complete set of practices at a given maturity level for all processes should reflect a complete description of the characteristics of that maturity level, as noted for the third item above. The extent to which all these six elements are defined and validated primarily determines whether a given maturity model goes beyond description to support prescription and/or comparison.

The maturity structure, combining the five levels, assessment framework and management system, is used for several reasons (Humphrey, 1987) that convey the CMM's intent to be a prescriptive as well as a descriptive model:

1. The maturity levels are selected to reasonably represent the actual historic phases of evolutionary improvement of real software organisations.
2. Each maturity phase represents a level of software process improvement that is reasonably achievable from the prior level.
3. Each maturity level suggests interim improvement goals and progress measures.
4. A set of immediate improvement priorities is readily apparent once an organisation's status in this framework is known.

Humphrey's conception of the maturity levels describing the historic phases of improvement is not the only way these levels can be conceived and used. Experience in other domains suggests that organisations may engage in activities in a purposeful manner, establishing defined systems prior to any activity and thus not passing through an 'ad hoc' level. Gareis and Hueman (2000) propose using a spider web model reflecting the interconnections between activities, which might be considered characteristic of different maturity levels.

The e-learning Maturity Model (eMM), considered in the case study below, adopts a matrix representation of capability in practices. It uses the term 'dimension' instead of 'level' in order to emphasise the complexity of development and activities. This approach is derived from the model used in the creation of the CMM alternative known as SPICE (ISO/IEC 15504; SPICE, 1995; El Emam et al., 1998;

Peldzius & Ragaisis, 2011). The key lesson is while it can be convenient to talk about the maturity level of an organisation, such a description is insufficient in itself to provide a nuanced description supportive of management systems, action and ultimately improvement in complex and networked environments where multiple processes interact cybernetically (Birnbaum, 1988; Lewis et al., 2005).

Staged models provide education institutions with a combination of explicit guidance and a structured, rational approach to quality improvement. This is supported by a theoretical model of organisational change, which is philosophically aligned with educational values. The e-learning Maturity Model discussed in the next section illustrates how such models can be used for both institutional and system-wide sense-making.

16.6 Case Study: Using the EMM to Analyse a Sector

The e-learning Maturity Model (eMM, Marshall, & Mitchell, 2002; Marshall, 2006b) is an implementation of the CMM combined with ideas from the SPICE framework (El Emam et al., 1998; SPICE, 1995; Rout, 1996) resulting in a maturity framework that is both prescriptive and comparative in form.

The eMM is an internationally adopted means for institutions and sector agencies to explore their capability. The eMM was developed, refined and validated through a series of projects conducted in New Zealand (Marshall, 2005, 2006a), Australia (Marshall et al., 2009), the UK (Sero, 2007; Bacsich, 2008; University of London, 2008) and the USA (Marshall, Udas, & May, 2008). It is one of few higher education quality frameworks applied over a decade in multiple countries and in multiple levels throughout the education system, having been used with schools, vocational providers and universities. This has resulted in a rich set of data that is used in case studies throughout this book.

The eMM is designed to be used by institutions wanting to get a sense of their institutional capability for e-learning and advice on which areas need particular attention. The capability assessments are undertaken to allow comparison with other institutions, which helps identify areas for collaboration and replication of good practices at both institutional and sector levels. The extensive set of processes and practices acts as a knowledgebase for organisations selecting activities for improvement based on strengths and weaknesses identified in their own and other organisational capability assessments. The eMM assessment provides a structured mechanism for monitoring progress or development of e-learning capability over time.

Capability, in the sense it is used in the eMM, describes the ability of an institution to ensure e-learning design, development and deployment is meeting the needs of the students, staff and institution. Critically, capability includes the ability of an institution to *sustain* e-learning delivery and the support of learning and teaching as demand grows and staff change. Capability can be nebulous but ultimately speaks to the capacity of the organisation to engage in new ways with a dynamically evolving context (Loasby, 1998).

The eMM divides the capability of organisations to sustain and deliver e-learning into thirty-five processes grouped into five major categories or process areas (Table 16.6). All the processes are interrelated to some degree, particularly through shared practices and the perspectives of the five dimensions. Each process in the eMM is defined within each dimension by practices (Fig. 16.1). The practice statements attempt to directly capture measurable activities for each process and dimension. The practices are derived from an extensive review of the literature, international workshops and experience from their application (Marshall, 2008).

Each process is assessed from the synergistic perspectives of *Delivery, Planning, Definition, Management and Optimisation* (Fig. 16.2). The eMM uses dimensions, with an underlying concept of holistic capability, instead of the hierarchical model of process improvement where capability is assessed and built in a layered and progressive manner implicit in the use of levels.

The *Delivery* dimension is concerned with the creation and provision of process outcomes. Assessments of this dimension are aimed at determining the extent to which the process is seen to operate within the institution.

The *Planning* dimension assesses the use of predefined objectives and plans in conducting the work of the process. The use of predefined plans or procedures potentially makes processes more able to be managed effectively and reproduced if successful.

The *Definition* dimension covers the use of institutionally defined and documented standards, guidelines, templates and policies during the process implementation. An institution operating effectively within this dimension has defined what it believes an activity does for the organisation and how a given process should be performed.

The *Management* dimension is concerned with how the institution manages the process implementation and ensures the quality of the outcomes. Capability within this dimension reflects the measurement and monitoring of process outcomes.

The *Optimisation* dimension captures the extent an institution is using formal approaches to improve the activities of the process. Capability of this dimension reflects a culture of continuous improvement driven by sense-making.

An organisation developing capability on all dimensions for all processes will be more capable than one that has not. Strong capability at particular dimensions that is not supported by capability at the other dimensions will not deliver the desired process outcomes. These dimensions are aligned to the CIPOF framework through the use of evidence measures.

Context measures speak to the way the organisation frames the activity in the *definition* dimension; input measures speak to the scale and scope of activity delivery; process measures (in the CIPOF sense) speak to the way the activity is planned; output measures address the management of the activity and the monitoring undertaken; while feedback measures speak to the sense-making and continuous improvement of the activity assessed in the *optimisation* dimension.

The case study presented in Sect. 14.5 shows how the eMM assessment can be undertaken over time to stimulate sense-making within a single institution. Another way to use the model is to examine capability across an entire cluster of

Table 16.6 eMM version 2.3 processes (revised from Marshall, 2006b)

Learning: Processes that directly impact on pedagogical aspects of e-learning	
L1.	Learning objectives guide the design and implementation of courses
L2.	Students are provided with mechanisms for interaction with teaching staff and other students
L3.	Students are provided with e-learning skill development
L4.	Students are provided with expected staff response times to student communications
L5.	Students receive feedback on their performance within courses
L6.	Students are provided with support in developing research and information literacy skills
L7.	Learning designs and activities actively engage students
L8.	Assessment is designed to progressively build student competence
L9.	Student work is subject to specified timetables and deadlines
L10.	Courses are designed to support diverse learning styles and learner capabilities
Development: Processes surrounding the creation and maintenance of e-learning resources	
D1.	Teaching staff is provided with design and development support when engaging in e-learning
D2.	Course development, design and delivery are guided by e-learning procedures and standards
D3.	An explicit plan links e-learning technology, pedagogy and content used in courses
D4.	Courses are designed to support disabled students
D5.	All elements of the physical e-learning infrastructure are reliable, robust and sufficient
D6.	All elements of the physical e-learning infrastructure are integrated using defined standards
D7.	E-learning resources are designed and managed to maximise reuse
Support: Processes surrounding the support and operational management of e-learning	
S1.	Students are provided with technical assistance when engaging in e-learning
S2.	Students are provided with library facilities when engaging in e-learning
S3.	Student enquiries, questions and complaints are collected and managed formally
S4.	Students are provided with personal and learning support services when engaging in e-learning
S5.	Teaching staff is provided with e-learning pedagogical support and professional development
S6.	Teaching staff is provided with technical support in using digital information created by students
Evaluation: Processes surrounding the evaluation and quality control of e-learning through its entire lifecycle	
E1.	Students are able to provide regular feedback on the quality and effectiveness of their e-learning experience
E2.	Teaching staff is able to provide regular feedback on quality and effectiveness of their e-learning experience
E3.	Regular reviews of the e-learning aspects of courses are conducted

(continued)

Table 16.6 (continued)

Organisation: Processes associated with institutional planning and management	
O1.	Formal criteria guide the allocation of resources for e-learning design, development and delivery
O2.	Institutional learning and teaching policy and strategy explicitly address e-learning
O3.	E-learning technology decisions are guided by an explicit plan
O4.	Digital information use is guided by an institutional information integrity plan
O5.	E-learning initiatives are guided by explicit development plans
O6.	Students are provided with information on e-learning technologies prior to starting courses
O7.	Students are provided with information on e-learning pedagogies prior to starting courses
O8.	Students are provided with administration information prior to starting courses
O9.	E-learning initiatives are guided by institutional strategies and operational plans

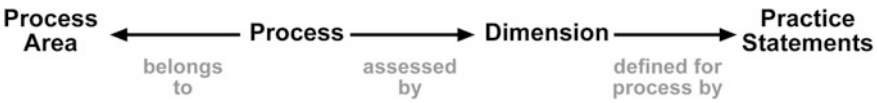

Fig. 16.1 Relationships between processes, practices and dimensions

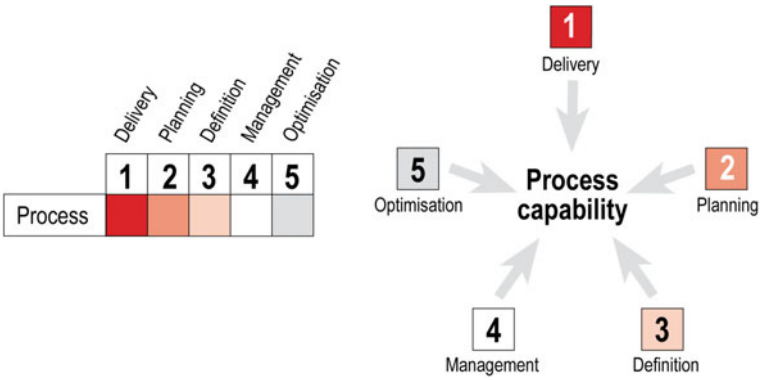

Fig. 16.2 eMM process dimensions

organisations to support a national or sector stocktake, to identify areas that present shared challenges or opportunities for collaborative benchmarking (below), and to examine the factors that influence capability in order to both validate the model and suggest strategies for individual organisations (Neal & Marshall, 2008).

Figure 16.3 shows the eMM assessments of 19 New Zealand ITPs (degree-granting institutions similar to US community colleges). The figure demonstrates the diverse range of capabilities that a national system inevitably

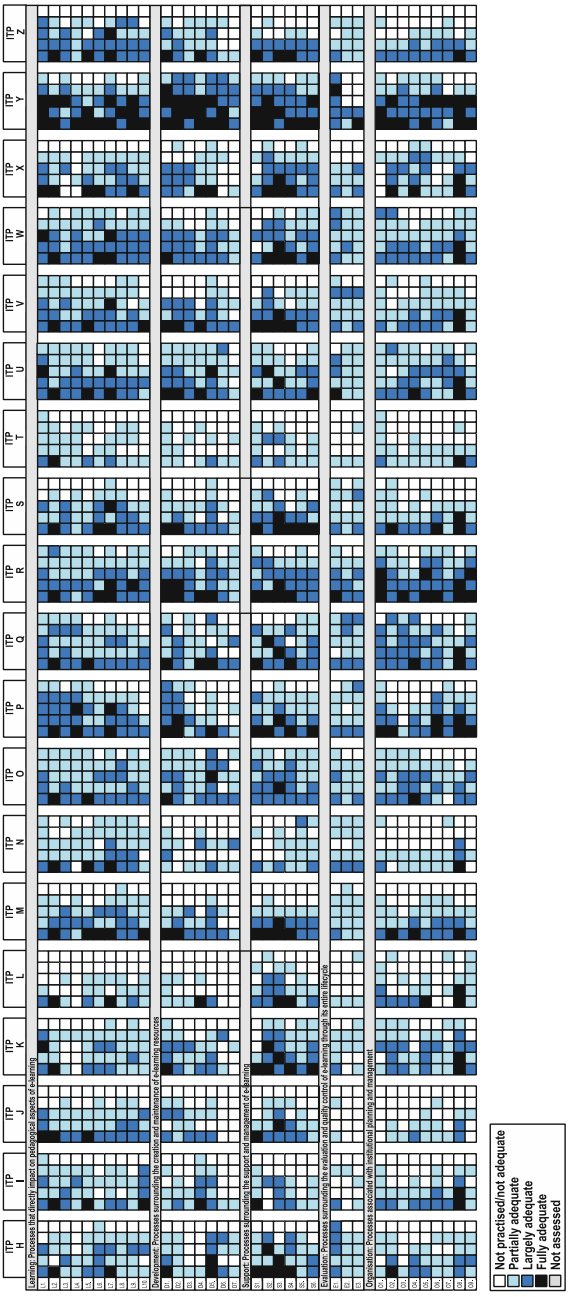

Fig. 16.3 ITP eMM assessments

includes. The visualisation is intended to stimulate pattern recognition, using the colours to identify repeated areas of dark or light that run through the complete set of assessments or between individual institutional columns. Examples include the very light cluster of rows in the fourth block down—processes E1–E3—which reflect the minimal sector-wide engagement with evaluation activities. In contrast, the third group of rows—S1–S6—is generally stronger in most institutions, reflecting the normal operation of a range of student and staff support services.

Some of these institutions have missions, such as support of regional agricultural workforce development, that are hands-on thus requiring little use of e-learning. Others are urban institutions providing a range of business and computing degree programmes through to postgraduate level. Some offer a significant proportion of their courses online or in a blended mode requiring significant investment in technology. It should be immediately apparent that while some institutions are significantly more capable than others—ITP-Y and ITP-R for example—the vast majority of institutions have a complex mix of capabilities across the processes and dimensions. Any attempt to reliably rank these assessments on the basis of this assessment would be misleading.

Figure 16.4 shows the same assessments as Fig. 16.3 but separates the five dimensions out into individual figures to emphasise the patterns of consistency within each dimension. This figure shows the significant lack of capability in the *management* and *optimisation* dimensions in particular. This absence, with the absence of capability in the *evaluation* processes, suggests the sector lacks the information that drives systemic improvements and is consequently operating blind. This analysis indicates the institutions will struggle to engage in systematic self-evaluation and benchmarking activities as they lack the information needed to evidence their activities.

As discussed above, confirmation bias and the challenge of Rumsfeld's 'unknown unknowns' are a real threat to understanding the challenges facing any institution. A related issue is the long-standing arrogance and complacency amongst established universities, noted by Shattock as damaging the UK system prior to the massive changes made in the 1980s:

> The failure to admit to differences in levels of institutional performance and to identify data that would illustrate them was damaging because it bred institutional complacency amongst some of the older universities and offered no incentive for improvement. It also encouraged too much reliance on 'informed' opinion and offered no assistance to those outside universities such as potential student admission candidates, industrialists seeking to commission research or the public at large who had a legitimate interest in selecting one institution over another. (Shattock, 2003, p. 2)

Ongoing complacency and an unwillingness to admit the value of self-criticism remain a feature of the prestige-dominated enterprise university (Marshall, 2010b). The eMM generates cues to address this by highlighting the importance of monitoring and evaluation activities and by promoting systematic improvements, which can be visualised as they progress, using longitudinal assessments such as the one outlined in the case study in Sect. 14.5.

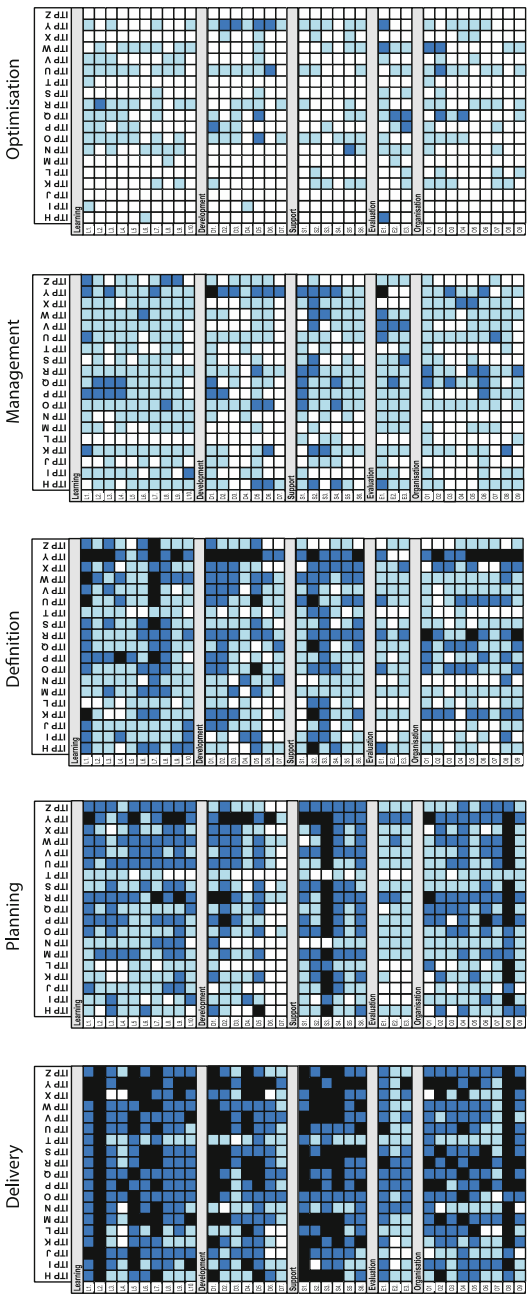

Fig. 16.4 ITP assessments by eMM dimension

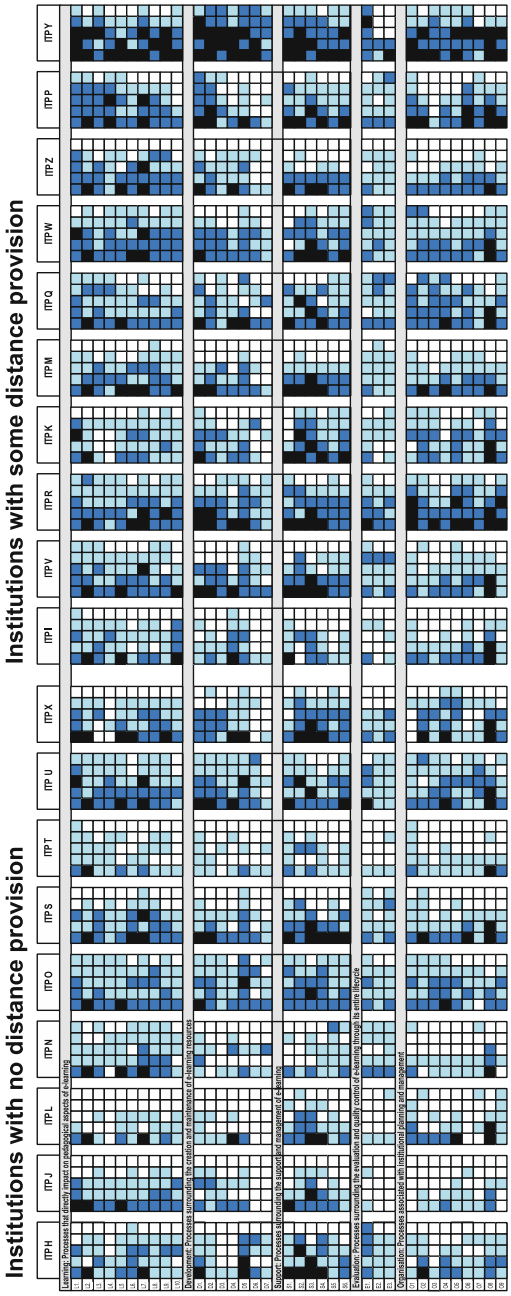

Fig. 16.5 ITP assessments grouped by extent of distance provision

The census of the complete group of New Zealand ITPs reported in Neal and Marshall (2008) means a number of hypotheses regarding the drivers affecting organisational capability to engage in a technologically mediated model of delivery were able to be tested. As an example, the hypothesis that institutions with experience in the delivery of courses at a distance are potentially more capable in e-learning delivery as a result of the formalisation of systems that typify distance delivery (Peters, 1994). Looking at the data sorted by distance student numbers, with the proviso that the institutions are not ranked within the clusters, shows experience in distance provision has some impact on capability (Fig. 16.5). Other institutions—ITP-O, ITP U and ITP-S—with no distance provision are still relatively capable, more so than some institutions with distance provision.

Ordering the eMM assessments in groups by the number of staff employed to support e-learning generated Fig. 16.6, which shows a resolution of institutions into groups with a pattern of increasing capability.

Adding the additional criterion of capability in process O9—strategic planning for e-learning—resulted in Fig. 16.7, with a gradient of capability apparent.

Ordering the data on the basis of other criteria, such as the number of students, revenue, urban/rural setting, failed to generate any similarly stronger gradation of capability amongst the assessments. There is an indication of a weak relationship between total revenue and capability, suggesting institutions need to be a minimum size to afford to engage seriously in e-learning but there was significant variation in the pattern rather than a gradient. This figure is not shown due to issues with maintaining institutional confidentiality.

The results in Fig. 16.7 suggest the eMM is assessing the strongest capability in organisations able to articulate a strategic rationale for their engagement with e-learning modes and investing in the resources needed to translate that intention into action, as was seen in the case study in Sect. 14.5. This result is useful as guidance to the institutions involved, to the sector in general via a number of other detailed observations reported in Neal and Marshall (2008), and as a form of validation of the eMM as a quality model given the resulting visualisations suggests a reasonable causal relationship without manipulation of the other process assessments.

These results, as well as the ones in Sect. 14.5, illustrate the multiple levels of analysis an eMM or maturity model assessment of an institution can support. The individual institutions are provided with a detailed analysis of their current capability and a list of areas where improvements can be made. The maturity model acts as a measure and roadmap for ongoing sense-making and sense-giving over time. The sector level analysis provides similar sense-making guidance to government agencies and to groups of institutions interested in systemic shifts that build capability across a number of institutions simultaneously. The ability to stimulate this type of collaborative improvement means maturity modelling assessments like the eMM is a useful complement to more resource intensive collaborative benchmarking activities such as the ACODE benchmarks discussed in the next section.

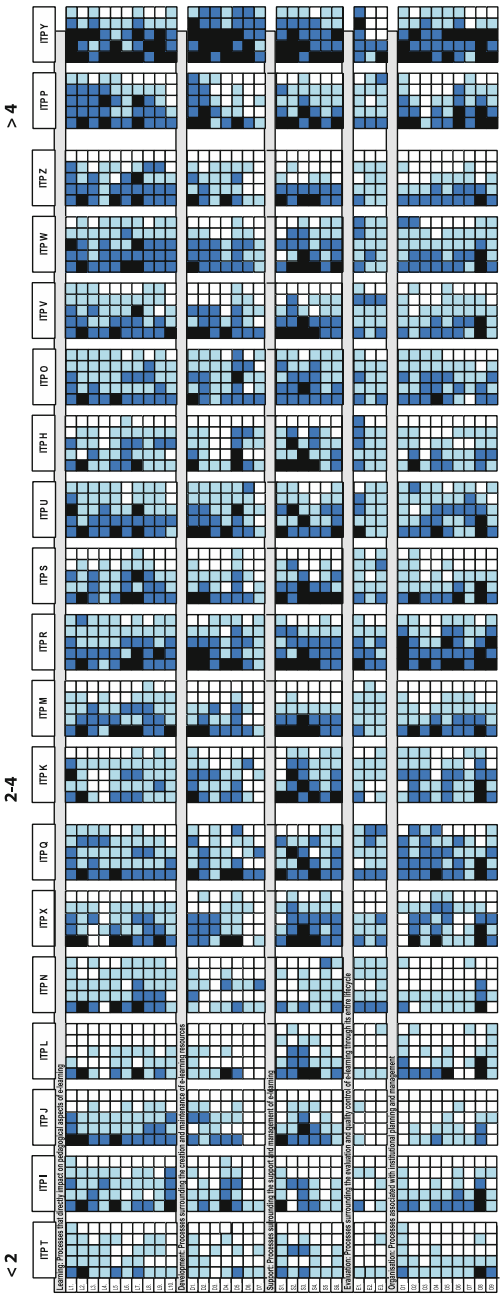

Fig. 16.6 ITP assessments grouped by the number of FTE staff supporting e-learning

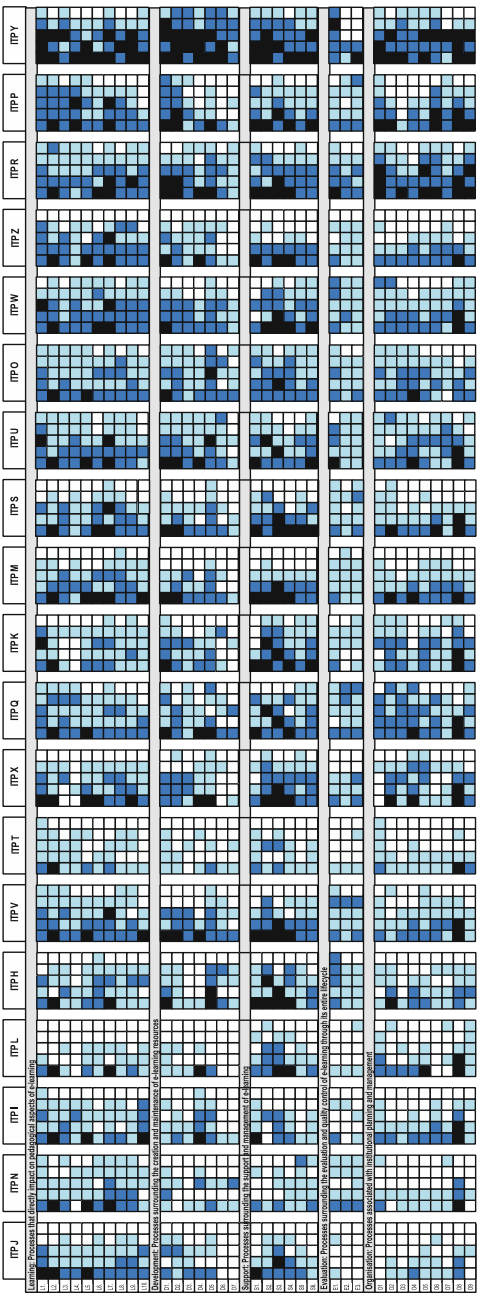

Fig. 16.7 ITP assessments ordered by capability in process O9 and then by the number of FTE staff supporting e-learning

16.7 Collaborative Benchmarking

Collaborative benchmarking is the structured comparison of a process or organisation with others engaged in similar activities relevant to the domain measured. Originally, benchmarking was designed by the Xerox Corporation to support a combination of research into good practice by others and the examination of performance within an organisation (Camp, 1989):

> Benchmarking is the search for and implementation of best practices. The adoption or adaptation of the best practices allows an organization to raise the performance of its products, services and business processes to leadership levels. Benchmarking performance measurements are useful means to identify organizations whose performance is significantly better and who, therefore, may have best practices. The real benefit of benchmarking, however, comes from understanding the practices that permit the performance and the reasoned transfer to the organization. (Camp, 1995, pp. 15–16)

Xerox's model of change adopts exemplar processes by teams of staff from one organisation learning from peers in other organisations who have implemented excellent processes in an analogous context. The major benefit of this approach is the collaborative experience, which provides a form of professional development and support to the participants.

Benchmarking has expanded in definition to include many forms of structured comparison, including those where the qualities of good performance are defined separately based on research such as the ACODE benchmarks (Brigland & Goodacre, 2005; Marshall & Sankey, 2017; Sankey et al., 2014). Benchmarking may also measure compliance with regulatory or statutory authority performance indicators (Cave et al., 1991). Unlike maturity models, benchmarking systems can be 'closed' with standards of absolute performance defined. Collaborative tools like the ACODE benchmarks allow focused examination of areas of particular strategic or operational importance, potentially building on areas identified for institutional improvement in a more comprehensive overview drawn from an eMM assessment (Marshall, 2009b).

The ACODE benchmarks provide a process for working collaboratively within an institution's different service groups and with external partners focusing on specific areas of institutional e-learning capability. This process is particularly effective as a mechanism for brainstorming options for improvement and in building wider awareness and interest in quality improvement within the institution. The collaborative approach used inside institutions as part of the ACODE benchmarking system has a number of benefits (Marshall & Sankey, 2017):

- The data is more likely to reflect reality, having been informed by multiple perspectives and experiences;
- Activities which are not shared outside specialist groups are more likely to be identified;
- Activities which fall across organisational structures or boundaries are more likely to be understood completely;

- The collaboration process creates a potential team of informed staff engaged with the problem and able to contribute to improvement activities;
- Collaboration stimulates critical thinking and creativity, leading to a greater diversity of potential strategies for improvement;
- Collaboration stimulates commitment and encourages the development of distributed leadership capability able to strengthen organizational agility and flexibility.

Feedback from the 35 universities that participated in formal ACODE benchmarking programmes in Australia in 2014 and 2016 was overwhelmingly positive with participants agreeing the process provided useful reference points for institutional capability assessments and identified beneficial strategies for improvement activities (Marshall & Sankey, 2017).

The advantage of collaborative benchmarking is the social processes that re-normalise expectations between different groups within individual institutions and between different institutions. This approach is a powerful model for promoting sense-making in collegial settings or in the third spaces where different stakeholders find themselves engaged in common action.

The advantage of a collaborative benchmarking approach over externally conducted audits and reviews is the explicit treatment of quality and change as activities collectively owned and engaged with by a range of internal stakeholders. The benefits listed above are significant as they create a context for sense-making activities, generating cues and enacting change scenarios to be used by leadership as the starting point for a wider conversation for change.

16.8 Conclusion

> Benchmarking breaks down the ingrained reluctance of operations to change. (Camp, 1989, p. 9)

> Outcomes-assessment practices in higher education are grotesque, unintentional parodies of both social science and accountability. No matter how much they purport to be about 'standards' or 'student needs,' they are in fact scams run by bloodless bureaucrats who, steeped in jargon like 'mapping learning goals' and 'closing the loop,' do not understand the holistic nature of a good college education. (Fendrich, 2007, n.p.)

One way to recognise the value of the different benchmarking approaches as tools for engaging with the wicked problem of change is to reflect on the sense-making questions for universities outlined in Table 15.2 in the Chap. 15:

1. How is the university continuously re-evaluating its activities?
2. What is the university doing to improve its capability to educate learners now and in the future?
3. What evidence is the university using to show that resources are used effectively and efficiently?

4. What is the university doing to maximise the effective and efficient use of the resources invested in educational activities?
5. What resources are being invested into educational activities? What is the university doing to understand its strengths, weaknesses and values?

Maturity models and collaborative benchmarking activities do more than gather evidence of activity or performance. They create the sense-making cues that stimulate the awareness of the need for change and then scaffold sense-making activities with tools aligned to the sense-making properties. One challenge is the necessity for leaders to accept the need to relax control over the examination of the institution internally and recognise the importance and value of internal criticism. Another is to realise the need to engage with other institutions in exploring these issues. This is quite a different mindset to the thinking of those leaders obsessed with prestige and driven by marketing philosophies that insist on only positive messages.

All too often, the academic experience of change in modern universities is one requiring compliance rather than recognition of the importance of internal debate as a tool for continuous improvement. The two quotes at the start of this conclusion reflect the tension between the potential benchmarking and other quality tools provide for sense-making and change, and the experience of many within universities stressed by an unacknowledged and strategically unformed shift to mass education.

Quality improvement must be seen as a collection of actions undertaken by, or on behalf of, the key stakeholders in tertiary education and which sustain the institution's core ideology. Bok (2013) uses the experience of the Bush Administration Secretary of Education Margaret Spelling to illustrate the problem facing governments promoting particular approaches to quality that fail to consider the agency of other stakeholders. The establishment of the US Commission on the Future of Higher Education by Spelling was intended to measure higher education performance. This initiative failed because of its inability to reflect stakeholder perspectives and to acknowledge the limitations of measurement systems. As Bok notes, the measures of learning outcomes proposed by the commission were ambiguous and easily criticised by a range of stakeholders, including the universities involved. They reflected a limited model of learning that discouraged change and ultimately were unpersuasive to many external stakeholders focused on prestige measures. Aligning information to specific stakeholders and recognising how they can act to improve the qualities they value helps ensure the issues described above are at least mitigated.

Students need institutional quality improvement activities that sustain their engagement with learning throughout their life. These assist them in identifying opportunities to develop new skills and knowledge. They motivate and engage them in education with a level of intensity designed to maximise the benefits and help them represent their personal qualities in a way that enables their success.

Universities need quality improvement activities that help the organisation engage in collective sense-making and reflection so change can be undertaken

continuously in a manner respecting the core ideology and context of the institution. The tools used to support quality improvement must ensure the organisation has the information required to manage its resources and activities effectively but the focus needs to be on the qualities of the outcomes being achieved and less on the inputs used to enable those outcomes. The CIPOF analysis of university ranking systems (Table 16.3) shows how easy it is to frame quality in terms that have little to say about learning and teaching outcomes.

Quality improvement activities must respond to the forces outlined in the first section, recognising the context for individuals, providers and the sector is changing rapidly and the need to embrace the ambiguity and unpredictability of the wicked problem change poses for university education. This is a particular challenge to established national quality and accrediting agencies and governments. Westerheijden, Stensaker and Rosa (2007) observe the first decision is recognising the choice of quality instruments is fundamental to the future success of the tertiary education system:

> Should quality be economically rewarded? Should new laws on the rights and duties of higher education institutions be clarified? Should an intermediate body be established to control or enhance quality? Should governments limit themselves to informing the general public about the importance of having a focus on quality? (Westerheijden et al., 2007, p. 3)

The problem facing governments attempting to answer this question is recognised by the New Zealand government Productivity Commission in their recent report on New Models for Tertiary Education:

> Change is inevitable, but predicting how future trends will influence tertiary education is hard. Under current settings, the system has little or no ability to adapt spontaneously to such change. It falls to government to accurately predict these trends so that it can adjust its purchasing correctly and ensure its rigid regulatory controls are appropriate for changing times. This places a heavy responsibility on government to correctly predict the future and make timely anticipatory changes to policy – in the Commission's view, a near impossible task. A better approach would be to allow providers to pursue different strategies, differentiate themselves, and adopt a wider range of new models. This would make the system more flexible, responsive, and resilient in the face of external shocks. (New Zealand Productivity Commission, 2017, p. 5)

This leads to the next chapter and the realities of change. If leaders choose to distance themselves from superficial prestige- and marketing-driven measures and pursue substantial and meaningful improvements in their institutions, they need highly effective and responsive change approaches designed with wicked problems in mind.

Chapter 17
Making Sense of Change

Abstract The myth of technological transformation and solutionism discussed in the introduction to this book is most visibly apparent in the narratives associated with change, particularly that associated with the introduction of new technology. Sense-making is guided by enacted reality, the need to engage in change so as to develop a deeper understanding informed by evidence and experience. Organisational change theories are reviewed and analysed for their application to higher education institutions and systems, with particular regard to their identity and role as places of learning. Christensen's dominant technological change model of disruptive change is analysed and critiqued as an overused and unhelpful focus on extreme change. The internal and external enablers or stimulators of organisational change processes are examined including coercive, mimetic and normative isomorphism with examples drawn from various international higher education contexts reflecting a range of economic, social and cultural drivers. The relationship between the application of change theory and the developing sense-making framework is examined and the leadership challenge of enacting change within a wicked context described.

> Q. How many academics does it take to change a light bulb?
> A. Change? Change? Who said anything about CHANGE? (Kirschner, 2012, n.p.)
>
> You could not step twice into the same river; for other waters are ever flowing on to you. (Heraclitus)

Organisational change is a tool enabling strategy to be realised. Strategy is a way of expressing the priorities an organisation has for change in the near to midterm. The choice of the mechanisms used for change need to be framed by the goals leadership has for the future of the organisation, shaped by the core ideology and the strategic context. Most importantly leaders generate a positive response from the internal and external stakeholders of the university if they are to be sustained. Earlier, the breakdown in trust and the negative characterisation of the relationships between academics and university managers was discussed as arising from a disjunction of values and a shift in stakeholder power influencing the priorities and

S. J. Marshall, *Shaping the University of the Future*,
https://doi.org/10.1007/978-981-10-7620-6_17

management of universities. This breakdown in trust makes change a problematic space for many universities, diluting the impact of new ideas and reducing the resilience and agility of the organisation over time.

The myth of technological transformation and solutionism discussed in the introduction to this book is most visibly apparent in the narratives associated with change, particularly that associated with the introduction of new technology. Work by researchers in the field of innovation, including Rogers (2003) and Moore (2006), suggests the reality of change is much more complex, particularly reflecting the human factors and relationships influencing the receptiveness and adoption of new ideas. Rogers examines the way new ideas are adopted by individuals and identifies that this is often an irrational process affected by human prejudice and relationships. Even important ideas, such as the use of clean water, are influenced by social norms and the perception of the status and importance of people changing their practice. This observation led to the identification by Rogers of five major groups of people based on their responsiveness to new ideas (Fig. 17.1). A key feature of this model is the need to recognise that people will fall into all of these categories at different times in their lives and even simultaneously with regard to different roles or functions.

Innovators are the people who create the new idea or technology. Consequently, they are highly committed to it but they are few in number and in many ways, not representative of the majority of people. The quoted text from Plato (Chap. 8) on the invention of writing illustrates the challenge faced by the innovator.

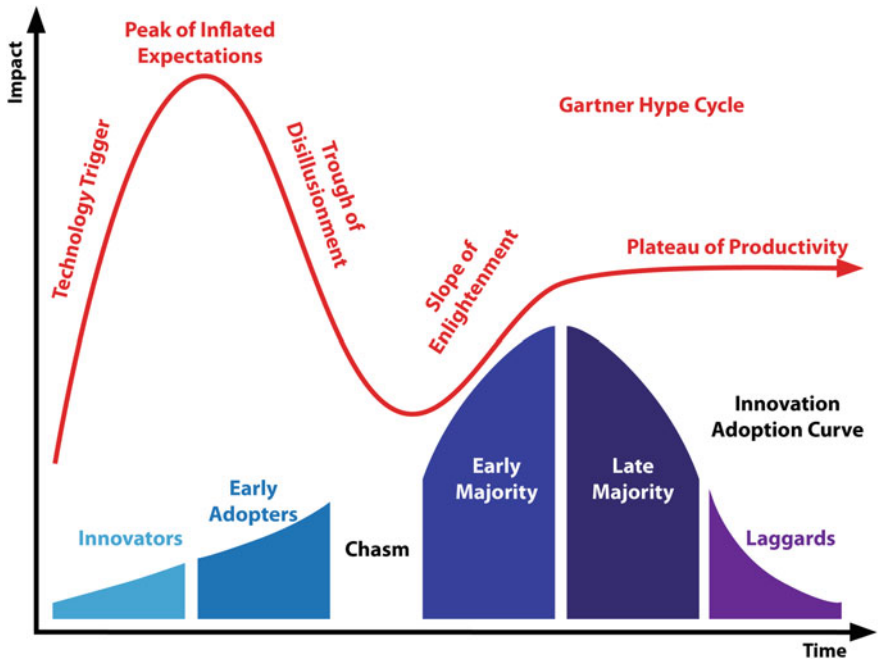

Fig. 17.1 Relationship between Gartner hype cycle (Gartner, n.d.) and Rogers and Moore's adoption curve (Moore, 1991, 2006 Rev. Ed.; Rogers, 2003)

Early adopters are people who have a very low threshold of receptivity to new ideas. They are eager to explore new technologies or concepts and understand their nature but also just as likely to abandon them for another.

The *early majority* and *late majority* reflect the vast proportion of users or beneficiaries of any new idea or technology. Their adoption represents the translation of potential into pragmatic normal use of the change.

Laggards as a group are highly resistant to change. They may never adopt a new idea or technology voluntarily and eventually only do so in the face of coercion, including the removal of all other options. Laggards are not by definition irrational, and they may have completely justifiable rationales for using an older conception or technology.

A related set of ideas is reflected in the widely cited and annually updated Gartner hype cycles (Gartner, n.d.). This describes the technocratic cycle of hype. It starts with the adoption of an idea by a few, moves to the overinflated expectations and hype, which are followed by disillusionment as experience moderates the expectations of the new idea, enlightenment as sense-making processes generate a realistic understanding of the new idea, and finally its general application and substantive contribution (Fig. 17.1).

Moore (1991, 2006 Rev. Ed.) notes that a significant gulf or 'chasm' exists between innovators and early adopters, and the vast majority of people. This is consistent with the 'trough of disillusionment' in the Gartner model (Fig. 17.1) and reflects the reality that the characteristics and priorities of innovators and early adopters may not be valued or representative of the majority of people in any group, including within the university.

Charles (2012) provides a powerful example of the irrational nature of change and its influence by culture and norms. Anaemia is a common health problem in poor regions with particularly significant impacts on the health of women, the elderly and children who typically subsist on a diet high in basic vegetables and lacking in iron. One practical solution is the use of an iron cooking pot, as the surface leaches the necessary trace amounts of iron into the food during the cooking process. However, the cost and weight of such vessels has led to their replacement with cheaper aluminium pots that do not have this advantage. The solution is to include a small piece of iron in the food as it is prepared but, to many people, this rational solution conflicts with the common sense notion that putting metal into food is a bad thing. Charles was able to achieve almost complete uptake of this strategy by having the iron formed into the shape of a culturally appropriate 'Try Sa'Bay' or 'happy fish'. The Try Sa'Bay is a representation of a local deity who is considered lucky. Shaping the metal in this form provided a culturally relevant sense-making narrative that was highly influential in changing the health outcomes for the community.

The introduction to this section of the book noted that change is an irrational process and a threatening concept for leaders as well as for those they lead. The sense of threat reflects the inevitable disorder associated with change, the stress and distraction of having to develop new approaches to deal with the consequences of the change itself. There is also the need to redevelop approaches to old problems

affected by the change. Individually and collectively, resisting change is a sensible mechanism for efficiently managing the inevitable chaos and entropy of life.

Gill (2002, p. 308–309) provides a useful overview of the reasons underlying change resistance that focuses on the underlying drivers of human behaviour:

- Dislike of imposed change, a particular issue for professionals used to operating autonomously or within a collegial framework;
- Dislike of surprises, reasonable for people used to managing their time carefully;
- Lack of self-confidence and confidence in others, typically manifested as a fear of the unknown, of inadequacy and failure and the adverse consequences arising from this;
- Dislike of disturbed practices, habits and relationships, moving to the unfamiliar, insecure and uncertainly controllable—the extent, pace and ongoing nature of technologically catalysed change is a significant contributor to this issue, as discussed in Chap. 8;
- Awareness of real or perceived threats to individual self-interest and shifts in power and influence such as loss or change of role in the organisation;
- Reluctance of management to deal with difficult issues, generating a sense that change is being misrepresented or misdirected, or arises from the manufacturing of crises rather than reflecting necessary and proactive leadership;
- Lack of respect and trust in the person or people promoting change, and scepticism or cynicism arising from the failure of previous change initiatives.

Sense-giving is a powerful tool for engaging with people using powerful narratives to address these concerns in ways that build trust, address the negative aspects of ambiguity and provide a framework for understanding the experience of necessary change from a personal and organisational perspective. In so doing, leaders need to reflect on the reality that:

- For most people in a large organisation, most issues have a low salience;
- Universities in particular have a high level of inertia reflecting the strength of the core ideology and the autonomy of the academic faculty;
- Collegial decision-making processes mean that change is often derailed by the accretion of other issues;
- The complexity of change decision-making can often overload the processes and people involved; and
- As discussed in Chaps. 9, 11 and 12, universities often lack the information needed to support the case for and sustain change (Cohen, March, & Olsen, 1972; Menand, 2010).

Significant change in universities can be led easily in some situations (Birnbaum, 1988, p. 205):

- When there is a crisis, real or manufactured that creates the widespread recognition of the need for change;
- When the university is small and lacking status such that change can be enacted through the coercive authority of senior leaders;

- Where the university is so out of date that change is visibly necessary to those comparing it with other institutions;
- Where academic governance is dysfunctional or disengaged and incapable of influence.

None of these are desirable situations, and they reflect the negative characterisation of change typifying the stereotypical relationship between academics and managers (Chap. 4). Sadly, there is anecdotal evidence of what Marginson and Considine (2000, p. 129) call 'engineered consent', where stakeholders are manipulated rather than engaged with as peers during the process of change. Cain and Hewitt (2004) provide an account by the Australian politician responsible for significant changes in that system, reporting the Vice Chancellor of Melbourne University regarded external pressure as a useful scapegoat for organisational change, allowing him to make changes without having to be open about his motives:

> by externalising the threat - by making me [Dawkins] the bogey man - [Melbourne VC Penington] was able to pick up the bits of it that he liked, and push that through, but blame me for it. And so he'd make these speeches where he'd be pretty unflattering about me, whereas in fact he was a secret supporter of what we were doing. (Cain & Hewitt, 2004, p. 48–49 quoting Labor Government Education Minister (1987–92) John Dawkins)

The scale and context of change is important in establishing its potential impact and the need to engage more substantially in change leadership. Changes can occur at the level of process, system, structure, organisation, or institutional throughout a system of higher education (Demers, 2007; Seel, 2007; Waks, 2007). The quality as sense-making framework discussed in Sect. 15.3 reflects the need for universities to adopt change strategies operating simultaneously and synergistically at multiple levels (Moore, 2006; Russell, 2009; Southwell, Gannaway, Orrell, Chalmers, & Abraham, 2005).

Enacting change at multiple levels inevitably generates a wicked problem as the different drivers and stakeholder perspectives operating at each level, and in each context, interact and respond to the possibility or reality of change. Pragmatically, this means the organisational change theories described in this chapter, despite their antithetical assumptions and implications, must be seen as coexisting in a paradoxically synergistic approach to change that uses inconsistency and ambiguity to drive agility, creativity and ultimately, improvement (Eisenhardt, 2000; Hedberg, Nystrom, & Starbuck, 1976).

Leading change while holding these contradictory ideas in their own minds is a particular challenge for managers and other staff trying to initiate and sustain change in universities. Demers (2007, p. 68) notes:

> [T]he stability of manager's cognitive structures is one of the major obstacles to organizational adaptation and eventually leads to radical change. The studies on cognitive structure development show the prevalence of convergent change (i.e. the tendency to modify and refine the existing frame) over discontinuous change. While some authors theorize about what managers need to do to facilitate cognitive reframing, this approach views most managers as incapable of undergoing second-order change in cognitive schemes without outside help.

One of the ways that sense-giving can influence the values people hold with respect to change is through the language used to describe it. Change can be seen as referring to a specific thing, such as an innovation enabled by the creation of a new technology. It can refer to the experience of a process resulting in a different organisational state, such as an organisational restructuring of internal groups, functions or personnel. Change can be used to describe the dynamic nature of the organisation's environment and the need to be responsive to different expectations from external stakeholders. Change can refer to a different way of understanding the organisation, new values or norms that cast it in a new light without necessarily requiring the use of new tools or the implementation of new structures or systems. The first thing that most people need to hear, however, is *why*. What is it that change will do that they can be part of and can value.

17.1 Why Change?

Key to effective sense-giving is recognition that the change proposed must reflect an underlying rationale and strategic perspective. Appeals to transformational thinking, the inevitable force of 'progress' and other technologically determinist narratives, are unpersuasive to professionals. The inability of leaders to generate a narrative valued by the staff of an organisation is apparent in many of the failed virtual universities described in Chap. 9 and was a key factor holding back ITP-Z in the case study discussed in Chap. 14.

Buller (2015) makes the distinction between 'received change' where the drivers are a result of the evolution of factors outside direct control by individuals or organisations and 'intentional change' where change is a directed activity. The distinction is important for sense-giving as it establishes the extent to which the change is likely to be seen as a threat to individual agency imposed by an identifiable stakeholder. How an organisation and its leadership respond is also influenced by the operation, potentially simultaneously, of three different mechanisms (DiMaggio & Powell, 1983): coercive, mimetic and normative isomorphism.

Coercive isomorphism describes change as a response to external pressures forced upon the university, a form of received change. This treats the forces for change as operating independently to the actions of the university and the resulting change as a rational response to the imposition of the external requirement. Framing change in this way is consistent with the experience of universities resisting the implications of mass university changes to the salience of stakeholders, most notably the shift externally to the needs of governments and employers reflected in the use of external quality systems such as the New Zealand PBRF, UK REF (Waitere et al., 2011; Stahl, 2015), the UK's TEF (Forstenzer, 2016) and the Australian LTPF (Chalmers, 2007) and QILT (QILT, 2017). The type of change this creates is often more symbolic than substantive, focusing on the delivery of measured outcomes at the expense of holistic improvement. As discussed in Sect. 15.1, it can see the operation of Gresham's Law drive a gradual decline in the activities of the university.

Mimetic isomorphism is intentional change stimulated and modelled by imitation, avoiding the challenges posed by wicked problems and the effort, both individual and organisational, to engage in sense-making. Change as mimesis has already been demonstrated at multiple points throughout this book, including the Chinese adoption of the Western university model for excellence, the use of international ranking schemes, the Virtual University and the MOOC. This form of change is evident in the use of TQM and other models basing quality on a pre-defined set of 'best practices' drawn from other contexts and the generic adoption of technologies such as the LMS or VLE as technological solutions to change. Mimesis is seen in the tendency to teach as we have been taught and the historic presumption that the focus of postgraduate study is the induction into a scholarly community (Chace, 2006). This is increasingly problematic as the student body changes to be demographically different to the faculty and as the pace of technological change challenges the way information is obtained and used. Marginson and Considine observe this strategy is ultimately a recipe for mediocrity:

> In the lesser universities, institutional strategy is caught in the logic of the 'simulacrum' … a state of replication in which the difference between the copy and the original disappears. Lesser universities want to become 'simulacra' of the market leaders. The problem is that universities are position-bond, and success is a product not just of clever strategies, but of history and geography. The positional power of the leader stays intact. The 'simulacra' are exposed as inferior copies. (Marginson & Considine, 2000, p. 221)

Normative isomorphism is closer than either of these to the sense-making model and reflects a combination of received and intentional change. Here, the framing of change is driven by the ongoing sense-making processes of professionals which lead to the emergence of 'legitimated professional practices' that represent the evolving understanding of the profession. Normative isomorphism is strongly associated with professional and disciplinary networks and standards. The value of this model in the university is its strong alignment to collegial academic values, and the recognition that change is legitimate when it balances individual autonomy with the normalised practices of the groups individuals choose to associate with and model their identity upon.

The case for change has been made in general throughout the first half of this book, reflecting a dynamic environment similar to that motivating change in many other sectors of society (Child, 2005). Individual universities operate within a dynamic context, which will be influenced by a specific combination of the forces they operate, including:

- The mix of élite, mass and universal provision;
- The impact of globalisation;
- The changing salience of an evolving group of stakeholders;
- Financial and economic drivers;
- The shifting value of different qualifications and the contribution these make to the economic and social context of the university; and
- New technologies catalysing and accelerating change.

Leaders must be able to translate these general trends into a compelling normative narrative, combining an understanding of the core ideology of the university with a pragmatic and ongoing assessment of its environment. This constitutes the evolving *why* of change, which must be communicated effectively and translated into systemic actions that build engagement and enact the necessary changes.

17.2 Organisational Change Theories

Establishing the *why* of change helps stimulate the process of sense-making by providing cues and a narrative for change that can be enacted. This leads to the *how*. Organisational change theories attempt to provide a rationale for the experience of change. In doing so, they reflect the values of those desiring and leading change and the realities of the different organisational contexts for change. Part of the challenge of developing a general theory of change is the dependence on the context. Often, experiences of change are post-facto rationalisations of the experience heavily influenced by the political realities of the institution and its key stakeholders. Although this process is helpful to the organisation experiencing it in the specific case, it presents something of a challenge when generalised into a theory applicable to other organisations.

Theoretical narratives of change can be seen as manifestations of the sense-making process. By enabling a retrospective revisit of the change process, they provide opportunities to re-frame that experience to support ongoing change enacted in response to the sense-making. Change theories are value laden. When modelling how change occurs, they frame those elements of an organisation important in a given value system and disregard those which are not valued. When considering how theory can inform the reality of change, it is necessary to consider the alignment of the value system of the theory with that of the organisation. Selection of the right theory of change can assist the process of sense-giving by generating a model of the organisation's context highlighting the cues, signalling not only the need for change but the means by which change might occur.

Historically, one of the most influential models of change is that of Kurt Lewin (1947, 1952) who proposed that change occurs in three steps: unfreezing; change; and refreezing. Lewin theorised that organisations exist in a form of stasis; the forces promoting change balance those resisting it. The goal of a leader wishing to see change occurs under Lewin's model is to reduce the organisational barriers preventing change, thus enabling the forces supporting change to act. This idea of needing to unfreeze an organisation has been enormously influential on change researchers. Hendry (1996, p. 624) notes:

> Scratch any account of creating and managing change and the idea that change is a three-stage process which necessarily begins with a process of unfreezing will not be far below the surface. Indeed it has been said that the whole theory of change is reducible to this one idea of Kurt Lewin's.

Lewin's theory embodies the idea that change is a discrete activity, undertaken with a specific goal in mind that can be realised and subsequently 'frozen' into the organisation as part of its routines. It also emphasises the role of change leadership, with the need to engage with the organisation collectively and through the unfreezing process communicate the rationale for change, which can then be implemented with the cooperation of the participants. Lewin's ideas have formed the foundation of the organisational development approach to change, which has historically dominated change in commercial organisations in the USA (Cummings, 2008).

Unfreezing is seen in the impact activities such as the European Bologna process have on national systems of higher education, providing a sense-making cue that stimulates a re-examination of stable systems and a development of new ideas:

> For national systems that were "stuck," as Jurgen Enders of the Center for Higher Education Policy Studies in the Netherlands noted, Bologna was "an icebreaker, a discourse" that created educational realities within "an acceptable range of difference." In this broader discourse, Bologna played a facilitative role—not the cause or origin but the platform for innovation. (Adelman, 2009, p. 21)

Despite its historic impact, the concept of a cycle of unfreezing and freezing seems inconsistent with the environment of increasingly rapid change described in this book. The real question lies in the nature of the freeze occurring after a process of sense-making. If it is positioned as a return to a period of calm stasis, then that suggests subsequent unfreezing will be challenging and prevent the maintenance of organisational agility and responsiveness. A more positive outcome occurs if the nature of the freeze is a reconfirmation of the core ideology and active and ongoing engagement with cues for further sense-making. Weick notes:

> Coordination is viewed as a dynamic process that tends to unravel and therefore has to be reaccomplished continuously. The constant tension between unraveling and reaccomplishment is an ongoing prod to emergent, continuous change. When people reaccomplish that coordination that ties their activities together, they tend to alter it slightly so that it fits better with changing demands from internal and external sources. This continuous updating tends to produce units that change just as rapidly as their environments. (Weick, 2009, p. 233)

Lewin is only one of a multitude of scholars who have attempted to make sense of change. The complexity of change provides fertile ground for theorists and consultants to propose models and metaphors. Although these are generally at best heuristics and are often at worst trademarked lists designed to solicit consultancy contracts without any evidentiary backing, they have value as tools for sense-making and sense-giving. The various models and change philosophies enumerated in the literature can be broadly classified (Argyris & Schön, 1978; Demers, 2007; Graetz & Smith, 2010; Kezar, 2001):

- *System models*: see change as having a multitude of effects across an organisation, direct, indirect and interconnected. Effective change needs to reflect a holistic view of the organisation and be enacted across the entire system.
- *Biological models*: change conceived as an evolutionary process subject to natural selection, a complex ecology, or change as a form of organisational life cycle.

- *Rational (teleological) models*: change is directed and follows the plan or strategy established in advance by organisational leadership.
- *Institutional models*: change is a response to the context of the organisation and its place within a broader environment with forces acting across the entire sector.
- *Resource models*: change is defined by resources and by the ability of the organisation to act to influence the available resources.
- *Contingency models*: change as a consequence of the context and the ability of the organisation to adopt an approach aligned to the key features of the specific circumstance.
- *Political models*: change as a consequence of conflict between ideologies.
- *Psychological models*: change mediated by the individual experience and the ability of the organisation to utilise behavioural mechanisms to influence individuals.
- *Social* or *Postmodern models*: change as social constructivism, balancing individual and collective sense-making through narrative and dissension.
- *Cultural models*: change is normal in that it is a response to changes in the human environment and arises from the natural action of values and beliefs, with the consequence that change is slow and incremental and resists internal and external direction.

In practice, many theories and models of change incorporate features from more than one of these classifications. In the context of higher education, the need to engage with administrative, academic and technological units within an organisation can result in the need to use different models simultaneously with the different groups. Diversity within academic disciplines and units drives the need to adopt multiple models, which reflect and use their different institutional perceptions and cultures. Each of these models is considered briefly below in the context of higher education.

17.2.1 Systems Change Models

Systems change models such as Birnbaum's cybernetic model (1988) and Weick's tight and loose coupling concept (Weick, 1976) treat organisations as consisting of highly integrated subsystems. These subsystems respond to changes in the activities of other subsystems and the context with a cascade of further responses throughout the whole organisation. Responses in tightly coupled organisations are rapidly and completely reflected throughout the system. Loosely coupled organisations are able to make changes that have a more localised impact. The resulting dynamic is a tension between efficiency and responsiveness. Tightly coupled organisations are potentially higher performing but hard to change, similar to highly adapted organisms in stable ecological niches. Loosely coupled organisations perform less efficiently but are able to experiment with change without it causing major disruption to the whole system.

Enterprise university models, particularly those informed by quality models such as TQM and 6 Sigma, are intentionally tightening the coupling of their subsystems and operations. This is a sensible choice in a stable environment with predictable change happening at a relatively slow rate or in very narrowly framed businesses. Organisations adopting a looser model of coupling are, in contrast, valuing responsiveness and resilience to the unexpected over efficiency and are adopting a structure more aligned to the wicked problem space. Loosely coupled organisations have the advantage of being able to enact contradictory strategies in different subsystems without causing significant disruption, providing the context for experimentation and continuous incremental change in response to a dynamic environment.

Marginson and Considine (2000) suggest loosely coupled departments within traditional universities enable a form of continuous change, able to be targeted to minimise the external appearance of change while ensuring necessary improvements in academic capability occur. A key factor in the success of such a strategy is maintenance of the core academic ideology giving the university coherence and a sustainable sense of collective identity, which acts as a rationale and metric for the success or relevance of changes made to the subsystems.

17.2.2 Biological Change Models

Biological systems and concepts, particularly complex ecologies, life cycles and the ideas of evolutionary theory, are very attractive to organisational change theorists. Models drawn on perceptions by non-specialists of biological and ecological sciences and on biological metaphors are often used to frame conceptions of change. In many cases, the presumption of rational, directed change bears a closer resemblance to creationism than genuine evolutionary science.

Evolutionary models (e.g. Cameron, 1984; Etzkowitz, Webster, Gebhardt and Terra, 2000; Hiltz and Turoff, 2005) assume that change is dependent on circumstances, situational variables and the environment faced by each organisation. Change is characterised as deterministic and subject to minor influence by people. The result is organisations cannot plan for change but must manage it when change happens. Organisations are held to exist in a homeostatic self-regulatory state, which resists change by constant re-equilibration with the environment.

Evolutionary models come into play as higher education institutions become subject to environmental constraints such as increased accountability for funding, competition from alternative providers, or new learning technologies. The loose organisational structure of many institutions helps them change by allowing accretion of new responsibilities. The diversity of institutions and the range of units within them is a strength as changes have a variety of impacts on individual organisations across a sector. This leads to the consideration of change as

intervention within an ecosystem or ecology. Ecological models are similar to evolutionary models in their use of the pressures of competition and selection, but they focus primarily on the dynamic interactions between diverse actors and the consequent disruptions resulting from the operation of change (Hannan and Freeman, 1977; Postman, 1992).

Cyclical models assume that organisations, like people, have a life cycle of development which takes the organisation through growth, maturity and then decline (Cameron & Whetten, 1983; Röglinger, Pöppelbuß & Becker, 2012). Maturity models like the eMM have an explicit presumption of organisational growth and development, consistent with a life cycle of development. Change is seen as a stage of development and is progressive and rational. The focus is primarily on individual development, with a strong sense of organisational identity and the use of staff development and motivation combined with a supportive management culture. There is a strong sense that people are a critical contributor to the process of change.

The established nature of most educational institutions, particularly universities, means they are 'mature' in their given context. Their life cycle can be measured in at least decades, if not centuries. The nature of the forces for change described in this book suggests this is unlikely to continue.

17.2.3 Rational or Teleological Change Models

Rational or teleological change models are also known as planned change, rational change or scientific management. Change is seen as a consequence of a purposeful activity undertaken by organisational leaders to achieve a defined goal. Change is intentional and occurs as a result of internal features or decisions and not in response to the organisation's external operational environment. Leadership has a central role in this model, in setting the agenda for change, supporting its development and rewarding those involved. A major assumption is change must be managed and the focus is on activities and processes rather than individuals.

Despite the wide acceptance and popularity with managers of teleological models such as that implied by quality models like TQM, they struggle to have relevance for higher education. The ambiguity of leadership and the independence of units and individuals within the university present a significant challenge to planned and directed change models. Teleological models emphasise the value of strategic planning, vision, strong leadership and efficient use of resources. This may not resonate with strongly traditional universities but will be increasingly relevant to publicly funded institutions forced to continually justify their existence. A particular challenge facing teleological models derived from the business environment is their lack of acknowledgement of academic values and institutional core ideologies. This is reflected in academic discontent with the teleologically framed New Public Management model discussed in Sect. 14.4.

17.2.4 Institutional, Resource and Contingency Change Models

Institutional models frame change as an interaction between the organisation and its context, with the drivers reflecting a broadly acting set of forces or conditions having impact across an entire system (Marginson & Considine, 2000; Schierenbeck, 2013). Examples of institutional change models include contingency theory, resource dependency and strategic choice. These vary on the extent the organisation can influence its environment and influence the nature of the engagement of its leaders with features of its environment, when undertaking change.

Contingency theorists, Kauko (2013) for example, view the organisation as completely integrated internally and see change throughout the organisation being driven by reactive adaptation to a relatively unchanging environment. Resource dependency theorists (Jaeger & Thornton, 2005; Pfeffer & Salancik, 1978; Slaughter & Leslie, 1997) treat change as a process of resource acquisition, with the environment enacted by leaders as a tool to serve the procurement of resources. Slaughter and Rhoades (2004) describe the evolution of resource dependency to a wider adoption of pure market approaches in higher education as academic capitalism, emphasising the wider cultural shifts driven by the dominance of a particular model of change.

Strategic choice theorists describe leadership as a change process directly influencing the organisation and its environment through deliberate strategic choices. This approach to change is evident in the impact of the MOOC as a shaping strategy (Hagel, Brown, & Davison, 2008) articulated by MIT and Harvard (Sect. 11.2). The result is a substantial and ongoing change in the nature of the online learning environment many higher education institutions operate within.

17.2.5 Political and Psychological Change Models

Political and psychological change models consider change as a human behaviour, subject to influence and manipulation by others in implicit and explicit change activities. Political models of change (e.g. Kerr, 2003; Marginson, 2004a) propose that change occurs as a result of conflict or tension between opposing perspectives. In the context of higher education, this could be collegiality versus individualism or contention between stakeholders.

Organisations change incrementally and in an evolutionary way within the context of one perspective until a short period of revolutionary change results in rapid change to the opposing perspective. Leadership of change is seen as key, with change perceived as an inherently political process in which only a minority of people within the organisation play a role. Availability of resources is important. Little change occurs when resources are plentiful but when resources are constrained, more people become involved in change activities.

Political models have a certain resonance to those involved in higher education, particularly the university sector, with the plurality of stakeholders and the perspectives held within important stakeholder groups. The explicit acknowledgement of the power influence and relationships have on the organisation is consistent with common perceptions of the academic environment. Political processes commonly depend on information and perception to motivate change.

Psychological change models are subtler and depend on behavioural mechanisms to influence the nature of change. Sense-making is strongly aligned with psychological change as the evolving narrative is intended to drive a sustained shift in the default behaviour of others. Both models depend on a range of tools to influence change including bargaining, raising consciousness, persuasion, influence, and the direct application of coercive power (Bolman & Deal, 1991).

17.2.6 Social, Postmodern and Cultural Models of Change

Social change models are derived from a phenomenological or social-constructivist view of organisations with change occurring as a result of a collective sense-making exercise undertaken by a range of people within the organisation (Buchanan, 2003). The need for change is identified as the result of a form of 'cognitive dissonance', and change occurs in an organic manner. The environment is less important than the perceptions of individuals, and there is no shared organisational reality or culture. Leaders guide the interpretation of the environment from a variety of perspectives and facilitate individual re-examination of identity.

Social constructivism has particular relevance in many educational institutions and key decision-making activities involve the use of collegial groups such as committees. The shared set of academic values and perceptions on what constitutes the institution is a defining feature, particularly of universities. On the surface, models such as Senge's (1990) 'Learning Organisation' appear to have particular relevance to educational institutions. The concept of mimetic isomorphism, where institutions attempt to reinvent themselves as simulacra in the mould of perceived élite institutions, may reflect the aspirations of some university leaders and the consequence of academic mobility and career development. The individual benefits of working at an institution with an élite reputation are perceived as significant and may motivate support for any change seen as attainment of institutional élite status.

Cultural models focus on the irrational or human aspects of organisational change (Trowler, 1998; Becher & Trowler, 2006; Whitchurch, 2008). Organisations are defined by a complex set of shared beliefs, values and myths. In significant ways, this makes organisations difficult to change without those shared values being adapted in major paradigm shifts. A shared culture is a strongly defining characteristic of most educational institutions, not just of universities. This is commonly expressed in the negative, as an explanation for the failure of leaders to achieve planned changes that challenge the established culture. Leaders can motivate change by providing an interpretation of events and history and by creating cultural

activities to stimulate change. Responsibility for change is seen as collective and collegial, but the rate of change is slow and complex. Cultural models of change are a useful tool for sense-making in higher education and have been used throughout this book. They play a role in the case studies provided, with strongly cultural aspects apparent in the Chinese, South Korean, German cases and in the New Zealand ITP-Z and PTE-A examples.

17.3 Sustaining and Disruptive Change

> "Much that we call innovation is in fact renovation, trying the ideas of the past once again." (Levine, 1980, pp. 3–4)

At this point, it is useful to introduce the Christensen model of sustaining and disruptive innovation (Christensen, Scott, & Roth, 2004). Disruption, with excellence, transformation and innovation, has entered the lexicon of modern organisations as a touchstone for those seeking to inspire change through the flawed perspective of transformational thinking. This is not to downplay the significance of genuinely significant disruptions occurring when technology combines with the right context and timing to fundamentally reshape industries such as music distribution and telecommunications. It is to recognise these are rare events and not the routine means by which change occurs. The identification of an average rate of three technological transformations a year (Beninger, 1986, pp. 4–5) is nonsensical and reflects a conflation of ordinary change with overhyped outcomes that inevitably, as with the Virtual University, seem to see a small number benefit financially and little or no real transformation to occur.

Despite these reservations, Christensen's model provides a powerful tool for understanding one of the fundamental mechanisms that seem to generate large-scale changes in sectors of commercial activity. Christensen proposes that changes in business, and in similar large-scale activities like education, are seen as operating in three different modes of innovation: *Sustaining*, *New-Market Disruptive*, and *Low-End Disruptive*.

Sustaining innovations are changes that improve the performance of components of a system without affecting the overall goals and intent of that system. Sustaining innovations improve aspects of a business, service or product by extending existing characteristics in desirable ways. This can result from technological changes such as the use of faster or cheaper computers, better resolution of display materials and a reduction in power consumption. Sustaining changes require very little sense-making effort, as they do not generate any cues for change in how people comprehend an activity. They simply act to reinforce or augment existing models.

Higher education routinely experiences the benefits of sustaining changes. Technology is widely used in universities and staff and students benefit from regular improvements in the speed and performance of infrastructure and tools (Chap. 12). The introduction of high quality, low-cost data projectors into teaching

spaces is an example of a sustaining innovation. In many cases, technology has simply translated existing lecture practice into a new medium, increasing direct and indirect costs in comparison to older technologies but providing a convenient means for teachers to present attractive content. The provision of notices and handouts through an LMS or VLE instead of issuing physical copies is merely sustaining as is the inclusion of multimedia in digital textbooks. Fundamentally, none of these necessarily involve any re-evaluation of pedagogical designs, the roles of students and teachers or the expectations of graduates. In addition to the practical dimension to this improvement, there is a reputational impact. Many institutions market themselves as innovative, actively participating in the modern knowledge economy and working with employers using the most advanced technologies. This often simply reflects the 'technological sublime' rather than any improvement in outcomes.

New-Market Disruptive innovations are what most people consider when thinking about technological innovation. New-Market Disruptive innovations make it possible for users to engage in activities not previously practicable or possible, creating completely new industries or markets for services. The Apple iPod and the supporting ecology of tools and services, including related innovations in CPU, battery, screen and network performance, are an example of a New-Market disruption that has completely changed the way many people expect to experience music. Online delivery of degrees is potentially a New-Market Disruption although the many failures apparent in the experience of the Virtual University and the lacklustre impact of the MOOC suggest realisation of the potential for innovation has exceeded the capabilities of existing providers and the affordances of the current technologies.

Low-End Disruptive innovations occur when existing products or services exceed the needs of a significant potential customer base. New services can therefore be provided in ways that reduce financial or other costs of obtaining the desired outcome. Low-cost airlines are a commonly identified example of low-end disruption, with their focus on cost minimisation, high utilisation of capital assets, and an agile focus on marketing directly to consumers of services that respond rapidly to specific needs (Schlumberger & Weisskopf, 2014). The resulting disruption experienced by the air transport industry has benefited a large number of people who can now afford to fly. The creation of low-cost laptops, or 'NetBooks', and of tablets, is an example of this form of innovation in the computer industry. Interestingly, online degree provision can potentially be an example of Low-End Disruptive innovation if the model adopts the approach of removing unnecessary elements of the learning experience and thus reducing the cost to students.

The real challenge for low-end disruption in education is resolving the tension between the positional values of a qualification and demonstrating evidence of intrinsic impact on student capabilities. As discussed earlier (Chap. 16), it is hard to show the direct value of many qualifications, especially as the student is an important determiner of the outcomes. A minimum set of qualities for industries like air transportation is much easier to define than it is for education, particularly when the expectations and perceptions of a diverse group of stakeholders are considered. Defining a model for low-end disruption in higher education is one

response to the challenge outlined at the beginning of this book and summarised in Fig. 2.1. The dominance of qualifications means the minimum product is likely to be an accredited degree, but this raises the challenges discussed in Chaps. 11 and 12. How can the qualities of this minimum degree be defined to meet the needs of the key stakeholders?

Case Study of Low-End Disruption: CU Coventry

One possible example of a low-end disruption in higher education can be found in the establishment of Coventry University College in the UK (Vasagar, 2011), now renamed CU Coventry (Coventry University Group, 2017). A wholly owned subsidiary of the well-regarded Coventry University, this new college was created to offer a no-frills option for students concerned about cost. For a total fee of £16,500–£19,500 (2015 prices), students get a degree in an accelerated time frame at a much lower cost than through the parent university but without access to a range of library facilities, IT services and other student services regarded as unnecessary for their classes. Instead, they are given a very structured curriculum, offered intensively throughout the year, and including the option to take classes seven days a week and in the evenings.

The range of qualifications and courses is relatively limited and focused primarily on business, accounting and information technology. Although most degrees are offered within the Bachelor of Arts qualification, it is notable that no humanities subjects are listed in the current offerings. Courses are offered in modules and students can flexibly start and stop study as needed. A particularly interesting aspect of their approach is the way it offers a means of circumventing the UK government cap on student numbers. They allow students to register as part-time but take courses for more weeks in the year than is traditional so they can complete their studies in three and a half years. This means students who miss out on their preferred university still have an option to enrol despite the limits being operated (Lynch, 2012).

The positioning of Coventry University College within the higher education sector in the UK is not without its controversies. Although they were rapidly amended after criticism, the initial marketing materials for the programme guaranteed that all students would pass:

> "We have total confidence in our teaching standards, in fact, we offer a **guaranteed pass** to you if you follow our recommended route through your study for professional awards - and if you don't we'll pay for you to have another go." (Coventry University College, 2011, emphasis in original)

Despite this early hiccup, the model has been very successful, winning the The Award for University of the Year in 2015 (Bothwell, 2015) and now operating on three campuses, including London (Whinyates, 2017).

CU Coventry is the higher education equivalent of the 'no-frills' airline subsidiary commonly operated by established airlines as a means of avoiding destructive competition at the premium end of the market. The history of

failure by incumbents of many of these initiatives in the face of competition from independently established low-cost operators (Graham & Vowles, 2006) suggests it is a strategy with a number of risks. Foremost is the possibility that a competitor with deeper pockets will simply undercut further and unsustainably until the business fails. Incumbent organisations are typically not as organisationally agile and aggressive as genuine newcomers and may find themselves simply ineffective operating in the new space.

The low-cost alternative may contribute to the failure of the parent company despite the intention that it be otherwise. This latter problem arises if the parent is unable to use lessons learnt from its subsidiary to evolve its offerings. Established airlines, such as Qantas, also operating low-cost subsidiaries have struggled to remain viable even as their subsidiary achieves a measure of success (Whyte & Lohmann, 2015).

The balancing factor mitigating these risks is the persistence of regulatory and social barriers, which tend to structure higher education regionally and nationally. The impact of these is evident in the failure of the USA venture by the UKOU and in the failure of the Apollo Group to translate its model internationally. Despite the ongoing work of those engaging with Bologna and related international policy shifts it has inspired (Chap. 6), these barriers appear to still protect established universities from new entrants (New Zealand Productivity Commission, 2017).

The decision by CU Coventry to focus on degrees for apprentices (Whinyard, 2017) is an interesting one and suggests they understand the opportunity this semi-independent organisation provides to expand into new markets, ones not currently seen as significant by most universities. The alignment of a degree from a well-regarded university with apprentices and employers echoes the German system. It also suggests a possible model for Korea, addressing the need to shift its system into greater alignment with manufacturing and industry.

The CU Coventry example illustrates one strategy for an established university to engage in low-end disruption. Another approach is shown by Deakin University with its Masters of Professional Practice, offering qualifications designed around ideas derived from digital badges at a significant discount to their main model (Deakin University, n.d.). The decision to undercut their own offerings requires significant leadership, as the natural pathway is to protect existing models. The systems and skills of the organisation are often less suited to the new model:

> Disruption is difficult because the definitions and trajectories of improvement change. What were valuable improvements before the disruption now are less relevant. And dimensions of the product that had been unimportant become highly valued. (Christensen, Horn, & Johnson, 2008)

Sometimes the decision to remain with an older approach, even in the face of significant potential, is the pragmatic economics associated with the sunk costs of capital and existing systems. Frankel (1955) observed this in the failure by UK cotton mills to adopt a new technology developed in America in the first decades of the twentieth century. The cost and disruption to existing business processes and relationships was too high to justify the change, even as the American mills out-competed the English ones in the market.

One of the key factors influencing the impact of technology on an interconnected system is the rate of growth; high rates of expansion make change more affordable as the new infrastructure reflects new technology. In the absence of significant growth, the cost of change also includes the future costs—depreciation—of the existing capital investment, which is being superseded. This is further complicated if some of the changes need to span multiple organisations; in a situation also requiring changes by individual students and their employers for example.

The other complexity affecting the introduction of potentially disruptive change is the relationship between the university and other organisations. As discussed in Sect. 4.6, there are a large number of third party vendors providing key elements of the infrastructure and services of the modern university. Any significant change requires, at a minimum, the ability to switch vendors rapidly and efficiently or the existence of a strong relationship enabling the university and vendor to evolve in partnership. It is more likely that vendors like Pearson will use their relationships to build a possible bridgehead for their own low-end market disruption, offering low-cost courses built around texts and course designs freely given away by university faculty over recent decades.

Although disruptive innovation, particularly the new market form, is commonly associated with technology, it is important to realise the use of any technology is, by default, neither sustaining nor disruptive. The Virtual University was ultimately neither, despite using essentially the same technologies that underpin the MOOC, itself potentially a low-end market disruption. Christensen, Anthony and Roth (2004) suggest that such failures reflect the misalignment of the business model and the student population, simply replicating existing practice with existing students, much as the modern data projector typically replicates the experience of older technologies.

The hard truth within Christensen's conception of change is that when new-market disruptive innovation occurs, it is rare for successful incumbents to survive the transition and those who do often bear little resemblance to their historical form. In making this observation, it is important to distinguish between the reality of the organisation and its brand identity. The rise of the brand as a corporate asset means the name of a company can live on well after it has changed beyond all recognition. IBM, while a highly successful services company, no longer defines the use of information technology in the corporate realm. Kodak, inventor of the digital camera, has effectively been destroyed by its creation. Apple is unusual in having been able to disrupt markets and rebuild itself but in so doing is increasingly less the computer company it was, a reality recognised in their dropping the word from their name in 2007. An as yet unresolved question is whether the university will similarly change into unrecognisable forms even as organisations with the high-profile brands of élite universities continue.

17.4 Conclusion: Change Leadership

> …there is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things. Because the innovator has for enemies all those who have done well under the old conditions, and lukewarm defenders in those who may do well under the new. This coolness arises partly from fear of the opponents, who have the laws on their side, and partly from the incredulity of men, who do not readily believe in new things until they have had a long experience of them. (Machiavelli, 1908, 47–48)

One of the major threads running through this book is the rejection of transformation narratives as a frame for leading and engaging with change in higher education. Many who write about higher education and technology are accused of holding a pro-innovation bias; a technocratic disposition to change preventing them from valuing what they have in a perpetual search for the novel and the new. The forces for change and the various case studies outlined in this book demonstrate there are very real challenges facing universities and some form of change is needed, but it cannot be treated as a purely instrumental or rational process (Abrahamson, 1991).

Rationality can be seen as a defining value of the university but this need to be balanced by humility and the recognition of the limits of our understanding. Sense-making is guided by enacted reality, the need to engage in change so as to develop a deeper understanding informed by evidence and experience. As Thomas observes:

> Making guesses at what lies ahead when the new facts have arrived is the workaday business of science, but it is never the precise, surefooted enterprise that it sometimes claims credit for being. In real life, research is as dependent as the human capacity for making predictions that are wrong, and on the even more human gift for bouncing back to try again. […] We like to think that we take aim and hit targets in taking advantage of a human gift for accuracy and precision. But there is this secret, embedded in the language itself: we become accurate only by trial and error, we tend to wander about, searching for targets. It is being in motion, at random … that permits us to get things done. (Thomas, 1980, p. 50)

Alvesson and Sveningsson (2015) identify a number of problematic features common to organisational change initiatives. These include:

- Overdependence on managerial authority at the expense of more widely enacted agency and responsibility;
- Oversimplification and generalisation of complex contexts to enable quick-fix solutions or the use of 'fads', the silver bullet mentality of technocratic transformational thinking (Abrahamson, 1991);
- Minimisation of the emotional and social elements of the organisation leading to superficial engagement and the promotion of brand and market driven prestige and grandiosity thinking at the expense of richer and more nuanced change; and
- Overemphasis on planning and design over experimentation and experience.

Alvesson and Sveningsson (2015) note that change project success is often claimed for purely political reasons (Jackall, 1988; Pettigrew, Woodman, & Cameron, 2001), even when there is little evidence of actual change or expectation that any changes are sustainable.

The tendency for incumbents is to protect the success they see in the status quo and avoid change until the opportunity for successful change has passed. Another pathway to failure is to outsource change to external partners who can act to minimise change occurring within the organisation in the short term by providing a shortcut to new models or ideas delivered as carefully packaged services. The problem is that in doing so, the university loses the chance to develop skills for change leadership and sense-making, to build the capacity for agility and responsiveness, and to develop systems that value independent thinkers who can lead future change. Instead, in outsourcing change, leadership and opportunities are outsourced as well.

The value of the different models of change discussed in this chapter is in the way they can act as cues for leaders engaging themselves in sense-making for their university and its context. The ITP-Z case (Sect. 14.5) illustrates how a shift from a model of institutional change framed by strategic choice to one framed by social and cultural change enabled leaders to stimulate a shift in the level of organisational engagement with change that had been resisted in various ways over the previous decade. Other models of change will resonate with leaders in different contexts and with those acting either within or without universities to stimulate organisational and system-wide changes.

Kauffman (2003) talks of the 'adjacent possible' as a way to understand the potential for possible changes, which can be made relative to the initial state of a system and its context. Not all change is achievable for all universities and leadership involves the ability to make the pragmatic choices necessitated by tough conditions. The forces for change outlined in this book are not trivial and in many cases represent an undesirable vision for the future (Chap. 20). Recognising the potential of possible changes able be reached is the key insight that can inform sense-making and the management of change in complex organisations.

University leaders need to distinguish the products of change, the visible uses of technology and services that can be outsourced, from the processes resulting in their use and the opportunity for change and growth they can enable. It is entirely reasonable to outsource technologies such as networks and the support of generic computing tools as they lack strategic value (Carr, 2003), but the growing use of third parties to provide the core affordances of education presents a real risk that the sense of the adjacent possible and the capacity to lead and shape change is being lost.

Leaders need to help universities overcome four major challenges if they are to enable a more resilient and agile organisation capable of sustaining the intensity and extent of change needed in the future (Hamel & Valikangas, 2003). The first is overcoming the ideological challenge caused by the conflation of values with mechanisms that obscures a deeper sense of the core ideology of the university (Chap. 14). The cognitive challenge reflects the awareness of the need for change,

the context of the university and the gap between its qualities and the demands being made upon the it (Chaps. 15 and 16). The third challenge is the political reality of the need to engage with diverse stakeholders in order to sustain the operation of the university as it engages in continuous change (Chap. 4). The final challenge is using sense-giving tools, such as strategy and narrative, to build commitment and engagement. This is the focus of the final section of this book.

Part IV
Leading Change in Higher Education Through Sense-Giving

Chapter 18
Part IV Introduction

Abstract Sense-giving is the intentional attempt to change how other people think. Sense-giving is not the creation of a vision or a strategy. It is the process of awakening in others the frame that is subsequently expressed in the collective development of these artefacts of sense-making and the purposeful guidance of an organisation towards a new mode of operation. This chapter introduces the final section of the book, where the focus shifts to action by leadership exploring tools that support leaders.

> The art of leadership lies in redefining the problem, of creating other possibilities for seeing, of creating possible 'alternities,' of creating different meanings of things. In a very critical way, which seems in retrospect always to have been inevitable, the leader is a sense-*giver*. (Thayer, 1988, p. 254)

Gioia and Chittipeddi's (1991) definition of sense-giving as "the process of attempting to influence the sensemaking and meaning construction of others toward a preferred redefinition of organizational reality" (p. 442) positions it as purposeful and aligned to a specific vision for the organisation. They frame sense-giving as intertwined with sense-making in a four-stage process of sense-making/sense-giving—envisioning (sense-making), signalling (sense-giving), re-visioning (sense-making) and energising (sense-giving). Kotter (1995, 2008) provides a recipe for sense-giving, starting with framing the need for change or establishing a sense of urgency and then taking an organisation through a guided process of sense-making culminating in the consolidation and institutionalisation of an organisation disposed to change over stasis. These align closely with Smerek's (2009, pp. 135–146) five sense-giving modes for university leaders: priority setting; framing; creating an inspiring future; construction of crises; and re-labelling and re-organising.

These models elaborate on Lewin's (1952) process, discussed in the last chapter, of unfreezing, change and re-freezing while allowing for the realisation that by re-freezing Lewin was not referring to stasis but a process of consolidation and institutionalisation of a new model. The process of unfreezing varies depending on

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the context but involves a combination of the sense-giving activities listed above including envisioning, signalling and priority setting. It draws on and responds to the intersection of the broad forces for change discussed in this book within the specific context of the institution. This requires a level of focus admittedly hard to achieve in large organisations. Significant change occurred in PTE-A as a result of the challenges described in the Chap. 15 case study (see also Marshall, 2012a). This was very much led by a focused leadership team:

> One of the things that I like is that new ideas can come from anywhere. Like some of my staff – we have a really open policy downstairs where, if my office door's open, they can come in any time. And they do, they come and talk to me about ideas … I mean some things are definitely led from the top and you're expected to do them. Because [Chief Executive] is so passionate about what she does. … but you can see the passion and it flows through. So, yes, a lot of it is led. But at the same time, if it comes from below then she'll make sure that someone takes it on board and leads it through as well. At senior level to make sure there's someone behind it. And the expectations put on me as part of the management are pretty high - to make things happen. So, yes, they are led, but I think it's not dictatorial. But there's definitely a [CE]-influence because of the passion. And I mean that in a positive way rather than a dictatorial way at all. [PTE-A Manager]

Even in a smaller organisation, there is the need to recognise that sense-giving and the resulting change is a collective activity and one of the strengths of the PTE-A leadership is their self-awareness:

> People are more aware of the importance [of e-teaching and e-learning]. And its people who would not normally have really assumed a responsibility or they would have done it because it's their job. They would have gone out, sourced and done this because they were asked to. But I've seen much more ownership now. I'm seeing more ownership in the e-teaching and e-learning. [PTE-A Leader]

The processes of change itself, as discussed in the previous chapters, reflect the core ideology of the university and stimulate a re-examination of how these are enacted. The creation of a strategy, as distinct from the document itself, is an important tool for sense-giving and sense-making, supporting re-visioning, framing and the planning for short-term wins as well as longer-term shifts in organisational activities. Strategy needs to be framed by vision. Smerek's 'creating an inspiring future' and tools like scenario analysis provide a mechanism for exploring how different choices can influence the future trajectory of change. There are many ways these future trajectories of reactive changes lacking a coherent vision can generate dystopian outcomes. Some are explored in Chap. 20.

Ultimately, change must be framed by the vision of the re-energised, strengthened and confident institution society needs every university to be. Sense-giving is not a linear process. It is a cycle of continuous re-engagement with the wicked problems that continue to challenge universities. This final section describes the role that strategy plays in shaping the future of a university. Strategic planning and sense-giving approaches are presented along with tools that enable leaders to engage with their organisations in the development and sustaining of effective change strategies using technology to enhance the core values and mission of the university.

Chapter 19
Strategic Planning as Sense-Making

Abstract Universities need to develop a new strategic discipline so they also can adapt to constantly changing circumstances, confront new facts and find creative ways to solve problems. Strategy is ultimately a tool for sense-making, sustaining and growing organisational capabilities for change. The challenge of strategy in a rapidly changing and ambiguous future is explored through ideas including the concept of black and grey swans and the impact of the normalcy bias on strategic thinking. Porter's five forces strategic planning tool is used as a lens for strategic sense-making generating a set of analytical prompts that integrate the material presented earlier in the book. The use of these prompts by leaders engaging in sense-making is illustrated through application to the strategic analysis of MOOCs building on the earlier analysis of the virtual university lessons in the modern MOOC context.

> Simple understandings lead to general rules to be applied in all situations; complicated understandings suggest that situations differ and that reliance on experiences of the past may prove dysfunctional. […]. Only complicated understandings can see the many and conflicting realities of complicated situations. (Birnbaum, 1988, p. 209)

This book has traversed many ways that an attempt to define a strategy can fail through the adoption of technocratic ploys. The virtual university case studies analysed in Chap. 9 and the MOOC in Chap. 11 illustrate the need to respect stakeholder perspectives and to recognise technological change is not a strategy in itself. The critique of the isomorphic pursuit of ranking and reputational grandiosity in Chap. 16 shows that marketing and branding, while attractive, lack any substance as strategies for sustainable change. The analysis of the changing scale and scope of higher education and the associated changes in the social and economic value of qualifications discussed in Chaps. 3 and 6 mean that even a simple strategy of growth is ultimately likely to see the university fail. Leslie and Fretwell (1996) note:

> … being distinctive in a market in which there is diversity among institutions is healthy. Conversely, when institutions become more and more alike, when the market provides 'buyers' with little to choose from, failure of the weaker among the 'conforming' institutions

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> is more likely. There is considerable evidence that institutions that have tried to become less distinctive and more conforming while nevertheless broadening the base of their enrollment have courted decline. (p. 16)

The value of strategically positioning a university should now be apparent, including the acknowledgement of the key stakeholder perspectives that inform the patterns of organisational behaviours promoted through any proposed change. The challenge is the extent to which a university strategy can support a plan for action in a space shaped by the ambiguity and uncertainty of the wicked problem outlined through the rest of this book. Mintzberg and Quinn (1995) propose that strategy fulfils five possible alternative roles for an organisation:

- It can be a *plan*, reflecting the military model of strategy as defining the course of action for a given set of situations with the intention of achieving a specific set of goals;
- It can reflect a very tightly defined objective, such as a crisis, and thus be a *ploy* intended to address a specific outcome, or a shaping strategy defined to spark a reaction from others;
- It can proactively articulate a preferred *pattern* of actions and behaviour, perhaps aligning the organisation with a set of values or a specific change philosophy;
- It can *position* the organisation within its context and in relation to other organisations and key stakeholders, reflecting a combination of scholarly, financial, political and geographical features that describe its activities; or
- It can provide a *perspective* of an internal understanding of the key features of the organisation, such as an assertion of its core ideology.

Applying a sense-making frame to strategy suggests the primary value of strategic planning is the impact the process of strategic sense-giving and sense-making has on organisational capabilities for change. The adoption of Mintzberg and Quinn's roles, or of combinations of them, can be seen as a tool for sense-giving, influencing the behaviours of those involved in the strategic planning process and responding to its articulation and application.

A particular challenge for universities is the way the autonomy of academic action and the often disaggregated and devolved state of decision-making creates a greater need to motivate and stimulate engagement with a strategy for change. Drucker (1999) discusses how in many organisations, the highest performing staff are essentially volunteers, exercising a great deal of freedom and choice in their employment and able to choose to apply their energies—or not—to any particular strategy; this is particularly true in the university. Frustration with this pragmatic reality underpins much the negativity discussed in Chap. 4, and the perception that academics are an impediment to strategic change. Fullan and Scott's (2009) mantra of "listen, link, lead" reflects a counter argument emphasising the importance of engaging with academics and respecting the need to adopt less autocratic models of leadership for change in universities.

Eckel and Kezar (2003, p. 16) argue that strategies need to be about ideas which take universities towards new ways of thinking and operating rather than simply reconfirming established norms: '[i]nstitutional change leaders should intentionally design change strategies that facilitate new sense, leaving behind old ideas, assumptions, and mental models'. Strategy normally has a strong narrative component (Dunford & Jones, 2000; Fenton & Langley, 2011), which can be seen as supporting the sense-making processes of retrospection, but it must also be a tool for action if change is to occur. The problem is balancing the rational planning aspects of strategy with the features of the wicked problem. This chapter begins by exploring this tension, considering the strategic implications of ambiguity before turning to a model of strategic analysis enabling organisational volunteerism and sense-making.

19.1 Strategy and Uncertainty

> When the future is unknowable, the foremost planning objective must be learning, not accountability (Govindarajan & Trimble, 2004, p. 70)

At first glance, the concept of a strategic plan in a highly dynamic environment with the ambiguity and inconsistency of a wicked problem seems like an unreasonable attempt to assert rationality. Strategic planning is normally predicated on the assumption that deliberate, planned action produces more satisfactory outcomes for the organisation than simply reacting to events (Mulhare, 1999). This rational conception of strategy is strongly associated with what March and Weil (2005) term the 'ideology of leadership'. They describe this as the mindset that 'emphasises reason more than foolishness, strategy and vision more than serendipity and improvisation…Action is seen as intentional, driven by the evaluation of its expected consequences … Within such an ideology…[leaders] need to believe they can make a difference' (March & Weil, 2005, p. 4).

Educational institutions are described as prone to strategic paralysis through their attempts to completely analyse situations prior to acting on them (Christensen, Horn, & Johnson, 2008). The pace of technological change and the intensity of the political and economic pressures upon institutions mean a strategic response needs to involve action early, and often, consistent with the sense-making property of enaction. Fullan and Scott (2009, p. 26) suggest institutions adopt a 'ready, fire, aim' attitude; strategy should be informed by and evolve rapidly in response to experience, rather than specified completely prior to execution. Adopting this mindset, strategic planning can be seen as the first stages of strategic action and the implementation of a strategy acknowledges the importance of ongoing planning and change.

Much of this book has described forces for change that, while unpredictable in many respects, are knowable in many other ways. They represent a wicked

challenge of interrelated complexity. However, universities also face less predictable change.

In September 2010 and again in February 2011, two major earthquakes hit the New Zealand city Christchurch. These were completely unexpected as Christchurch was believed by many to be relatively immune to the risk of earthquakes, particularly in comparison to other New Zealand cities. The impact was unpredicted and serious, for the city and for educational institutions (Stevenson et al., 2011). Following the quakes, Christchurch-based tertiary education institutions struggled to deal with the consequential issues, including the need to maintain revenue streams while rebuilding facilities. A particular challenge has been the flight of international, full-fee, students from an area now perceived to be at risk. Another is the substantial increase in insurance premiums and issues with insurance companies taking long periods of time to settle claims while aftershocks continue to damage buildings.

PTE-A was one of the educational organisations operating in Christchurch at the time of the quakes:

> When Christchurch happened, it brought it into stark reality where I think, as a college, we were dependent on moving along – having structures but not really admitting that we need a risk management framework and we need to create certain policies and embed them in the college so that we are actually going to formally look at risk management, business continuity, disaster recovery. So I think that some of the things we were talking about [before the earthquake], for myself and to a certain extent for the IT team, were kind of esoteric, but were brought into stark reality. … we put ourselves in the position of some of our colleagues down in Christchurch who lost everything. They lost their student records, their ability to deliver their courses…they literally lost everything. [PTE-A Manager]

The eMM benchmarking analysis of PTE-A triggered a strategic response addressing the dependence of the organisation on its IT systems, which had occurred gradually through incremental change (Marshall, 2012a). This saw key organisational systems changed just prior to the first earthquake. Systems were sited and managed in a way that meant that physical disruption to the servers was a minor issue and no data was lost. This supported the process of renormalisation following the earthquake for PTE-A staff and students. Once staff and students were able to return to learning and teaching activities, something they wished to do as a return to normality, they were able to do so easily, using systems they were already familiar with:

> Interesting how many of our academic staff said 'I want to get back in' because this is real. This is here, this is tangible, this is consistent, this is what we know. Let's put back in the things that we can control. The things we can't control are there but when we know we're doing the stuff that are consistent in our lives, it's helping us with the other'. So that's been good. [PTE-A Manager]

Christensen's sustaining change is built around the presumption of incremental improvement. Strategic and operational planning occur by assuming the institutional context and capabilities will change in ways similar to the types of change experienced in the past. Tomorrow will change from today in a manner very similar to the change from yesterday. There are two major problems with this presumption,

anchored in the 'normalcy bias' (Omer & Alon, 1994); the human tendency to underestimate the extent of disruption caused by unexpected events and to overestimate the ability of individuals and organisations to respond effectively to the consequences.

The first is what Nicholas Taleb (2007) calls the 'black swan': a change bearing no apparent relationship to the state of the system immediately before it. Often a black swan is some form of disaster or crisis. Black swans by their very nature cannot be planned for. The only viable strategic response is to build resilient organisations that can dynamically cope with the unexpected. Those Christchurch institutions with robust organisational and technological infrastructures, including well-trained staff, found themselves able to respond easily by switching to fully online modes once staff and students were ready to restart teaching and study. Institutions without such well-prepared staff and systems were also able to move online to some extent but struggled to do so, given the general disruption being experienced in the city.

The second problem is the pace of change. It is natural to look at the historical change an organisation has experienced over a period of time and to project that same degree of change into the future over a similar time period. Not all change takes this form. Many of the changes discussed in earlier chapters represent exponential and, in the case of technology, multiple-exponential change.

Exponential change is harder to plan for as its pace accelerates greatly over time, creating the sense of the 'radically unknowable' world described in Chap. 8 by Barnett (2000). Analogously, if you imagine a plant invading a lake and doubling its extent daily, there is very little visible change initially, but after some weeks of apparent stasis, the lake can go from being one quarter covered to completely so in two days of rapid change. Double-exponential change compresses this last phase to mere minutes.

Unlike black swans, exponential and double-exponential change can be planned for. Doing so requires the ability to identify situations where the pace of change is generating a potential Singularity and creating organisational structures capable of rapid change. These rapid and ambiguous changes are described as grey swans; high impact change that cannot be directly planned for but which occurs frequently, requiring a process of risk management and mitigation (Mohammed & Sykes, 2012).

In higher education, such rapid change can occur when a new pedagogical model replaces an older one, often as the result of unintended consequences arising from external changes. PTE-A experienced this when its strategy of gradual introduction of an alternative, fully online mode as a complement to its existing face-to-face and correspondence modes was unexpectedly accelerated (Chap. 15). Accreditation changes in the expectations for students and their use of technology led to a sudden change in the proportion of students engaging online, and within eighteen months, the majority of PTE-A's students were studying completely online. Careful planning and the development of flexible and responsive systems saw this organisation cope well with the rapid change needed.

Recent experiences with the exigencies of the world economic crises suggest many universities struggle to respond rapidly to changing external conditions. Experience working with staff suggests they struggle to keep up with the rapid pace of technological change. In many cases, this struggle is not only with the practical aspects of using the technology properly but a more comprehensive manifestation of stress (Rushkoff, 2013; Toffler, 1965). The struggle includes not understanding the nature of the technology; not being able to imagine the consequences of its use; not being able to imagine the impact it will have on the processes and outcomes experienced; and not being able to keep up with the ongoing evolution and development of further changes. The challenge for those interested in planning for the future is how to represent the implications of ongoing change in a form that enables non-specialist engagement with the possible alternatives at a pace sufficient to cope with the inherent complexity and personal implications. The organisational capacity that needs to be developed and supported is analogous to that of our students:

> *The Yale Report of 1828*—an influential document written by Jeremiah Day … distinguished between "the discipline" and "the furniture" of the mind. Mastering a specific body of knowledge—acquiring "the furniture"—is of little permanent value in a rapidly changing world. Students who aspire to be leaders in business, medicine, law, government or academia need "the discipline" of mind—the ability to adapt to constantly changing circumstances, confront new facts, and find creative ways to solve problems. (Levin, 2010, p. 71)

Universities need to develop a new strategic discipline so they also can adapt to constantly changing circumstances, confront new facts and find creative ways to solve problems. McGrath (2013) suggests that organisations increasingly need to relate the tempo of their strategic plans to the pace of change as an attempt to cope with what Barnett (2000, p. 76) called the 'supercomplexity' facing university leaders. The problem is overcoming the initial sense-making response, which sees organisations frame complexity in ways that are increasingly disconnected from the reality of their context:

> …we construct an expected world because we can't handle the complexity of the present one, and then process the information that fits the expected world, and find reasons to exclude the information that might contradict it. Unexpected or unlikely interactions are ignored when we make our construction (Perrow, 1999, p. 214)

These unlikely or unexpected interactions are the new normal (Hinssen, 2010) of modern organisations and need to be recognised as, often transient, cues for strategic shifts. In many industries, strategy needs to relate more to transient shifts and opportunities than attempting to sustain a substantial long-term competitive advantage built around the maintenance of the status quo. Higher education currently has some insulation as a consequence of the length of time it takes for students to complete qualifications, but as the MOOC and digital badging illustrate, there is growing interest in disaggregating qualifications into shorter and more flexible forms.

Responding to a transient advantage depends upon the ability of the organisation to rapidly respond to changes that are unlikely to be as apparent to leaders as they

are to the staff involved in the direct operations. Much of the advice given to leaders in this space hinges on the active involvement of a broad section of the organisation's workforce in identifying opportunities for entrepreneurial growth and experimentation within a set of broad directions (McGrath, 2013). Sense-giving depends on a structured and compelling narrative, which stimulates sense-making by a wide group of stakeholders. Porter's Five Forces, described in the next section, are one way this conversation can be openly framed, allowing for a diverse set of perspectives to be shared and used to plan for future change.

19.2 Porters Five Forces as a Tool for Sense-Making

Porter's Five Forces model (Porter, 1979, 1985, 2008) is a tool for strategic analysis, which can be used to support strategic sense-making (Marshall, 2013a).[1] Porter's model frames strategic analysis of the structure of any domain—such as higher education—using the eponymous Five Forces. These forces are the *Threat of Substitute Products or Services*; the *Threat of New Entrants*; the *Bargaining Power of Buyers*; the *Bargaining Power of Suppliers*; and the *Rivalry Among Existing Competitors* (Fig. 19.1). Complementing Porter's forces in the analysis of higher education are the forces influencing the wider context of higher education.

The forces identified by Porter's model are apparent in the lessons drawn from the experience of the Virtual University (Chap. 9) and the MOOC (Chap. 11). Figure 19.2 shows the alignment between the historical analysis and the strategic framework provided by the model.

Each of Porter's forces is examined below and strategic prompts for analysis by universities identified. The quality as sense-making questions provided earlier in Table 5.2 (Chap. 15.3) is used as a starting point for this, in combination with questions derived from the application of Porter's model to higher education (Marshall, 2013a).

19.2.1 Porter's Threat of Substitute Products

Substitute products are alternative mechanisms achieving the same outcomes valued by the stakeholders making the 'buyer' choice. Substitutes are not the same product offered by a different organisation (see the *Threat of New Entrants* and *Rivalry Amongst Existing Competitors* below). Examples of substitution in higher education include the virtual university initiatives, MOOCs and alternative models such as the CU Coventry case study discussed in Chap. 17.

[1]This section of this chapter is based heavily on the analysis presented in Marshall (2013a).

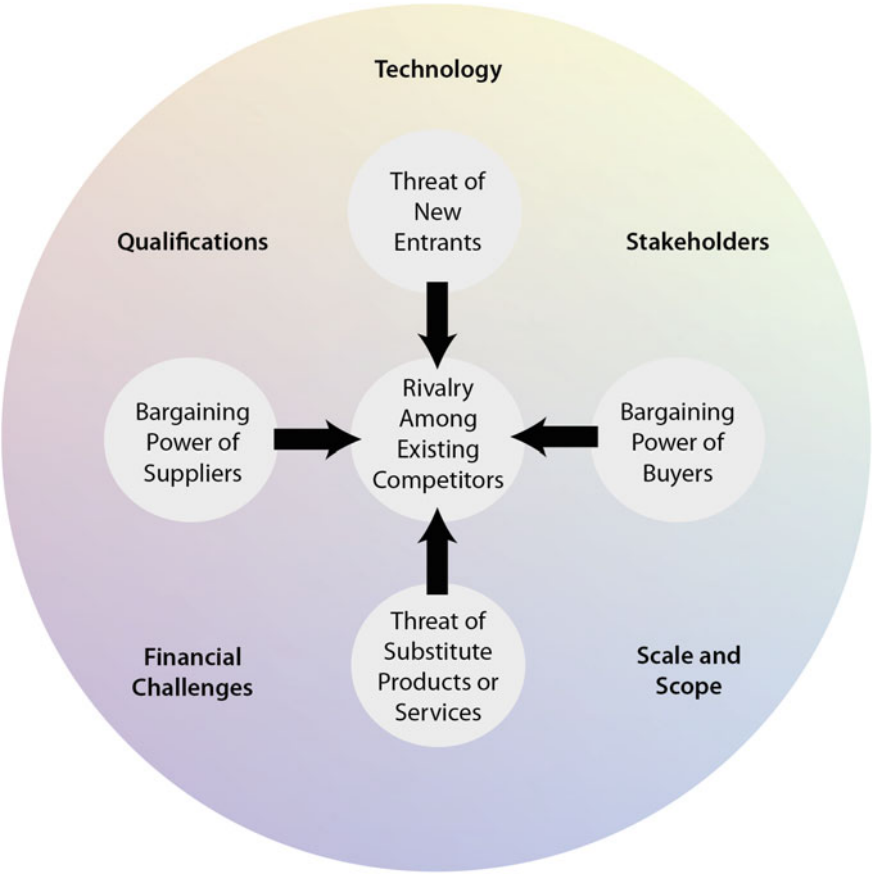

Fig. 19.1 Porter's Five Forces contextualised to higher education (modified from Porter, 2008)

Substitution can be seen in terms of Christensen's model of new market and low-end disruptive innovation (Christensen, Scott, & Roth, 2004) and raises the question of how different stakeholder perceptions of the price-performance outcomes of the resulting education, certificate or qualification are assessed and balanced. The stakeholders in existing models of higher education already struggle to agree on what 'quality' means and how the performance of organisations can be measured (Chap. 15). Introducing completely different education mechanisms will only heighten these existing conflicts. Under mass education, higher education is dominated by economic and employment outcomes preferred by employers and government (Chap. 4). Other stakeholders may view alternative mechanisms with suspicion, either out of concern that this is further privileging the existing dominant stakeholder salience or that it is not valued by employers and consequently compromises the perceived value of the resulting qualification (Chap. 6).

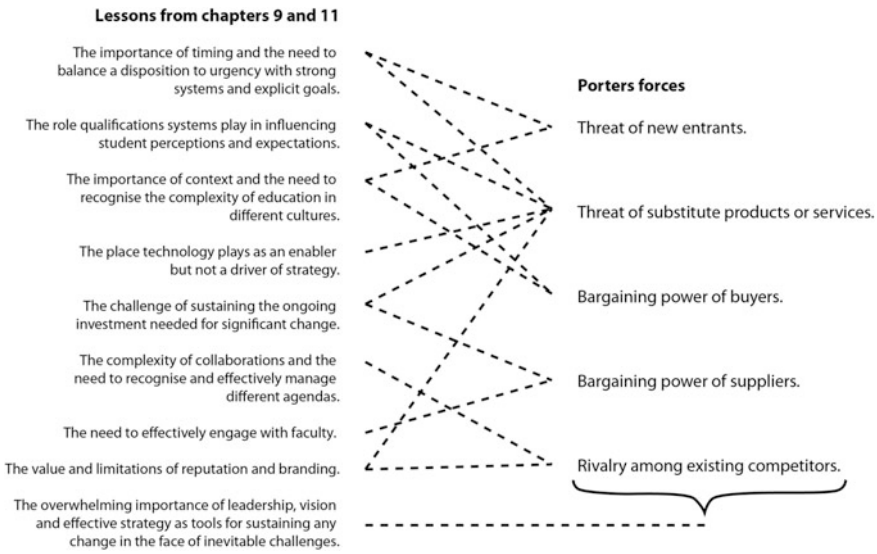

Fig. 19.2 Mapping between the lessons from the Virtual University and MOOCs and Porters Five Forces

The strategic questions posed in Table 19.1 all share a common thread, the extent to which the university understands the impact it has on the educational outcomes of learners, individually and as groups within society. Engagement with the answers to these questions should start from a reflection on the core ideology of the university and needs to involve active participation by learners and salient stakeholders.

Substitution is not merely an issue of a changing experience of learning; it needs to recognise the interconnected systems of global society that are influenced by education. Much as England's cotton mills were unable to be updated with new technology because of the systems they were part of, new models of education need to interoperate efficiently with wider social and economic systems. This is not a recipe for complacency. It suggests a focus of strategic planning on how the university sustains and strengthens those wider systems connections.

19.2.2 Porter's Threat of New Entrants

New entrants to any industry bring new and different capabilities and are energised to compete with established organisations. They often draw on success in other domains to access resources unavailable to the existing organisations. The lack of previous involvement in the new domain means new entrants are not encumbered by investment in old approaches, financially or psychologically, and they are better

Table 19.1 Strategic prompts for universities regarding the threat of substitute products or services (modified from Marshall, 2013a). Codes, e.g. IL1, are cross-references to Table 5.2

Context
1. What is the personal situation of the learner and what is motivating their desire to learn? (IL1)
2. What are the fundamental qualities of the institution's educational offerings that are valued and differentiate the institution from others operating in the same sector?
3. What legal and economic factors affect the viability of substitutes and what risks exist for political influence changing those factors?
Input
4. Are external organisations using technology already, or potentially, in ways that pose a risk for substitution for key institutional offerings?
5. What is the university doing to guide learners into appropriate programmes of study? (UL2)
6. What defines the contribution the university makes to the learner population being served? (UL3)
Process
7. How are the university's activities integrated into wider economic and social systems?
8. How is the value of the institutional educational offerings communicated to each of the key stakeholder groups and differentiated from substitutes?
9. Are there ways by which technology creates substitutes for existing activities in ways that strengthen the institution?
10. What activities sustain the learner, motivates their learning and generates outcomes they value? (IL3)
Output
11. What evidence is the university using to demonstrate the value of its activities within interconnected social and economic spheres?
12. What evidence is the university using to demonstrate the impact of their activities on the learner? (UL6)
Feedback
13. What helps the learner understand the impact of their experience and motivates them to continue learning? (IL5)
14. What is the university doing to help the student choose the next steps for their education? (UL7)

positioned to question established wisdom and assumptions that may no longer hold. The implied threat in the appearance of new entrants is a reason for barriers to entry.

Higher education has traditionally used the processes of accreditation as a substantial barrier to entry and this worked well in the previous century. Its fundamental weakness is accreditation value depends entirely on societal acceptance that accredited institutions are substantially better than those not formally accredited. New entrants can be existing stakeholders, historically operating in different spaces, such as vendors. The questions in Table 19.2 help guide the analysis of the

existing context, to test the reality of the barriers protecting against new entrants and to help identify entry activities that might already be underway and previously un-noted.

A significant barrier to new entrants is the incumbent institution's access to a substantial resource of expert pedagogical and subject knowledge in the form of staff, although, as discussed in Chap. 4, many teaching staff are on contracts giving them plenty of scope for employment by other providers. The incumbent also frequently has legal advantages with copyright laws permitting the use of third-party-owned content by formally established educational institutions. Third parties are providing a growing proportion of the teaching materials used in undergraduate education. As discussed in Chap. 6, vendors such as Pearson are perfectly capable of directly offering qualifications themselves. Any significant evidence of this approach working well at lower cost to students will be very attractive, not only for students but also to public funders of education. This could see many of the regulatory barriers to new entrants quickly withdrawn, particularly if the risks of misuse of public student-aid funding are addressed.

The possibility of retaliation by existing providers against new entrants is unlikely to be of significance in higher education. Institutions appear to have very little political or financial power to influence outcomes when operating under the mass model and, as discussed in Chap. 5, they generally lack the financial resources and management capabilities needed to respond effectively. Any attempt to retaliate against new entrants could be highly risky for universities in some countries. It will be seen as further evidence of institutional disregard for the real challenges of affordable education opportunities for all and potentially will attract the opprobrium and retaliation of governments and society in general.

Some countries, such as China and Korea, with highly regulated (James et al., 2011) or strongly conservative attitudes to higher education are less likely to have concerns about the operation of new entrants but this will depend on the specific context. The experience of virtual university initiatives, such as GUA/NextEd (Chap. 9) and the criticisms of neocolonialism made of the MOOC (Chap. 11), illustrate that new entrants are not necessarily an inevitable consequence even of widely hyped potential shifts in provision.

The strategic threat posed by new entrants in higher education is likely to only have dramatic impact in the immediate future if it presents a viable alternative at sufficient scale to influence the perceptions of the salient stakeholders of a given university. This depends on the combination of modes the university is operating within. Élite universities are the most secure in this regard, as are the élite programmes of universities operating in multiple modes, provided the underlying financial model is robust and not dependent upon cross-subsidisation from other activities that may be vulnerable to disruption.

Over the medium term, the strategic risk posed by new entrants is much less certain. The current wave of nationalism notwithstanding, it remains possible that globalised models of education will emerge. This is particularly possible in the more vocationally aligned spaces, such as accountancy, finance and IT, where there is value in new models to support businesses growing their skill base as part of their

Table 19.2 Strategic prompts for universities analysing the threat of new entrants (modified from Marshall, 2013a)

Context
1. What role is the university playing in the system and how does that role relate to those of other stakeholders at a system level? (US1)
2. How is the institution managing its strategic relationships with other organisations that potentially could become new entrants?
Input
3. What differentiates the university from other universities? (UU2)
4. What is the university's strategy for developing and sustaining a competitive advantage in expertise in areas important to key educational offerings?
5. What strategies are in place to mitigate any risk that new entrants could affect specific student cohorts?
Process
6. What is the university doing to maximise their own and other university or stakeholder contributions to the success of the targeted learner population? (UU4)
7. What is the university strategy for the ownership and control of intellectual work relating to education and how are staff supported in working with content and resources licensed in various ways?
8. What strategies are in place to mitigate any risk that distribution channels might be influenced by new entrants with conflicting agendas, such as existing partners in related industries (e.g. publishing and technology)?
Output
9. Who are the other organisations influencing the university's own offerings and how is that influence understood and managed?
Feedback
10. What helps the university continuously re-evaluate their role in the system and respond with systematic improvements? (US5)
11. What are universities and stakeholders doing to strengthen their collaboration and address gaps in the services provided to the targeted learner population? (UU8)
12. Are there ways by which the university can act as a new entrant for parts of its business?

own strategies for sustaining competitive advantage. The various forces for change create potential spaces for new entrants, particularly those able to use technology and agile organisational models to act on transient advantages created by change and slower moving incumbent institutions. The primary counter to this is a combination of strategies enabling agility and a disposition to action, while strengthening systems that reflect the core ideology of the university and align with its roles in the wider systems of higher education and society valued by key stakeholders.

19.2.3 Porter's Bargaining Power of Buyers

The power of buyers is a strategically complex area in higher education as it reflects the influence and impact of the disparate group of key stakeholders identified in Chap. 4. Although students generally make choices about their education and are always the stakeholder with the greatest legitimacy and urgency, they do so in a space highly influenced by other stakeholders, including their own families and others associated with the mode—élite, mass or universal—they are engaging with. The experience of various virtual university providers, including the UKOU with its US operation (Sect. 9.1.5), illustrate the problem of translating a model from one context to another in ways that align with stakeholder expectations.

Governments as major stakeholders in publicly funded higher education are also highly influential as buyers, often defining the fees that can be charged and establishing the legal and regulatory standards that apply; in essence constraining the range of business models that can be legitimately used. Accreditation requirements enforce buyer power, but for established universities, these also act as a mechanism that stabilises the strategic environment.

The other major buyers, particularly under mass education, are employers. Additional to the obvious influence over the economic impact of qualifications for students, employers contribute to the content and delivery of education, directly and indirectly, through setting industry standards, providing internships, and working as partners advising and contributing to courses.

The quality as sense-making questions presented earlier in Table 5.2, focusing on the individual learner and on the university's engagement with their experience, provide the background information necessary to inform a strategic analysis of student concerns as buyers (Table 19.3). The concerns of other stakeholders, including the positioning of the university within the broader system it is part of, are salient in understanding the other strategic influences affecting student choices.

The discussion on the financing of higher education in Chap. 5 describes the landscape many universities are experiencing. An important strategic question is the extent to which economic and cost elements drive priorities for any given university, influencing the perceptions of learners and other key stakeholders regarding the value and attractiveness of the university and its programmes. The challenge of defining quality discussed in Chap. 15 is relevant as discussing value is meaningless without a shared understanding of the qualities it is representing and the measurements used as evidence.

An increasingly important strategic consideration for many universities is how they help learners realise the value of their education. As mass systems transition towards universal modes, there is a need to show how the university can make an ongoing contribution to success for individuals and society beyond the initial credentialing of young people. As education becomes more integrated into adult lives, there is an increasing need to engage with employers, communities and governments to create and sustain an environment that encourages and supports ongoing education in place.

Table 19.3 Strategic prompts for universities analysing the bargaining power of buyers (modified from Marshall, 2013a)

Context
1. What strategies does the university have in place to manage and influence the perceptions and expectations of each key stakeholder group regarding the university's activities?
2. How does the university manage the perceived cost and access to higher education it provides?
3. What is the personal situation of the learner and what is motivating their desire to learn? (IL1)
4. What is the university doing to understand the context of the individual learner? (UL1)
Input
5. What opportunities are there to influence the revenue being generated from learners?
6. In what ways do changing the scale and scope of activities affect the revenue of the university?
7. What is the university doing to guide learners into appropriate programmes of study? (UL2)
8. What defines the contribution the university makes to the learner population being served? (UL3)
Process
9. How are the costs of each learner's education managed?
10. What is the university's strategy for developing the skills of its existing faculty and other staff, and how are technology strategies enhancing or supporting this?
Output
11. How does the university help the learner recognise the success they have achieved?
12. How are a range of stakeholders experiencing the outcomes of educational activities? (UU5)
13. What evidence is the learner using to demonstrate the value of their experience? (IL4)
14. What evidence is the university using to demonstrate the impact of their activities on the learner? (UL6)
Feedback
15. What helps the learner understand the impact of their experience and motivates them to continue learning? (IL5)
16. What is the university doing to help the student choose the next steps for their education? (UL7)
17. How do learners influence the priorities for change and continuous improvement by the university? (UL8)

19.2.4 Bargaining Power of Suppliers

Powerful suppliers transfer costs to the enterprise or retain power and control over key aspects of the industry. Higher education is unusual in that the major supplier is the faculty, who in some models are the collegial owners of the institution and responsible for much of the leadership.

Faculty are experts in their particular subject and discipline. They are afforded a degree of control and flexibility in their work well beyond the norm for employees in many professions. Faculty often have considerable autonomy in their choices of the technology used in their work and by their students, and in the content and structure of courses and qualifications. In practice, as discussed in Chap. 4, the situation is more complex. The majority of institutions have no single cohesive and collegial faculty body, and faculty power is often diluted by conflicting perspectives. The growing use of contractors and part-time staff in teaching roles further weakens the strategic influence of faculty in many universities. Despite this, engagement with faculty is a key factor influencing the outcomes of virtual university and MOOC initiatives, and faculty remain a key determiner of university reputations through their research.

The complex web of supplier activities undertaken by a major vendor like Pearson (Fig. 4.2) demonstrates the potential complexity that needs to be engaged with when asking the questions in Table 19.4. The relationship with all suppliers, including faculty, needs to be actively and continuously tested and used to advance strategic thinking by the university leadership. An important question is the nature of the involvement of suppliers in the strategic planning process and the value they can contribute to the sense-making process.

Vendors represent the primary supplier to universities and, as discussed in Chap. 4, they have a powerful and diverse range of interests potentially reflecting strategic challenges and opportunities to the university. There is also the important role vendors play in creating and maintaining much of the technological infrastructure of the modern university through direct purchase, service and outsourcing relationships (Chap. 12). There are choices in this space, with the individual relationships varying in nature from mere purchase and supply, through to a more active partnership generating guidance and opening up the possibility of new activities. This guidance needs to be examined carefully as several of the virtual university cases illustrate how suppliers misused their position for gain at the expense of their university partners.

Universities operating at the large-scale level of mass education or entering into the universal space, as part of MOOC consortia for example, must actively consider how much the organisation can usefully disaggregate to manage the risks and requirements of success and to mitigate the impact of failures. Core ideology is an important heuristic for assessing the strategic opportunity in answers to these questions and for ensuring the governance and operational management of supplier relationships are successfully framed as strategic plans evolve.

19.2.5 Rivalry Among Existing Competitors

Competitor rivalry is a complex issue. The individual institutions comprising the publicly funded education sector in many countries should ideally be working collaboratively and cooperatively to deliver the greatest value possible for the

Table 19.4 Strategic prompts for universities analysing the bargaining power of suppliers (modified from Marshall, 2013a)

Context
1. How does the university maintain its awareness of the capabilities of current and potential suppliers?
Input
2. In what ways are relationships with key partners being used to advance both the strategic and operational interests of the university? 3. What resources are being invested into educational activities? (UY2)
Process
4. What is the university strategy for engagement with its faculty regarding the strategic direction for its offerings and the role that technology might play formally and informally in the experience of teachers and students? 5. How is the university using its vendor and outsourcing relationships to build and sustain its key capabilities? 6. What is the university doing to maximise the effective and efficient use of the resources invested in educational activities? (UY3)
Output
7. What evidence is there to show the value being added through each supplier relationship? 8. What evidence is the university using to show that resources were used effectively and efficiently? (UY4)
Feedback
9. How is the relationship with suppliers generating new options for activities that sustain and strengthen the university? 10. How is the university managing the risk of strategic losses resulting from operational priorities or expediencies associated with supplied activities? 11. What is the university doing to improve its capability to educate learners now and in the future? (UY6)

taxpayer. As a result of the pressures caused by the changes experienced in many universities over the last few decades, universities find themselves forced to engage in a form of market competition intended to stimulate efficiency and entrepreneurship. Nationally and internationally, institutions compete for reputation, to attract the best and brightest students and faculty, for research grants, and on various ranking and performance tables maintained by governments and media companies.

The consequence, as discussed in Chap. 16, is many universities actively compete for reputational advantage and invest heavily in marketing strategies aimed at influencing student choice. Fundamentally, this represents wasted investment because all universities are working equally hard at lifting their performance. This rivalry tends to be geographically bounded as institutions commonly jostle over potential students. Over time, a form of educational ecology has evolved. Changes

in government control of student enrolment can lead to conflict but this situation is mostly stable.

The strategic analysis of rivalry with existing institutions, including those offering current alternatives to formal education and qualifications, needs to consider the context within which it currently operates and how that relates to the activities of other stakeholders engaging with that context (Table 19.5). Differentiation is often important in focusing resources efficiently in ways that maintain or strengthen the university's position. This can reflect focus on different student populations, disciplines, industries, regions or model; including the use of different technologies and pedagogical structures—face-to-face, distance, online—and different scales—élite, mass, universal.

Input, process and output aspects of the analysis need to consider how the university actively maintains an awareness of its environment and the changes others are making. One of the important benefits of collaboration is the way it provides a continuous flow of information from other collaborators. The movement of staff between universities is a normal feature of global higher education, and these people are providing important perspectives on the activities of potential and actual rivals.

The university needs to consider the way its activities and impact are perceived by the salient stakeholders. The nature of higher education as a social institution means some forms of competitive activity are risky in reputational terms. The feedback prompts in Table 20.1 emphasise the need to continuously engage with the context identifying ways that change is enabling new ways to sustain or grow the university's operations. This includes the ways it influences the behaviours and perceptions of key stakeholders to shape that context in ways favourable to the university.

19.3 Using the Cues from MOOCs to Illustrate Strategy as Sense-Making

The questions outlined in the tables above are general in their framing, reflecting the international diversity of universities and contexts. A strategic analysis can be sharpened and focused by using these questions in combination with a specific agenda or proposed potential direction, testing the alignment between the various strategic threats and new ideas in order to identify opportunities and risks.

The analysis of MOOCs in Chap. 11 concluded with a list of the strategic spaces technology can help a university engage with. These included: the support of reputational marketing; a means of marketing to students; as a test-bed for and support for change projects; a means of supporting research through engagement with specific populations; and as a means of widening access to groups not otherwise being served. Sense-making strategic analysis, such as the Five Forces framework, is a way of assessing an institution's context that can be used to elaborate these generic possibilities and test the likelihood they can add value to a university's strategic position.

Table 19.5 Strategic prompts for universities analysing rivalry with existing competitors (modified from Marshall, 2013a)

Context
1. How does the university understand the extent of its educational activities and the boundaries that define its context for operation?
2. What role is the university playing in the system and how does that role relate to those of other stakeholders at a system level? (US1)
3. How do other universities and stakeholder groups contribute to the targeted learner population and educational context? (UU1)
4. What differentiates the university from other universities? (UU2)
Input
5. How does the university ensure it maintains or grows its relative share of resources (financial and non-financial)?
6. What synergies with other universities or stakeholders contribute to learner success? (UU3)
7. What capabilities, systems and resources are contributing to the role played by the university? (US2)
Process
8. How are relationships with other institutions and stakeholders actively managed to maximise value to the university?
9. What is the university's strategy regarding the use of resources from its own offerings by other institutions, including those in direct competition?
10. What is the university doing to effectively operate within the system? (US3)
Output
11. What evidence is there of a collaborative contribution to learner success with the university drawing on the strengths of other universities and stakeholders? (UU6)
12. What evidence is there of the nature of the impact the university has had on the system and the value of its role within that system? (US4)
Feedback
13. How might new or existing organisational relationships be sustained and strengthened?
14. How can the university engage with the scope of its context in ways that sustain and strengthen its activities?
15. What are universities and stakeholders doing to strengthen their collaboration and address gaps in the services provided to the targeted learner population? (UU8)
16. What helps the university continuously re-evaluate their role in the system and respond with systematic improvements? (US5)

19.3.1 Threat of Substitute Products

Porter's threat of substitute products is a perfect encapsulation of the strategic challenge posed by MOOCs. Substitutes offer attractive price-performance outcomes and are easy to switch to from an established product. Jaschik and Lederman's (2016) survey of US Chief Academic Officers found only 12% regarded MOOCs as high quality, but 47% saw them as potentially serious competition for existing programmes and courses.

MOOCs are characterised as free, although they do have substantial opportunity costs if students engage seriously with the courses, use the collaboration and interaction facilities actively and choose not to devote their time to formal qualifications. MOOCs also make it very easy to enrol and commence study. They are a form of low-end disruptive innovation (Sect. 17.3; Christensen et al., 2004) where the experience of a formal education with the resulting high-quality qualification is discarded and the focus is placed entirely on content and individual learning.

Barriers to MOOC substitution include the value, 'performance' in Porter's terminology, of the resulting education, certificate or qualification, which will almost certainly be influenced by the common perception that at free goods have no value (consistent with the behaviour of learners who typically fail to engage even minimally with most MOOCs). Countering this is the possibility that MOOC providers, benefiting from the scale and diversity of their offerings and the information gleaned from universities and students creating and using MOOCs may be able to develop their platforms in ways that ultimately drive substitution built on this body of knowledge and experience.

MOOCs can be used as very effective transition or foundation experiences aimed at preparing students for formal study. There are already examples of institutions using introductory programmes as a means of understanding the implications of MOOCs for undergraduates (Helsinki University, 2013; Huckabee, 2015; Texas State University, 2015; Young, 2015d). The MicroMasters™ focus of the edX consortium is clearly intended to promote transition to graduate programmes (Strausheim, 2015; Young, 2015e).

The strategic question for any university is whether involvement in MOOC consortia is increasing the threat of substitution of their own programme and therefore providing an opportunity to substitute into other spaces, or whether their offerings are sufficiently different that substitution is unlikely for the foreseeable future. Crucial to this is the way the university engages with key stakeholders in order to provide a highly responsive and contextualised experience resisting substitution by more generic alternatives.

19.3.2 Threat of New Entrants

The MOOC, as with the Virtual University before it, is often seen as a vector for higher education disruption by new entrants using technology to access an apparently vast and untapped demand for education, free of the encumbrances of formal qualifications and the costs of the traditional university teaching infrastructure.

The recognition of prior learning, long a challenging space for institutions (Harris et al., 2011), is becoming a more closely studied process with the additional strategic risk that unjustified barriers erected as a form of educational protectionism are unlikely to be politically or socially sustainable. Of the barriers to new entrants, Porter identifies (Porter, 2008) scale is not a barrier when considering MOOCs and nor is the distribution channel. These are advantages to the new entrant adopting a MOOC strategy. In many cases, the institutions offering MOOCs are not experienced in offering extremely large-scale internet services, while new entrants potentially have experience hard-earned in other forms of e-commerce. Vendors such as Pearson are a potential threat, being more able to reframe materials developed for other uses into MOOCs. The current exclusion of such companies from consortia is not a particularly strong barrier. These companies already have in place the necessary infrastructure to operate MOOCs.

The strategic question for an existing provider is their response to these new entrants. Acceptance of transfer credit of the assurance statements of organisations like Pearson is already being implemented by some institutions (Udacity Blog, 2012; Young, 2012c), as is the development of processes for validating work done through MOOCs outside the control of the institution (De Santis, 2012, October 29; Kolowich, 2013a), such the MicroMasters™ (Strausheim, 2015; Young, 2015e). If MOOCs continue to grow in popularity, a probable outcome is the erosion of the viability of an institutions' own courses. In the short term, this risk is mitigated by the limited range of MOOCs in terms of subjects and in levels of intellectual challenge. Institutions would be wise to have strategies in place to sustain the reputations of their own competitive offerings and to monitor their viability in detail.

Some institutions may find their own staff are new entrants potentially disrupting the institutions' formal operations or are contributing to the threat of others entering. Individual faculty are already offering MOOCs of one type or another independently of any formal institution, and this may be a completely reasonable exercise in academic freedom. If they wish to prevent it, the institution first needs to realise it is happening. Institutions may see positive benefits of social responsibility, entrepreneurship and innovation arising from staff MOOC initiatives, but some strategic analysis and awareness of what is happening is wise. Faculty often publish through third parties, signing away intellectual property in contracts that enable those third parties to re-publish different forms, such as MOOCs. Limitations of these contractual arrangements are complicated by faculty desire to get published and require investment in legal support as well as negotiation with publishers.

19.3.3 Power of Buyers

It is not hard to see the MOOC as an expression of higher education as an experience good consumed like other entertainments such as books, television programmes and movies. As a consumer good, the relationship becomes one of choice and influence, and increasingly the role of the MOOC provider is aimed at marketing a product that is sufficiently satisfying that the consumer will return to a course, or select another from the same provider. As with other media, the MOOC provides the possibility of immediate satisfaction in education, as self-paced MOOCs address the immediate need of the student for an experience.

MOOCs can thus be seen as a tool for improving university responsiveness to students. Rather than having to plan up to a year in advance, students can decide to engage in a course of study and immediately start working on introductory course materials. Unsurprisingly, existing MOOC initiatives have been dominated by introductory courses in a wide range of subjects. A challenge for the future is how to convey to potential students the expectations made of students in more advanced courses, and what preparation or prior knowledge they will need in order to effectively engage in the new course. This is a non-trivial problem already evident in traditional institutions when programme changes are attempted and may represent an area for innovation and new business models.

The experience of a MOOC is, however, also a strategic risk as it influences the student perceptions of university study, both in terms of the nature and difficulty of coursework, the processes of assessment and the level of intellectual challenge, and the flexibility of the timing and intensity of course activities. It is not hard to see students increasingly restless and disengaged from existing pedagogical structures such as lectures (Chap. 10) and wanting to see evidence that technologies framing the MOOC are also being used effectively to support formal programmes. While the MOOC remains a functionally passive form of education, limited by existing media and interaction technologies, this is a relatively low risk. But as MOOC consortia improve their tools, the risks grow that students and other "buyers" of education will start to expect a similar degree of development and responsiveness from established universities.

Existing MOOC platforms are already functionally equivalent to institutional LMS/VLE delivery and the range of video material, in particular, is already lifting expectations for online courses. Much of the business of training providers is already being disrupted as they struggle to justify what value they add beyond the structured text and video that can be freely accessed from MOOC providers and vendors. The strategic question for universities is what they can learn from the MOOC activities they and other institutions undertake and how that information is used to change practice in their other educational activities.

19.3.4 Bargaining Power of Suppliers

The range of vendors who provide elements of the technology and business infrastructure enable an institution to achieve the level of scalability and robustness needed to support MOOCs with potentially hundreds of thousands of students. As discussed in Chap. 8, it can be helpful to think about MOOCs as a platform (Siemens, 2012). By doing so, strategies can be developed regarding aspects such as course discovery and brokerage; the MOOC equivalent of Google for Web pages. Other components of a platform likely to emerge are the brokering of course content licensed for MOOC use; professional skills and consulting in MOOC initiatives; student recruitment, guidance and counselling; just to name a few of the more obvious. Finally, MOOCs represent opportunities for institutions to develop experience in their strategies for use of cloud platforms for segments of their operation.

The strategic prompts regarding suppliers focus on the need to actively monitor and manage supplier relationships in order to both protect the institution's interests and to gain insight into the shifting landscape of services, products and relationships that influence the changing context of the university. MOOCs provide a wealth of information on student interests and behaviours that can be used to identify new opportunities for programmes tailored to specific groups; the supplier power is how this information is made available within consortia. A strategy of active engagement and collaboration within these relationships is an important strategy for building and validating trust and for gaining access to information and opportunities.

An institutional strategy of engagement with MOOCs inevitably must also involve managing the work of faculty. They need to be supported both as sources of content and leadership in the identification, design and delivery of MOOCs, and also in order to gain their support with the various academic procedural requirements commonly found within institutions affecting staff workload allocations and the integration of MOOC activities with other educational programmes. Disengagement by faculty was a key factor leading to the failure of several virtual university initiatives, and similar outcomes are likely to occur within many universities that fail to develop a strategy of ongoing faculty engagement on the future of their MOOC and other offerings.

19.3.5 Rivalry Among Existing Competitors

The extent to which MOOCs have a strategic impact on the relative position of a university with regard to others serving the same populations depends primarily of the extent to which MOOCs are effective as a tool for reputational advantage. There may also be advantages if MOOC enrolments are able to influence student choices for further or ongoing formal study. Strategically, there is an opportunity for

institutions to reflect on the convenience of the MOOC experience, the possibility that you can decide to study a subject and then within a few minutes be enrolled in a course and starting to engage with the material. Despite this potential, there currently is no evidence that either strategy has any substantive impact and the diversity of universities joining the various MOOC consortia suggest that there is little contemporary reputational significance in belonging to any of these groups.

The other form of competition MOOCs represent is the possibility that by redefining higher education as a global sector operated completely online and at large scale, every other university in the world becomes a direct competitor for students and associated funding. The neocolonialist myth that the world is flat discussed in Chap. 11 implies that the majority of universities will be unable to operate MOOCs in competition with those offered by the élite US universities. In addition to completely missing the importance of social and cultural context in education, this also assumes that élite universities have the capability and capacity to teach all subjects well, and particularly, that they can translate their existing practice effectively into online experiences that students enjoy and find useful.

One strategic response to this threat is to simply be better at engaging in MOOC pedagogies, creating and delivering courses that distinguish themselves through the quality of the educational experience. The high rate of disengagement seen in most MOOCs (de Barba, Kennedy, & Ainley, 2016; Belanger & Thornton, 2013; Breslow et al., 2013; Christensen et al., 2013; Clow, 2013; Koller, Ng, Do, & Chen, 2013; Lindeore, 2013; MOOCs@Edinburgh Group, 2013; Pursel et al., 2016) suggests that there is plenty of opportunity for improvement. Other strategies include collaborations with other universities in order to create offerings that build on those of other universities in a synergistic way, essentially creating a form of cartel protecting the members from other universities. The current lack of any significant collaborative benefit being demonstrated by the MOOC consortia (Brown, Costello, Donlon, & Giolla-Mhichil, 2015) suggests this strategy may be effective for those prepared to be the first movers.

Most importantly there is the need to reflect on the contexts that the university operates within in order to identify features that external competitors will be unaware of or unable to replicate. The Chinese MOOC initiatives XuetangX and Coursera Zone (edX, 2014; Rocheleau, 2013; Strausheim, 2013) illustrate one way in which local context is an important strategic factor; many other countries will have preferences for local products that embody implicit cultural and social values or that avoid associations with unpopular western governments.

19.4 Conclusion

> In the worst case scenario, the final strategic plan is a public relations document. It is full of soaring rhetoric designed to offend no one. The purpose is to provide a fund raising document. There will be few, if any, ‘deliverables’ and no detailed tasking of individuals

> with responsibility for outcomes. The stated objective is an across the board increase in 'quality' and national standing, without any specifics for how that might be achieved. Vague objectives leave the administration in the position to go wherever the wind blows; this means the single biggest cost associated with higher education planning is an opportunity cost, what might have been rather than what is. (Martin, 2011, p. 138)

Porter's model is one of many available in the strategic planning and leadership literature. Use of this model is less about the specific value of the particular approach and more about the importance of framing strategic planning as a process of collective sense-making by the university and its key stakeholders.

MOOCs are employed to illustrate the use of the framework outlined in this chapter and to make an important point. Using any technology, such as the MOOC, is not a strategy in itself. Deciding to offer MOOCs is not a strategic decision, although it may be part of a wider strategy aimed at stimulating and informing change, respecting the wicked nature of the problem and the way that any intervention changes the nature of the challenges posed. The pursuit of 'quality' however it is measured or financial outcomes are not strategies. They are, at best, tools providing one measure among many, assessing the impact of strategy on the university over time. Even in a for-profit education provider, as the University of Phoenix demonstrates (Sect. 9.2.1), pursuit of profit as a primary strategy ultimately destroys the viability of the organisation.

The process of strategic planning is a means by which an important outcome is achieved. That outcome is not the documentation of the plan. It is the development of the capacity of the university to actively engage with its context and the changing needs of its salient stakeholders, while remaining true to the institution's core ideology. A successful strategic plan builds a collective sense of potential and provides both a rationale and a plan that energise the organisation and enable action.

This chapter started with an acknowledgement of the tension between the logical ideology of leadership and strategic planning, and the uncertain nature of the challenges universities will face in the short and medium term. Involving a diverse group of stakeholders in the process of strategising is an important tool that mitigates this tension and stimulates commitment to act collectively in the interests of the university as a whole. Engaging with this diverse group in ways that help identify key drivers and perspective is a complex process but one that is critical for effective sense-making processes. The next chapter explores how scenarios are used to provide a flexible sense-giving model stimulating the exploration of strategic priorities and alternative plans rather than imposing structures that disenfranchise and alienate alternative viewpoints.

Chapter 20
Futures Scenarios as Tools for Sense-Giving and Sense-Making

Abstract Scenarios provide a means for other important influences on the trajectory of change to be highlighted and for the place of technology as primarily a catalyst to be recognised. A set of scenarios is presented in this chapter to illustrate the complex interplay of the forces introduced in the first section and how these can generate a wide range of possible future institutional contexts far beyond the simplistic vision of represented by the MOOC, responding to the wicked complexity of university change. This chapter describes the use of scenarios as a tool for generating strategic options and as mechanism for organisational sense-making that can be extended and applied by institutions examining their own context in detail.

> We shall never be able to escape from the ultimate dilemma that all our knowledge is about the past, and all our decisions are about the future. (Wilson, 2000, p. 24)
>
> Capabilities are always conjectural. Capabilities are the least definable kinds of productive resources. They are in large measure a by-product of past activities, but what matters at any point of time is the range of future activities which they make possible. What gives this question its salience is the possibility of shaping capabilities, and especially of configuring clusters of capabilities, in an attempt to make some preparation for future events, which, though not predictable, may … be imagined. (Loasby, 1998, p. 144)

The futility and inaccuracy of predicting the future has already been discussed in Chap. 8 so it worth acknowledging from the outset that scenario planning is not a predictive tool. Believing the path technology or society will take can be predicted is essentially another manifestation of the transformational thinking and technocratic determinism this book argues against. Scenarios are management tools created to explore a specific area of an organisations' operations in ways that reframe perceptions and enable choices to be made (Higgins, Davis, & Zaka, 2012; JISC, 2008; Marshall & Flutey, 2014; Ramirez & Wilkinson, 2016; Richards, O'Shea, & Connolly, 2004). Wilson (2000) positions scenarios as a tool for supporting management decision-making, noting that successful leadership is not predicated on foreknowledge.

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The concept of scenario planning was developed in the 1950s and 1960s. It was used for military planning by the RAND Corporation (Amer, Daim, & Jetter, 2013) and by Royal Dutch Shell for oil industry strategy development (Wack, 1985a, 1985b). It has been used subsequently in a multitude of contexts. Scenario planning is used in higher education to explore a wide variety of contexts, including sector-wide change in the UK (Blass, Jasman, & Shelley, 2010), the impact of a wide range of changing influences on libraries (Staley & Malenfant, 2010), and the impact of technology on university infrastructure, delivery models and capability development (Higgins et al., 2012; JISC, 2008; Marshall & Flutey, 2014; Richards et al., 2004).

Scenarios enact the concept of sense-giving and align to the idea that strategy is ultimately an act of communication or conversation (Van der Heijden, 2005), a narrative used to reshape the perceptions of others (Fenton & Langley, 2011; Ramirez & Wilkinson, 2016). The features framing a specific scenario speak to the key points of dissention between stakeholders, allowing them to recognise the value in collegial and collective action even when it is against their immediate self-interest. Scenarios need to operate as sense-making cues, triggering awareness of a future state of the university that is different to the status quo and helping people explore their place in that alternative future.

Barnett (2014) talks of 'feasible utopias' as a means of examining potential future universities. He frames the challenge scenarios respond to as:

> Is it possible to derive conceptions of higher education that are non-ideological, not prone to undue pessimism, are duly sensitive to the deep structures underlying universities (the rise of the global knowledge economy and cognitive capitalism), are properly critical of contemporary forms of higher education, open themselves to the realisation of new forms of higher education, and are appropriate to the twenty-first century (and even beyond)? (Barnett, 2014, p. 16)

For a scenario to be effective, it needs to address areas of ambiguity and uncertainty. It describes a plausibly achievable outcome, provided sufficient resources and commitment are applied. Any scenario too far from reality is unlikely to assist decision-making, although there is an argument for some scenarios being slightly implausible to account for black swans and to think the 'unthinkable' (Masys, 2012). Using the Christchurch quake example, scenario planning prior to 2010 is unlikely to have considered earthquakes. Any scenario built around a specific city-wide disaster is implausible, whereas the possibility of a major fire, a terrorist incident, flooding, a pandemic is much more likely. The point is not the accuracy of the scenario but the planning for the generalised challenge it stimulates that is important. The use of a zombie attack for emergency response planning (CDC, 2011) is deliberately implausible. The use of such a frame ensures participants recognise the need to think about a range of potential issues rather than being captured by the specifics of any one.

One of the important, even necessary, ways a variety of scenarios can be generated and used to inform strategic planning is through the involvement of a wide range of participants in their generation and analysis. Strategic planning is often

captured by a small group who inevitably do not have a monopoly on the truth. Involving a range of stakeholders, representing a diversity of perspectives, helps ensure the scenarios are not limited in scope to 'safe' or predetermined strategic options (Godet, 2000). The rest of this chapter examines how scenarios can be used as part of a diverse but coordinated sense-giving approach to strategic planning.

20.1 An Introduction to Scenario Modelling for Change

Scenario planning methodologies (JISC, 2008; Van der Heijden, 2005) embody key sense-making properties including retrospection, enaction, plausibility and the importance of social engagement. These properties provide the means for undertaking the process and shaping the impact it has on the organisation. The manner of engaging with scenarios is explicitly one of learning and exploration that acknowledges ambiguity and uncertainty. This section outlines the structure and process of scenario planning and how to use it to gather useful insights.

The starting point is a collective brainstorming activity with a diverse group of participants focused on how the university's specific context could evolve in the future. An important enabler is ensuring a breadth of experience is represented, rather than focusing only on one group, such as senior managers. The idea is to articulate a range of challenges, options, trends and features of the current and possible future environment. A useful technique for getting a diverse range of ideas is to start the process with individuals privately listing their own ideas, before sharing these with the wider group and generating additional ones in collaboration with others. This ensures ideas are not constrained or skewed by strongly presented views of a minority. Another mechanism for stimulating creativity is to ask participants to adopt the imagined perspective of different stakeholders, or to reflect on different sub-contexts that might vary from the mainstream experience.

This body of material is structured by themes and used to identify the key dimensions describing the domain being analysed. These dimensions create the structure for the scenarios to be developed or placed within. Using two dimensions gives a two-by-two matrix of four scenarios and adding further dimensions will expand the range of scenarios geometrically. Two to four dimensions generally provide more than enough latitude for most strategic planning exercises. Thought should be given to a meaningful description for each end of the scale of the dimension.

The next step is to create scenario capsules describing the university in the context defined by the values of the dimensions for each cell within the matrix. Godet (2000) suggests two possible types of scenario can be created. Exploratory scenarios describe the process of change from the current state to the future state, defined by the particular dimensions. Anticipatory or normative scenarios focus on describing the context at the future point. Catchy and engaging titles and descriptions are useful tools to stimulate imagination when writing the scenario outline, but

the goal is to preserve the integrity of the imagined context and to highlight key features reflecting decision points or implications of decisions.

The final stage is to analyse the scenarios for insights contributing to the decision being made. The goal is to find strategies responding to multiple scenarios and so avoiding being trapped by specific predictions. The analysis must consider salient features of positive and negative scenarios and consider how the university can shift its context towards one generating positive outcomes. Key scenarios are selected and used as a starting point for additional consultation and engagement, aimed at building interest in the strategic planning process and generating cues to the nature and type of change needed.

The traditional approach to strategic planning involves draft strategy consultations, which tend to constrain the range of issues and privilege particular approaches by failing to acknowledge uncertainty and ambiguity. Scenarios used in the way described are an important stimulator of sense-making as they explicitly address the ambiguous nature of strategic change. Figure 20.1 summarises this process and emphasises the need to see it as part of the ongoing process of change enablement and decisive action.

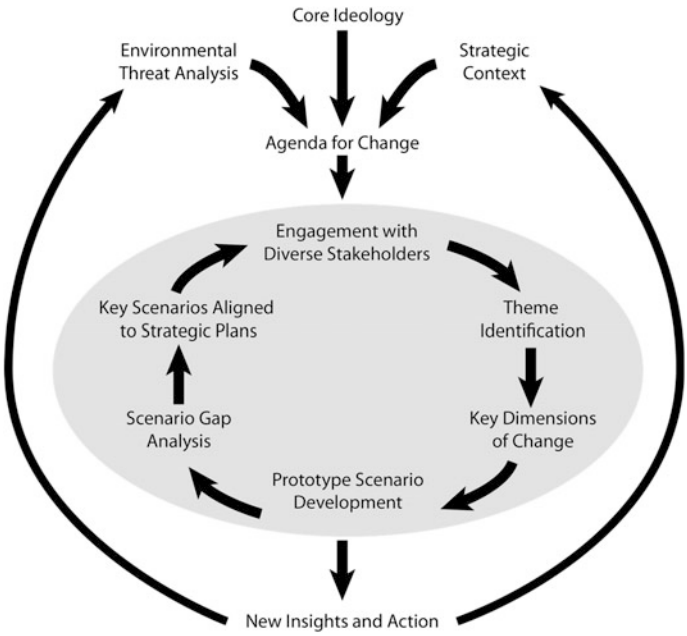

Fig. 20.1 Summary of the process of scenario planning

20.2 Scenario Modelling Applied to Higher Education Through the Lens of the Forces for Change

To illustrate how scenarios can be used to support strategic sense-making, the rest of this chapter provides a set of scenarios created to explore the implications of the changing university environment described in the first half of this book. The forces for change acting on higher education described in the first two major sections can be expanded to generate a set of dimensions to guide the creation and analysis of scenarios for the changing future context of the university (Table 20.1).

The context for the following fifteen scenarios is the state of higher education as we transition towards universal education and as political and social choices are made which define the nature of that educational experience. As with all scenarios, they start with an exploration of the extreme implications of particular circumstances but they should be understood as inherently false. The motivation for creating these is to illustrate the fallacy of assuming the future can be described without reference to context; or in Bourdieu's words 'a world without inertia' (Bourdieu, 1986, p. 46).

Table 20.2 shows how a set of dimensions can be used to shape the range of following scenarios. Each scenario is constructed to reflect a specific combination of drivers. These are used to select the subset of scenarios relating to factors particularly important to a specific context. The selected scenarios are analysed for strategic actions reinforcing desirable features and mitigating undesirable ones.

Alternatively, desirable scenarios can be chosen and a gap analysis performed between their characteristics and those of the current context. This is used to identify the major drivers distinguishing the two contexts and from this, identify possible ways of shifting the context towards the features of the more desirable scenarios.

20.2.1 Adam Smith's Invisible Hand

The Invisible Hand of the market proposes the sum of individual actions in self-interest leads to a collective outcome more effective than that resulting from deliberate intention. This scenario imagines a world responding to the work of commentators such as Schierenbeck (2013), Vedder (2004) and Zemsky (Zemsky et al., 2005; Zemsky, 2009). They argue that removing the protections and subsidies typifying higher education will allow the flowering of a pure market in education, lowering costs for students and increasing the efficiency of the sector, as with other commodity markets. Arising from this will be a new breed of university that is entrepreneurial and fully engaged with the development of entrepreneurs (Fayolle & Redford, 2014).

In this scenario, any negative consequences arising in the transition from mass to universal higher education are transitory and the Invisible Hand acts to stimulate

Table 20.1 Scenario dimensions and associated scales

	High	Low	
Technology			
Dominance of technology	Technology is pervasive and dominates educational provision	Technology is constrained and restricted in impact	
Quality			
Commodification	Education as a product	Education as an experience	
Standardised learning experience	Standardised learning experiences	Flexibility in the learning experience	
Access			
Openness	Open in both access and ownership terms	Strict ownership and control of intellectual property	
Scale of system	Universal	Mass	Élite
Cost			
Commercialisation	Strict adherence to market ideology	Focus on societal rather than commercial outcomes	
Public cost containment	Society minimising costs	Wealthy society investing in education	
Stakeholders			
Focused on the academy	Focused on the needs of academics and disciplines	Focused on the needs of external stakeholders	
Focused on the learner	Focused on maximising learner autonomy	Focused on the needs of society collectively	
Sector steering	Education providers subject to tight control by external agencies	Education providers free of direct external control	
Social conformity	Education focused around structured roles in society	Education focused on individual interests and independence	

Table 20.2 Scenarios arranged by dimension

	High 10	9	8	7	6	5	4	3	2	Low 1
Dominance of technology	Star Trek University Xanadu Technological Singularity Digital Agora	Ivory Cybertower Dr. Strangelove's Solution	Expanding of H. G. Wells Adam Smith's Invisible Hand Rousseau's Spiritual Malaise		Malthusian Collapse		Marxist Collective Ownership Chinese Dragon			Cardinal Newman's Educational Theocracy Modern Academy Economic Powerhouse
Public cost containment	Malthusian Collapse	Modern Academy Chinese Dragon Economic Powerhouse	Ivory Cybertower	Adam Smith's Invisible Hand		Marxist Collective Ownership	Dr. Strangelove's Solution Expanding Universe of H.G. Wells	Xanadu Technological Singularity		Star Trek University Digital Agora
Standardised learning experience	Economic Powerhouse Chinese Dragon	Rousseau's Spiritual Malaise Malthusian Collapse	Modern Academy Expanding Universe of H.G. Wells	Adam Smith's Invisible Hand Marxist Collective Ownership		Ivory Cybertower		Dr. Strangelove's Solution	Xanadu	Technological Singularity Star Trek University
Focused on the academy	Expanding Universe of H.G. Wells Cardinal Newman's Educational Theocracy Ivory Cybertower	Marxist Collective Ownership Digital Agora Xanadu				Modern Academy		Adam Smith's Invisible Hand Rousseau's Spiritual Malaise Dr. Strangelove's Solution		Malthusian Collapse Economic Powerhouse Star Trek University Chinese Dragon

(continued)

Table 20.2 (continued)

	High 10	9	8	7	6	5	4	3	2	Low 1
Focused on the learner	Digital Agora Xanadu			Marxist Collective Ownership		Technological Singularity Adam Smith's Invisible Hand	Modern Academy Cardinal Newman's Educational Theocracy Ivory Cybertower	Dr. Strangelove's Solution Economic Powerhouse	Expanding Universe of H.G. Wells	Chinese Dragon Star Trek University
Scale of system	Dr. Strangelove's Solution Digital Agora Malthusian Collapse	Universal Rousseau's Spiritual Malaise Star Trek University	Xanadu Chinese Dragon Adam Smith's Invisible Hand Marxist Collective Ownership		Chinese Dragon Adam Smith's Invisible Hand Malthusian Collapse	Mass Economic Powerhouse Expanding Universe of H. G. Wells Modern Academy			Rousseau's Spiritual Malaise	Elite Ivory Cybertower Cardinal Newman's Educational Theocracy Technological Singularity
Openness	Star Trek University						Marxist Collective Ownership	Dr. Strangelove's Solution Expanding Universe of H. G. Wells Economic Powerhouse	Malthusian Collapse Cardinal Newman's Educational Theocracy Ivory Cybertower	Chinese Dragon Adam Smith's Invisible Hand Xanadu
Commodification	Malthusian Collapse Xanadu Adam Smith's Invisible Hand	Chinese Dragon Rousseau's Spiritual Malaise	Economic Powerhouse	Modern Academy		Ivory Cybertower	Expanding Universe of H.G. Wells	Marxist Collective Ownership		Digital Agora Cardinal Newman's Educational Theocracy Technological Singularity Star Trek University

(continued)

Table 20.2 (continued)

	High 10	9	8	7	6	5	4	3	2	Low 1
Commercialisation	Malthusian Collapse Xanadu Adam Smith's Invisible Hand	Xanadu Economic Powerhouse	Rousseau's Spiritual Malaise Dr. Strangelove's Solution	Chinese Dragon Modern Academy		Ivory Cybertower			Expanding Universe of H.G. Wells	Marxist Collective Ownership Star Trek University Digital Agora
Social conformity	Chinese Dragon Star Trek University	Ivory Cybertower Expanding Universe of H.G. Wells	Economic Powerhouse	Modern Academy		Marxist Collective Ownership Dr. Strangelove's Solution		Adam Smith's Invisible Hand	Xanadu	Technological Singularity Cardinal Newman's Educational Theocracy Digital Agora
Sector steering	Star Trek University Chinese Dragon	Economic Powerhouse Modern Academy	Expanding Universe of H.G. Wells Rousseau's Spiritual Malaise	Ivory Cybertower				Digital Agora	Xanadu Dr. Strangelove's Solution	Cardinal Newman's Educational Theocracy Adam Smith's Invisible Hand Marxist Collective Ownership

and support the development of an effective system. This shares many characteristics of evolutionary change in biological systems, with natural selection ruthlessly acting on less effective organisms to leave those best suited to the current conditions. The key factor is the need to understand the conditions defining success. Organisations succeed or fail based on the conditions they experience in the market, which in this scenario are minimally influenced by external factors. It is possible to shape the environment to some extent, as illustrated by the MOOC strategy enacted by Harvard and MIT, but the limitations of that model are evident. If the environment fails to shift as predicted, the realities of the market apply and the virtual university illustrates the outcome (Chap. 9).

In the Invisible Hand scenario, universal education emerges from sectors defined and constrained by the quality and performance management systems of mass education. This scenario anticipates an ongoing growth in the scale of demand for higher education, combined with international treaties expanding upon Bologna and GATS that act to influence governments to reduce public subsidies of existing models. The dominance of market ideologies in other contexts continues to justify the treatment of education as just another market, as is evident in the changes in higher education apparent in the UK (Collini, 2012) and Australia (Marginson & Considine, 2000). In this scenario, educational opportunities arise from the surviving universities, now almost unrecognisable in the form they have evolved into, and from new entrants, which are mostly commercial enterprises attracted by the opportunities of the newly emerging marketplace for higher education.

Universal education is currently framed as a free and open experience. Under this scenario, the current public spending on higher education is used to subsidise the operation of the various alternatives provided. Funding is allocated in a model not dissimilar to the way advertising operates in the contemporary web environment. Revenue is generated in line with the extent a given educational activity is used and is sourced from public funding, various charitable foundations, commercial sponsors and advertisers in proportion to the popularity of the offering. Various public good and social improvement experiences are prioritised but the extent and variety of different providers and educational settings mean regulation is light. The mass system greatly reduces under this scenario, while the élite model continues to operate as before with fully privatised funding and ongoing access to a disproportionate share of international student revenue and research funding from both private and public sources.

Technology is a fundamental driver of this model. Every aspect of the process is monitored, mediated and monetised. Content is licensed and monitored for legal compliance. Offerings are tailored to individuals on the basis of sophisticated models identifying interests and generating opportunities for education. Many aspects are subtly influenced by commercial interests, if only through the introduction of advertising placements within educational content. Monetisation strategies are multilayered and in addition to the obvious advertising, they include information on behaviour patterns, which can be used to influence planning for future projects.

A significant difference between this scenario and the Malthusian Collapse is it genuinely assumes there is a successful model for some form of higher education emerging from a market acting without deliberate collective intention on the part of the sector. The fundamental driver of this scenario is this absence of an explicit strategy adopted by government and universities in concert. That does not mean individual organisations lack their own strategy. At least in the early phases of this scenario, it is likely a greater diversity of strategies than those now apparent will be used but the Invisible Hand will winnow these down. As with biological ecologies, if the new conditions are stable for enough time, successful strategies will be refined and diversify to exploit specific niche opportunities. Instability, however, favours generalist strategies, much as human actions favour the success of rats and other aggressively invasive organisms.

Successful universities in this scenario use all of the tools of change and organisational development to maximise the efficiency and effectiveness of their systems and activities. Processes and activities are constantly measured and benchmarked. A relentless vigilance and focus on operational cost management is essential. Marketing is central to operations with every action carefully designed to sustain brand positioning and influence the decisions made by learners. Institutional values, such as collegiality and the broader social mission of universities, are replaced with employee loyalty and engagement programmes simplifying management and further increasing operational efficiencies.

Some organisations adopt the model of a ruthless removal of all activities not core to the management of the brand. As with the Malthusian Collapse scenario, all the various functions associated with the contemporary university will be outsourced and contracted from specialist providers unless they offer a specific competitive advantage to be leveraged or monopolised by the organisation. Elements of this approach are already seen in the growing ecosystem of educational businesses discussed in Chap. 4 and in the organisational deconstruction undertaken by the Californian State University (Bates, 2012). Technology provides the essential integrating infrastructure and enables a services model of delivery like that already apparent in the shift to outsourced provision of productivity software and communication tools.

20.2.2 Cardinal Newman's Educational Theocracy

The Idea of the University (Newman, 1853/1976), despite its acknowledged flaws and limitations (Bloom, 1987; Bok, 2013; Geiger, 2011), is still regarded by many as describing the goal universities should aspire towards. This humanistic vision of pure intellectual pursuits, unsullied by pressures of commerce and application and framed by a moral vision of human excellence, is still influencing many institutions operating in élite modes whether or not they are elitist in a social or political sense or recognised as internationally excellent on purely intellectual measures. Unlike the Digital Agora scenario, this model rejects mass and universal education as

compromises to the underlying conception of the university as a place of exclusion and excellence in intellectual endeavours.

As a future portrayal of evolving higher education, Educational Theocracy describes the ongoing placement of universities as separate institutions of learning, protected from the pressures and constraints facing other forms of higher education. Students are free to pursue individualised explorations of human knowledge without the constraints of formalised accountability through uniform programmes of study aligned to standardised qualifications. The academic faculty are free to exercise their minds without reference to any end other than the ideal of intellectual growth and expansion of knowledge. The benefits of this flowering of human capability and knowledge are free for others to use but the university itself remains aloof and secure in its place as the intellectual wellspring, critic and conscience of society.

Despite its historic antecedents, this scenario is more Humboldtian than religious in nature; faith and fanaticism are directed at intellectual ends rather than purely spiritual (von Humboldt, 1903/1970). Lernfreiheit and lehrfreiheit dominate and define the experience of both staff and students. The separation from the challenges of the world of commerce and politics is seen as breeding a degree of other-worldliness, an affirmation of the ivory tower criticism levelled at the university in the transition to mass education (Bok, 2003; Chatterjee & Maira, 2014) which might even see the term owned and used with pride.

In its sense of intellectual freedom and rejection of financial values, it shares some features with the Star Trek Academy but this scenario is not defined by technology. The feature distinguishing this possible future for higher education is the centrality the Theocracy of Education places on the individual human intellect and its development within an institution of society. The focus is on the creation of a scholarly environment that stimulates and sustains individual and collective creativity and intellectual activity. The institutional focus is not an organisational, managerial or corporate model but the building and sustaining of reputation; moral and intellectual authority emphasising the integrity of the ivory towers of the university. This value for the role of dedicated leadership makes it distinct from the Marxist Collective Ownership scenario.

Organisationally this scenario is attractive to established and successful universities. Many of its characteristics are associated with those with internationally excellent reputations, such as Oxford and Harvard, but it influences many other universities with strong reputations in national contexts. Some members of the academic community see this as the ideal university, in line with the romantic and nostalgic recollections of the massive investment in higher education in the last century. The many writers decrying the loss of the university and calling for a return to the idealised paradise of an earlier educational utopia, particularly those in the humanities and championing the liberal arts college model in USA, are attempting to create the future reality embodied in this scenario (Anderson, 1996; Aronowitz, 2000; Bailey & Freedman, 2011; Brabazon, 2007; Collini, 2012; Hersch & Merrow, 2005; Holmwood, 2011; Readings, 1996).

Elements of this scenario are already apparent in individual universities. It can be argued that the Chinese investment in their flagship universities represents an explicit attempt to realise this scenario for a proportion of their sector of higher education, although perhaps with less emphasis on the intellectual excellence and autonomy of individual scholars. See the Chinese Dragon scenario for an alternative conception.

Success in the Educational Theocracy scenario requires a strong commitment to change but rather than changing to create a new model, it is change undertaken to sustain an existing one. This scenario is not predicated on a worldwide abandonment of the factors driving change but on responses that re-express those forces in ways that strengthen the core intellectual values of the university. Demographic changes identify new viewpoints and experiences that enhance the intellectual quality of the university. Stakeholders are encouraged to recognise the leadership and significance of the university. Financial costs are managed through a reduction in the scale and focus of the institution and its movement away from adult training with a focus on qualifications while recognising the wider social benefits of the university. The focus on intellectual excellence as the primary outcome removes much of the external drive for performance management and acts as a heuristic framing the adoption and use of new technologies.

Organisational change and development tools build collective values and collegial management systems, strong enough to resist external influences and open enough to induct new participants. Recognising and maintaining a core set of values is critical. Benchmarking and quality tools retain value as mechanisms for continually testing and improving the educational experience, free of risk that such information will be misused to audit and force compliance with external agencies and agendas.

The strategic challenge posed by this scenario is how to engage with the political and economic forces dominating the particular context the university operates within, building the relationships that ensure the value of the institution is recognised and sustained without external interests intruding into its operation. The strength of the university as an institution in this scenario is the role the collective community of the university plays in supporting its leaders in that engagement, through their collective affirmation of its value and their demonstrated commitment to its ability to raise the quality of the human experience.

20.2.3 The Chinese Dragon

Derived from the broad parameters of the Chinese system discussed in Chap. 3, the Chinese Dragon scenario reflects the central management of higher education as a public service seen in a number of other countries as well. The values promoted in this system are those of a cohesive society that respects order. Education is as much a tool of social development as of intellectual and economic. Many countries have elements of this scenario apparent in sub-sectors of their tertiary education system,

particularly those at the transition point between mass and universal education and in the vocational space.

Universities in this scenario do not operate as isolated organisations but have a focus on a specific set of educational and social outcomes within a tightly controlled context. Success is almost entirely a reflection of meeting a set of externally imposed key performance indicators associated with operational efficiency.

The system operates both at mass and universal scales, as it needs to serve both as a training ground for industry, commerce and government administration, and as a socialising mechanism sustaining the collective culture. For-profit providers can operate but do so under tight regulation and with heavily constrained parameters imposed on the scale and scope of their operations. Such providers are partly owned by the government or its agencies.

The strategic priorities and measures of success are externally defined, and university leadership is held strictly to account by key government stakeholders. The university strategy in this scenario is an operational document, translating these external expectations into internal systems. Engagement with other stakeholders is important as a means of maintaining and demonstrating social cohesion and in providing a means of influencing the political environment the university operates within. The relationships between the university and other providers in the system are important, including those operating at the school level.

Cooperation and coordination, particularly with regard to infrastructure and staff capability development, are valued as contributing to collective social well-being. A major role of institutional leaders is their ability to maintain effective relationships with peers. The staff of universities in this system are probably subject to nationally negotiated employment agreements and contracts that structure their careers and options for movement through the system. Their roles are very consistent and most position themselves as public servants rather than employees of a specific university.

Cost management is important in this scenario. Technology is less important and defined by external standards or by integration into national infrastructure. This scenario shares many features with the Star Trek Academy, differing primarily around the primacy of technology and the values of openness. Vendor relationships are complex and involve coordination with government agencies at local and national levels. Competitive threats are minimal or non-existent, with strict regulations preventing the entry of new providers and the scale and scope of existing providers managed to a national plan negotiated well in advance. Efficiency and focus are the major determinants of success under this scenario.

20.2.4 Dr. Strangelove's Solution

Kubrick's 1964 black comedy *Dr. Strangelove or: How I Learned to Stop Worrying and Love the Bomb* provides the context for this scenario, imagining an alternative response to the pressures generating the Malthusian Collapse. As with that scenario,

the forces identified in the first section of this book maintain their momentum and are exacerbated in the shift to a universal model of education. Instead of this generating a collapse of the existing institutions through the creation of new externally defined and owned models, this scenario imagines the consequence of disruption by an established player who acts to reset and redefine the nature of higher education in a cataclysmic reinvention. The disruption is not an intended outcome of a rational strategy to achieve universal education, but the unintended consequence of a strategy operating without any guidance or control at the sector level.

In its simplest form, this scenario arises from an out of control expansion of the MOOC model, a re-visitation of the Virtual university experience without the brake being pulled to prevent irreversible damage to the systems of higher education. An ongoing proliferation of educational experiences stimulating an educational arms race. Institutions and consortia competing for the role of largest provider in numbers and in scope, without any constraint forcing a re-examination of the educational impact. The participants in this race gamble repeatedly that the next set of offerings, the next delivery platform, the next market, will somehow transform the totality of their MOOC offerings and provide a mechanism to pay for retention of what remains of the educational system. This explosion is enabled by unsustainable funding from outside the system, provided in the belief that universal education can be delivered like digital music with lean distribution channels.

The analogy with the music industry is key to understanding this scenario as it illustrates the power digital distribution can have over markets. The idea that we can remove the physical constraints on production is compelling: the Star Trek replicator, the ancient Greek Horn of Plenty, representing a utopian ideal. In reality, the music experience demonstrates a classic case of significant disruptive innovation. Music publishers had built profitable businesses selling music as a physical thing, even using successive technological developments to resell the same product repeatedly; as vinyl records, as tape cassettes, CDs, DVDs and even returning to vinyl to support the market for nostalgia and new performance styles. The idea that music was intangible, was capable of being experienced without any substantive physical embodiment, was not a part of that paradigm. The final outcome of music industry disruption of is still to be seen but it is already apparent much of the power has shifted to companies like Amazon, Google and Apple who provide the new digital marketplace for music and who support the discovery and experience of music through their systems, effectively stripping much of this control from the publishers.

The Dr. Strangelove scenario is a consequence of unthinking institutional application of this model of disruption to education. Modern technology enables a much more rapid pace of change than has historically been the case. Consequently, events can move so fast they fall beyond institutional control, rendering the typically torpid organisational systems of higher education incapable of reacting to the unintended impact of change. MOOC consortia, such as FutureLearn, Coursera and edX, are modelling their existence on the success of Amazon and others. They see

the value that can be derived from organising and managing digital content, while leaving the costly and risky business of creation to others.

The separation of production and distribution is the difference between this scenario and the Malthusian Collapse. The ultimate consequence of Dr. Strangelove's destruction is the fragmentation of higher education institutions into competing providers of educational content in a form that privileges efficient distribution over any other factor. Like the music album, courses will be dismantled into smaller components for reassembly by the student as they will. Advertising and sponsorship will creep into the experience in exactly the same way the 'freemium' model of entertainment is changing the experience of online games (Kalman, 2014; Pujol, 2010).

The temptation to move in the direction being hyped by other institutions, stakeholders and external commentators can be very strong. The virtual university examples (Chap. 9) serve as a warning that even very credible experts, and Merrill Lynch was certainly reputable at the time, or the very best institutions can be wrong. The unpredictable path of future technological change (Chap. 8) constantly replaces our sense of the possible but in Dr. Strangelove, unlike the Singularity scenario, it is not redefining the fundamentals of education and the human experience of learning. Institutions rushing to participate in technologically defined activities such as MOOCs without a sense of how that activity will feed back into the organisation, informing their understanding of their context, and without a business case framing the range of costs and potential benefits, run the risk of surrendering control and autonomy to external forces in the same way book and music publishers lost to external aggregators like Amazon, Google and Apple.

The challenge posed by this scenario is that the pressure for unsustainable change comes from within the sector, directly responding to external changes rather than using a process of sense-making to understand how they influence the integrity and outcomes of the system as a whole. Clarity of vision and the ability to rapidly respond to new opportunities in a way that sustains and strengthens the core ideology of the institution are key to success in a world moving towards Dr. Strangelove's cataclysm.

Leadership is needed to help maintain a collegial awareness of the value the institution provides society, to ensure new technology is used to enrich the outcomes and strengthen the organisation rather than transforming it into a technological artefact controlled by a few stakeholders exploiting their position. A mature organisation, aware of the impact of its activities, monitoring their operation and outcomes and reflecting on this information to continuously improve will be in a much healthier position than an organisation reacting randomly.

20.2.5 The Digital Agora

This scenario sees the university using technology to support inclusive global citizenship and to operate universally. Inspired by the Agora of Athens, the

university serves as the centre of the intellectual and social life of a community, providing a hybrid digital campus as an assembly point for engaging in a wide range of educational pursuits.

The teaching and learning focus is on inquiry and the development of intellectual skills. Ready access to content through electronic tools means teaching is oriented towards social constructivism and a scholarly approach to problem solving. Lifelong learning and community engagement are seen as important drivers, particularly given the ageing population and increased leisure time of older members of society. The campus is seen as an important social and informal learning environment with much of the formal learning activity mediated through online tools. Relatively few classes, other than basic introductory sessions, are offered through lectures, although there are plenty of guest speakers presenting at open conference style seminars, providing opportunities for the public and the university community to explore a wide range of intellectual issues.

Open educational resources and pedagogies are actively supported and the university partners with a large international consortium whose members include international élite and mass universities. Students can complete much of their study for qualifications independently of the university using open resources and participating in online communities run by volunteers, some of who are university staff and postgraduates themselves. This independent work is complemented by participation in a programme of review and assessment, culminating in the achievement of the formal qualification. Only postgraduate students spend significant time on campus, and many undergraduate students are only formally enrolled for a year in order to complete the required processes to be awarded their undergraduate degree.

Technology pervades the life of the university, its staff and its students. All administrative aspects of study are automatically addressed without human intervention. Students and staff are equipped with multiple networked and interconnected devices providing continuous personal connectivity and interoperability with public networks. Augmented reality tools facilitate social activities, including those associated with learning, and provide a constant overlay of relevant information as needed. Intelligent agents and personal information management systems undertake much of the routine identification and review of new information relevant to student and staff studies. The role of the user is to focus on goal setting, critical analysis and creative use of the synthesised information.

The Digital Agora expresses a utopian ideal requiring careful leadership if it is to balance the flexibility and openness of its core ideology with sufficient structure to be a feasible utopia rather than pure fantasy. A careful strategy of engagement is needed to sustain the success of the Agora, with the community of staff and students who are functionally volunteers and with the wide range of other organisations operating in the same and related contexts. The flexibility of this scenario implies the activities of many different organisations will intersect, digitally and physically, and they will cooperate and collaborate to provide the environment and experiences for staff and students.

This scenario is dependent on the ongoing development of digital technologies. Realising many aspects of this scenario requires active engagement with rapidly evolving consumer technologies, powerful and easy to use but designed primarily for non-educational use. The independent nature of learning imagined here implies technology strategies need to focus on curation, integration and consultancy, rather than management and control.

The greatest challenge offered by this scenario is realising the light organisational structures and leadership approach needed to sustain its growth. Leadership strategies need to influence and stimulate change enacted by people acting with a high level of autonomy and capability, emphasising the value of collegial and collective action, recognising and valuing individual contributions to the overall system.

20.2.6 The Economic Powerhouse

This scenario emphasises the relationship between the university and the wider economy. The primary and overriding focus is the direct contribution the university plays in workforce development and in supporting the development of industry and commerce. In a context of austere world economies, the university sees its role as providing a solidly reliable tertiary education for students in undergraduate and postgraduate studies. The environment is one of ongoing financial austerity reflecting the decline in public wealth and a government focus on minimising direct and indirect expenditure on higher education.

The ability of students to quickly demonstrate value to employers and for the university to support economic growth defines priorities for the structure of the degree experience and the role played by technology. The university is seen by society as the efficient provider of an educated and skilled workforce. Teaching and learning reflects a strongly vocational and career focus with applied research apparent throughout the student experience. This is a mass model scenario with no aspiration for wider social and community engagement. The vast majority of students are full time and expected to attend classes on campus. Undergraduate degrees are tightly structured, with the majority of courses defined by the choice of programme or major and with capstone and interdisciplinary courses used to provide integrative experiences. Internships, practicums and the use of industry facilities and staff during teaching are common.

Unlike the Invisible Hand scenario, there is not a pure market in place and government still sees value in the operation of a pseudo-market to regulate the operation of for-profit provision but a key strategic priority is engagement with sector agencies to preserve this regulatory protection. Despite this key difference, many organisational implications are similar, including the need to maximise the efficiency and effectiveness of internal systems and processes.

Technology has a defined and circumscribed role in the lives of students and the university. Financial constraints mean investment in technology is carefully

managed to minimise costs. Performance information is collected routinely on a wide variety of student and staff activities and used to monitor the efficiency of systems and to manage costs tightly. The university provides a basic technology platform modelled on the industry standard workplace with a heavy use of purchased content and tools. Economies of scale with large cohorts of students mean lectures are recorded and delivered via video as well as in large lecture theatres. Content is licensed from commercial publishers, and students are expected to purchase an electronic reader in order to access textbooks. Assessment activities are collected and marked through electronic workflows, and there remains a single standard course environment, provided by the university, delivering content and administration. The majority of content engagement is mediated through licensed facilities provided by the textbook publishers. Wherever possible, simulations and virtual experiences are used in undergraduate classes to replace the use of dedicated laboratories and specialist equipment. Large classes mean discussion forums are used to provide announcements and answers to frequently asked questions.

The use of external vendors in this model means relationships need to be carefully managed. As competitors will be using similar or identical systems, the ability to negotiate slightly better contract terms and curate the range of available products and services efficiently becomes important strategic differentiators.

The university needs to focus on the impact its teaching and research has on the economy and on sustaining partnerships with specific employers and industries for research, internships, practicums, and as destinations for graduates. Accountability to external stakeholders, assessed through a range of standardised performance measures, is a major priority as competition with other providers is a significant feature of the landscape.

20.2.7 The Expanding Universe of H.G. Wells

This scenario is inspired by the genre of science fiction typified by nineteenth-century author H.G. Wells. His novels, including *The War of the Worlds*, *The Invisible Man* and *The Island of Doctor Moreau*, explore the idea that science, technology and discovery are constantly challenging and expanding our ideas of what is possible, generating new situations that society needs to respond to, preferably though a reaffirmation of our collective human values.

In the Expanding Universe scenario, purpose and meaning is maintained by higher education through a constant expansion in human understanding and an ongoing demand for educated people able to sustain our society in the face of these dramatic changes. In the society imagined in this scenario, universal education is a coping mechanism for the pace of change and the need to remain relevant in a world redefined by scientific discoveries. The focus is not on the nature of universal education and its mechanisms but the impact of education in sustaining a functioning society in the face of dramatic change.

It is possible to see this scenario as a call for disproportionate investment in the physical sciences, engineering and mathematics, as is apparent in the political steering of the education sector in the UK (Collini, 2012; Her Majesties' Government, 2013a; Scott, 2011). H.G. Wells, however, was a socialist and well aware of the need to engage with people from a wide variety of backgrounds and interests. If the changes we experience impact across society, then higher education needs to support people in a wide variety of contexts in coping with the implications. People educated in the social sciences and humanities are essential to the process of managing the chaos caused by changing patterns of employment and helping society find new meaning.

Wells' writing has a distinct utopian character; he wrote of the human race responding to a challenging universe with collective rationality. In this scenario, higher education is a tool supporting a society that values intellectual development and makes it readily available to all in the support of a rational and orderly response to change. His socialist ideals are reflected in the evolution of economic models to the point the educational system is subsidised, if not free. In contrast to the strongly regulated society of the Star Trek scenario with its strong engagement with diverse cultures and vision of a technocratic utopia, this remains a scenario of messy conflict and social disorder.

The responses and solutions to our problems are solved by humans, not bestowed as gifts of radical technological change. People remain flawed and driven more by self-interest than by social coherence and deep divides and inequalities remain, despite the attempts to impose rationality and the positioning of education as a pathway to personal success. Technology is important and responsible for much of the change encountered but does not dominate or transform the educational experience such that existing organisational models become irrelevant. Unlike the Singularity scenario, technology is not transforming the nature of human understanding but neither is it threatening the existence of higher education—Dr. Strangelove, or society in general—the Malthusian Collapse.

The drivers for success in this scenario are not the typical mass education indicators of academic reputation or financial efficiency but a focus on intellectual growth and social impact. In this scenario, a successful university is well integrated with its community and positioned as a lifelong mentor and supporter of individuals and society. The focus on economic drivers has been diluted by the wealth generated from new scientific and technological developments, but this has disrupted traditional patterns of employment. Investment in business is a higher risk proposition as new inventions continually disrupt existing production methods and place large capital investments at risk of being supplanted by newer, more effective processes. Relationships between universities and commercial interests are more fluid, the pace of new ideas and the demand for people equipped with new knowledge and skills relentless. This drive for new ideas and skills is already evident in the relationships various US universities have with companies like Google and Microsoft, with their funding of professors as research fellows and their use of academic researchers as leaders of commercial technology initiatives.

The leadership challenge is maintaining institutional integrity and coherence in a rapidly changing world. This is not a scenario where the institution of higher education faces a strong political or economic challenge to its legitimacy but one where the flux in the student and staff population is high and dramatically challenging ideas and discoveries are a routine fact of life. The intellectual dimension of university life and the role of research is strengthened, but many of the institutional trappings and mechanisms are exposed to innovation and the constant pressure to respond to new technological discoveries. Organisational coherence under high levels of change depends on clarity of institutional identity, and a strong awareness of the core ideology needed to sustain that identity.

Leadership is needed to help understand the ongoing relevance of those values in the face of changes affecting the mechanisms of education and to help new staff and students engage fully with those values. Sense-giving is essential to internal success and to external success as one of the key functions of a university in this scenario is its ability to provide sense-making support to society and individuals in the face of significant and sustained change.

These changes are not limited to the external environment. A high degree of organisational maturity is needed to ensure processes and systems are constantly re-evaluated and improved in response to change. Shifts away from the success measures of mass education, such as cost and employment, mean more sophisticated tools are needed to support organisational development. Frameworks such as the eMM, which do not assume specific models of delivery and organisational structure and which can cope with ambiguity, are needed to assess the impact of new knowledge on organisational capability and provide a rich evidence base supporting the management of resources for change and improvement (Chap. 16).

In the Expanding Universe scenario, the strength of the university as an institution is the role the continually changing community of internal stakeholders plays in maintaining its own coherence. It achieves this through commitment to core values and continuous sense-making aimed at benefiting from the opportunities and challenges posed by the changing environment.

20.2.8 The Ivory Cybertower

The Ivory Cybertower scenario posits the university as disconnected from the pragmatic realities of a faltering world economy, with a decline in investment in higher education by government and a falling market for international education as various source countries focus on domestic provision. This scenario differs from the Educational Theocracy by positioning technology as providing a strategic edge for the university, reducing the costs of education but also reflecting the expectations of the targeted student population. The university sees its role as protecting the reputation of a university education and value of a degree by restricting it to an academically selected population of the brightest and best through an élite model

enabled by modern technologies aligned to the contemporary workplace they will lead.

Strategy and marketing materials describe an institution educating the leaders of the future by exposing them to a high-quality university education with a strong emphasis on research and postgraduate study. The university is seen by society as an élite institution complementing the more vocational focus of employer operated providers and the public polytechnic sector. Strategically, the university talks about the impact its teaching and research is having on the economy and the partnerships it has with specific employers and industries for postgraduate research, internships, practicums and as destinations for graduates.

The teaching and learning focus of the university is driven by efficient, centrally operated systems supporting a student population with an emphasis on a variety of postgraduate qualifications. Many of the students are part-time. A large proportion are postgraduate students, undertaking study while in full-time employment with the focus of their courses developed in collaboration with employers and industry partners. Undergraduate degrees are structured with the majority of courses defined by the choice of programme or major and with capstone and interdisciplinary courses used to provide integrative experiences.

Technology is heavily used to support teaching at both undergraduate and postgraduate levels, providing a gloss of modernity and operational efficiency without substantially shifting the pedagogical designs of courses that are recognisable evolutions of current offerings. Students are expected to engage with a wide range of locally developed and licensed content provided by the university via the Internet and accessed on personal devices.

Student activities and performance are actively monitored by a variety of systems, and the analysis of this information drives continuous improvement of the quality and efficiency of their experience. Undergraduate courses use face-to-face time to offer tutorials targeted to specific students on the basis of online performance and identified needs, for structured collaboration activities, and to provide students with hands-on experience with specific tools and equipment. Campus facilities are equipped with technologies to facilitate collaboration by students and staff in designated small- to medium-sized learning spaces. Large lectures are only used for first-year courses, which are designed to provide a broad foundation and to stream students into their majors.

This is an élite model so reputation is an important driver in this scenario, as are the strategies needed to address how that reputation is sustained in the face of continuous attempts by other universities to gain an advantage in various international ranking tables. Engagement with faculty is driven by the reputational value they can contribute as international scholars and their ability to facilitate linkages into the leadership of key external stakeholder groups. Vendor relationships are as much about high level connections and reputational alignment as they are about the services supplied and there is a strong linkage with branding and sponsorship activities, particularly with those organisations that have alumni in senior roles.

20.2.9 The Malthusian Collapse

The educational dystopia of the Malthusian Collapse reflects a vision of a world destroyed by human failings manifested in uncontrollable change:

> The power of population is so superior to the power of the earth to produce subsistence for man, that premature death must in some shape or other visit the human race. The vices of mankind are active and able ministers of depopulation. They are the precursors in the great army of destruction, and often finish the dreadful work themselves. But should they fail in this war of extermination, sickly seasons, epidemics, pestilence, and plague advance in terrific array, and sweep off their thousands and tens of thousands. Should success be still incomplete, gigantic inevitable famine stalks in the rear, and with one mighty blow levels the population with the food of the world. (Malthus, 1798, p. 44)

It is not hard to sense a potential for a Malthusian Collapse in the review of the forces affecting higher education presented in the first section of this book. The successful growth of higher education has started to impinge on the sustainability of that growth and could potentially lead to a failed system with loss of the value of existing qualifications and the inability to sustain the scholarly mission of most universities.

Under this scenario, the transition from mass to universal education is not managed and guided to sustain important economic and social outcomes. Instead, the trends identified earlier play out to a catastrophic conclusion. Globalisation and growth in the scale of education continue unchecked, with education experiencing the same consequences befalling other sectors of the economy and society. Trade agreements force governments to acquiesce to the interests of multinational corporations interested only in driving down costs while growing profits through massive increases in the scale of their operations.

Existing public universities will struggle to compete against these lean operations, particularly as they target the most cost-effective parts of the education system, damaging the viability of the universities as they are left with fewer students and only the most expensive and specialist subjects. Political and economic pressures see many universities forced to try to compete in a race to the bottom, slashing costs and inevitably damaging the quality of the educational experience.

Educational products will be generated by the new multinational providers after careful market analysis and delivered remotely using a variety of media tailored to the characteristics of the desired consumer. Price and acceptability in a market become dominant factors in the success of these operations. Quality is managed by defining education as standard, uniform and consistent. Excellence remains pre-eminent but only in the meaningless way marketeers and consultants use it today in commercial settings. Universities will struggle to compete with the focused efficiency of these operations, with collegial management structures failing to evolve rapidly in response to the changing market conditions.

Technology is an important enabler of elements of this model, providing the means for the functions of education to be externalised and disaggregated so they can be delivered by an ecosystem of specialist organisations invisible to the general

public. The focus is on administrative and operational efficiencies, not on the pedagogical affordances or experience. The multinationals have the advantage. Unencumbered by the need to depreciate a physical campus infrastructure, freed by trade laws from the need to support expensive minority populations and experienced in the negotiation of contracts for services, they can ruthlessly out-compete existing universities. This could easily include the subsidisation of unprofitable, loss-leading offerings in order to destroy existing providers and establish a new, commercially operated monopoly in their place.

Another source of competition comes from media companies, diversifying and building on existing trusted brands to support niche educational enterprises. Examples of this can be seen in educational initiatives such as NYT EDUcation announced by the New York Times (Fabris, 2015a). Aspects of the Malthusian Collapse scenario are already apparent in the USA, as reflected in the changing fortunes of the University of Phoenix (Sect. 9.2.1). Two-year college degrees are no longer the ticket to adult success they once were. The positional characteristics of qualifications are influencing student and employer behaviour, and the spiralling costs described earlier are dominating the political narrative. Increasingly, the idea that formal education qualifications are unnecessary for success is being presented to the public (Ernst & Young, 2015). The conceit is the success of a lucky and brilliant few is somehow plausibly achievable for large numbers of people. The MOOC is positioned as a post-qualification model of education providing a free education equivalent to the élite degree experience. As well meaning as many of the MOOC initiatives may be, the analysis presented earlier suggests that they will only continue to exist while the various subsidies, hidden and overt, continue to be available.

This scenario should be familiar to many in higher education. An early rehearsal of it occurred in response to the Virtual University hysteria (Chap. 9). No dramatic collapse followed, at least not one that significantly compromised the sector, even if investors and governments lost their investments. This partly reflects the premature hype of companies like Merrill Lynch; possibly it was a consequence of generally benign economic conditions in the early part of the first millennial decade. Despite this, the forces identified earlier remain strong pressures on any institution.

Core to the collapse is the sense the university has lost its way as an institution of society. The collective social and political understanding of the role the university plays in society has been dismantled in the face of competing demands for specific outcomes. In its place, the universities have failed to provide a strong sense-making narrative for the various stakeholders that enables the value of the university to be recognised and defended in a cohesive and systematic manner.

A strategy for success in the face of the wider sector collapse imagined in this scenario appears to be one of resilience and self-confidence, built on a foundation of strong systems, robust financial controls and the vision of leaders prepared to take necessary risks. Research into the success of companies facing hostile sector-wide conditions (Collins & Porras, 1996) suggests long-term survival depends on institutions investing in their strengths, ruthlessly cutting where they are weak, and building core capabilities while others retrench and lose momentum. This strategy

positions the organisation to rapidly take advantage of better conditions when these present themselves and gain a first-mover advantage. If the resources are available, this can even be the time where innovative approaches can redefine the organisation and the sector. The necessity for change is manifest, and this simplifies the process of sense-giving and stimulates sense-making processes as people respond to the situation.

The leadership challenge posed by this scenario is how to maintain the balance of discipline and confidence in the future during the lean periods. This is particularly hard given the need to be ruthless in stripping away unnecessary or weak components of the organisation in order to focus on and invest in the areas that strengthen it and respond to future needs. Leaders need to use quality improvement and organisational development tools to manage the impact of necessary changes and to protect the core values, vision and capability of the organisation as they engage in these changes.

20.2.10 Marxist Collective Ownership of Education

The Marxist Collective Ownership scenario is based on an educational application of Karl Marx's analysis of capital (Marx, 1867/2013) and his proposal for a model of collective ownership of the means of production and the surplus value generated by individual work. Countries such as Australia or New Zealand operate a higher education system that can be said to be owned by the public but under this scenario ownership extends well beyond that. Marxist ownership means direct control and authority over the surplus value of the outcomes of education, collectively exercised by everyone who participates.

Politically and economically, the Marxist concept of collective ownership of surplus value is complex, and it is not immediately obvious what it means in an educational setting. Surplus value of production resulting in the accumulation of private capital can be understood educationally as encompassing the way individual academics benefit personally from the work of their students extending beyond the direct educational outcome achieved at the individual level.

This scenario describes an educational space explicitly rejecting the influence of New Public Management (Sect. 14.4) ideas, particularly the implication that intellectual endeavours can be operationalised and measured in ways resulting in their control and exploitation by managerial classes and élites (Chatterjee & Maira, 2014; Giroux, 2014; Toscano, 2011).

Recognition of the existence of a meaningful surplus value in education is apparent in sections of the AAUP code of ethics addressing the duty of care academics must exercise. Failures are reflected in the experiences of graduate students who feel exploited by the model of postgraduate education (AAUP, 1970), including the exploitation of student intellectual activity in the form of patents, copyright and attribution of authorship. The ideas of intellectual property play out in a manner strongly analogous to that addressed by Marx in his critique of the

accumulation of private wealth by employers at the expense of their employees. Dyer-Witheford (2011) describes this idea as 'futuristic accumulation' reflecting the Marxist idea of primitive accumulation responsible for the enclosure of agricultural productivity. Futuristic accumulation describes how intellectual and technological progress is captured by processes of ownership, resulting in growth of private wealth and an ongoing dispossession of the wider population.

Marx's ideas stimulated dramatic historical changes, many of which remain in play. A collective ownership of education also suggests a significant social adjustment. At the very least, this reflects a more systematic application of Chomsky's argument that universities should be critical to the point of being subversive, disturbing the peace and disrupting the status quo of the dominant market economies (Chomsky, 2003).

External stakeholders, government control, performance management and accountability all cease to have value as the collective participants in education take responsibility for the operation of higher education. This means students exercise direct control over the curriculum and the pedagogical approach. They are personally and collectively responsible for any formalised outcomes, especially any involving external instruments such as qualifications or transcripts. On the face of it, this scenario implies anarchy and a complete rejection of the core intellectual expertise that gives the university meaning. An example was apparent in the USA during the turbulent time of the 1960s (Bok, 2013; Marginson, 2016). The treatment of students as equals to academics is an important differentiator in this scenario. The absence of subordination to a wider social hierarchy and interests separates this scenario from the Star Trek one and avoids some of the issues that have plagued communist societies with dysfunctional hierarchies.

A successful organisation in this scenario needs to enable collective ownership of the experience while providing a mechanism respecting the collective value of intellectual expertise. Recognition by people who are experts that they are in many ways just more advanced learners and capable of learning from the fresh perspectives of less advanced learners is central to this model. The Māori of New Zealand have the concept of Akō (Marshall, 2013), which provides an example of how this can be successfully implemented. The treatment of all participants as peers with different contributions means issues of control and attribution of the outcomes can be resolved equitably, rather than exploitatively.

Technology supports many of the enablers that make aspects of this scenario plausible, particularly the reduction in the dominating influence of traditional infrastructure, the capital, embodied in the campuses and information resources stored in closed repositories. This traditional infrastructure is controlled by institutions or, as they move into mass models, by governments or corporations, rather than the Marxist ideal of collective ownership by the students and teachers. The dramatic and ongoing reductions in the cost of information production and access, the globalisation of scholarly communities, and the opening of many of the modes of communication used to build and sustain collaborations, enable a blurring of the formal institutional boundaries that exclude wider participation.

Digital democracy advocates are already exploring the implications of technology as a tool for collective governance and decision-making. Many MOOCs are embodiments of this scenario, already, in their creation of very open communities of practice, dedicated to personal education in a collectively supportive setting. The key concepts of open education and supporting technologies (Chap. 11) are significant contributors to aspects of this scenario in their provision of models for collective benefit from individual work that actively discourage the control of intellectual capital by a minority.

Transitioning to an organisational model reflecting aspects of this scenario requires a genuine commitment to collective democracy and shared leadership from institutional leaders and managers. There are examples of organisations operating within Marxist frameworks who provide potential partners for benchmarking and sense-making. An important strategy is one of supporting small and local change initiatives, giving staff and students the opportunity to explore the implications of this model. Student involvement is essential, but the transition to greater autonomy by students within higher education institutions needs to be carefully framed. The failure of an earlier generation and the alienation of academic staff and of wider scholarly and disciplinary communities must be avoided.

A particular challenge for institutions currently operating in aspects of the mass education model but wanting to shift to reflect aspects of this scenario is how relationships with strongly salient stakeholders, government and employers are managed. Poor engagement with these stakeholders could result in direct intervention by agencies and other immediately disruptive actions such as loss of external funding, the devaluing of qualifications or even de-accreditation.

20.2.11 The Modern Academy

In the Modern Academy scenario, the government, freed from the pressure of financial austerity, has moved away from the model of strict financial accountability applied in the early years of the millennium and looks to the university sector to support wider social and cultural outcomes as well as enabling education and scholarship throughout adult lives. The legacy of harder times remains visible in the sector through a predisposition for central authority and a general attitude of accountability and parsimony.

The New American University model promoted by Crow and Dabars (2015) exemplifies this scenario, with their description of a pragmatic university, determined to offer a broad range of programmes aimed at a specific context and reflecting the diverse socioeconomic needs of the various communities constituting that context.

Technology utopianism has been tempered by the pragmatics of previous austerity. Technology is important, particularly with regard to the administration and management of the university, but traditional models of learning are reaffirmed and strengthened. Technology systems are managed centrally and all administrative

aspects of study are automatically addressed without human intervention. Content for most courses is licensed from commercial publishers, and students are expected to purchase an electronic reader in order to access textbooks. Most staff choose not to create online resources for their courses, using licensed materials provided with textbooks or having materials created by the small course production teams located in each faculty. Assessment activities are collected and marked through electronic workflows, and there remains a single standard course environment, provided by the university, delivering content and administration. Technology is seen as an important tool for accessing information and for communication, but students are expected to attend face-to-face classes for all of courses and to engage in a variety of educational activities without the use of technology.

In contrast to the large-scale models typifying universal and mass education, the university has strongly affirmed the value and importance of the traditional campus experience providing a structured and educationally effective pedagogy. The student body has grown in size and diversity but most students are engaged in full-time study. Staff numbers have increased significantly to support a high staff-to-student ratio. Much of the undergraduate teaching is now taught by adjunct teaching fellows employed on teaching-only contracts. International students remain an important part of the student body, reflecting the growth in the Asian economies and the sense that the university provides a high-quality, traditional education consistent with the sober values of Asian societies.

This is very much a 'business as usual' mass educational model, rejecting disruption and working to sustain gradual change strongly aligned to the core ideology and context of the university. Success in this scenario is achieved through a strategy that pays careful attention to the balance that is maintained between the various forces for change and perspectives of stakeholders. Each major university activity is framed by the importance of the place the university situates itself within. Learning and teaching activities are framed by careful engagement with diverse communities and consideration of the measures describing success in their terms. Academic priorities and direction are externally positioned, looking for opportunities to make new connections with the various external stakeholders through applied and interdisciplinary education and research.

20.2.12 Rousseau and the Spiritual Malaise

If not confronting the catastrophic Armageddon suggested by the Malthusian Collapse, perhaps the sector will instead face a Spiritual Malaise, as the intellectual and social values of the university are lost in a technological deterioration of the intellectual foundations of society. A decline like that of Rome in the later years of its empire. Superficially changing in response to the ravages of external forces, but in reality, reflecting a loss of integrity and values inherent to the process of civilisation, increasingly separating people from each other and from their natural, biological nature.

In the introduction to this book, a number of positive consequences arising from education are outlined, including longer life, greater happiness and better health. In this scenario, these positive outcomes represent minor and transitory benefits in a society where our very civilised state is ultimately responsible for a spiritual malaise affecting our fundamental humanity. Rousseau argued the state of civilisation was itself harmful:

> While government and laws provide for the safety and well-being of assembled men, the sciences, letters and arts, less despotic though perhaps more powerful, spread garlands of flowers over the iron chains with which men are burdened, stifle in them the sense of that original liberty for which they seemed to have been born, make them love their slavery, and turn them into what is called civilised peoples. (Rousseau, 1750/1964, p. 36)

This scenario imagines a world where education is universally available but dominated by the utilitarian needs of a system of control and oppression, benefiting a few at the expense of the vast majority. An illustration of an intermediate step to the realisation of this scenario is to imagine a proliferation of free online courses providing access to some form of higher education and redefining expectations of what a university does to the superficial affordances of a MOOC. This would naturally coexist with the ongoing operation of an élite model of education, well concealed from the attention, interest and aspirations of the general public in the same way exclusive resorts and business venues of the élite are concealed.

The spiritual malaise in higher education reflects the disengagement of teachers and learners from each other, a disjunction of purpose leaving both unsatisfied with the relationship and the outcomes. The technology enabling and sustaining the growth in scale and the integration of higher education into the wider economic and political systems of civilisation pollutes the culture and values of the institution to the extent it ceases to be about the development of human knowledge and potential. The relentless drive for accountability has left the experience of education defined in the shallowest of utilitarian ways, concealed by the façade of the fading reputation of the university.

The transition from an élite to a mass model saw several writers speak of the decline of the integrity of higher education (Anderson, 1996; Aronowitz, 2000; Bailey & Freedman, 2011; Brabazon, 2007; Collini, 2012; Hersch & Merrow, 2005; Holmwood, 2011; Readings, 1996). These writers are, perhaps consciously, repeating Rousseau's attempts to draw our collective attention to the positive elements of a simpler experience of life, operating at a slower tempo where change is measured in generations of lives, not generations of devices. The anti-technology slant of these critiques echoes a long-standing concern illustrated by McLuhan quoting the Chinese sage Chuang-Tzu from 2500 years ago:

> I have heard my teacher say that whoever uses machines does all his work like a machine. He who does his work like a machine grows a heart like a machine, and he who carries the heart of a machine in his breast loses his simplicity. He who has lost his simplicity becomes unsure in the strivings of his soul. Uncertainty in the strivings of the soul is something which does not agree with honest sense. It is not that I do not know of such things; I am ashamed to use them. (McLuhan, 1962, p. 30)

The public university response to this scenario is to accept and transition to a purely transactional model of higher education, or to resist and reaffirm the values of the academy. The first strategy is almost certainly doomed as it presumes a university is capable of abandoning virtually everything that defines the concept and ruthlessly focus on operational efficiencies. Under this option, the malaise is real and the patient has died. The second strategy requires a leadership capable of working with the university stakeholders to build a collegial consensus around the core values of the institution and align the systems and processes of the organisation to sustain and embody those values.

The impact of the values on the culture cannot be a superficial gloss achieved by slick marketing. It must be owned and communicated on the individual level by staff in their daily routine. Faking a genuine commitment will simply accelerate the pace of the malaise. Inevitably, defending the institutional culture and values will cause the institution to conflict with external stakeholders who do not share the core value set. The strategic response to this scenario needs to reflect a strong belief that the integrity of the institution will be respected as they negotiate to mitigate the impact of external conflict. Maintaining that integrity requires recognising the distinction between aspects of the institution that are core values and those reflecting operational mechanisms (Chap. 14). Sense-making and sense-giving are powerful responses to the strategic and operational challenges embodied in this scenario. The intangible nature of values means they need to be communicated carefully in the rationale for initiatives and a constant narrative asserting their influence must be relayed throughout the organisation by leaders and managers at every level.

20.2.13 The Star Trek Academy

The Star Trek Academy is a scenario built on the technological utopia of abundance. In the science fiction world imagined by Star Trek, the development of technology has resulted in a society unconstrained by limits on basic human needs. There is no consideration of finance, at least at the individual level, and no evidence that any one is constrained other than by their personal and intellectual capabilities. Star Trek imagines a world of great social order and coherence, it values diversity and inclusion but also the rule of law and respect for individual and collective rights.

A university in this scenario is by definition a public institution; fees, student finance and debt, and commercial profit have ceased to be anything other than historical curiosities. The focus of the university is on preparing people to make contributions to a society where, despite the absence of money, people still have meaningful jobs that are necessary for the functioning of society. There are many parallels between this conception of the future and aspects of the German tertiary system described in Chap. 5.

Star Trek is defined by technology. It pervades every aspect of life with the growing use of artificial intelligence apparent in the use of omnipresent information systems. The educational experience is thus a technologically mediated one. The presence of ubiquitous networks, strong artificial intelligence, vast databases of human knowledge and immersive holographic augmented reality mean a student can experience a rich and authentic learning environment. The pedagogy of abundance will make the problems faced by mathematics teachers over cheap calculators became simple in comparison. Unlike the Singularity scenario, Star Trek society does not transform or reinvent our basic natures but celebrates our essential humanity in all its diversity.

The structured nature of Star Trek society suggests education will be informed by the individual assessment and tailored development programmes that characterise the training of young sports people today. This distinguishes it from the strict focus on intellectual excellence that characterises the Theocracy scenario. Access to information and educational experiences will be a normal part of everyday lives, so the role of education will be in deepening the creative and critical skills of people and helping them focus their energies and productivity in socially meaningful ways. Technical skills and innovation will be important but equally valued will be the skills needed to sustain a stable society engaging with a diverse mix of alien civilisations. The ability to understand alien perspectives, languages and cultures will require a skill set much closer to the humanities than the sciences, and the ability to sustain the stability of human civilisation faced with such complexity will require expertise in human sociology, politics, history and communication.

Despite its abundance, Star Trek society is regulated, efficient and responsible. Tools to improve the quality and efficiency of processes and to help smoothly integrate continuous technological change are likely to be valued. Leadership is important, but leaders are expected to act in ways consistent with the intellectual and social values and missions of the institution. Accountability to external stakeholders is still important, but the shift away from contemporary economic frameworks means the focus is more about obtaining the greatest value from the resources invested and understanding ways that higher education integrates into the other societal institutions.

Aspects of this scenario are apparent in the experience of community colleges and universities based in smaller urban or rural contexts, such as the University of the Sunshine Coast in Australia (Shaw & Allison, 1999) or the University of Highlands and Islands in Scotland (Newlands & Parker, 1997). These universities are explicitly engaged with their local communities and decisions about the range and level of educational opportunities are framed by local demographic, economic and social concerns. Technologies such as MOOCs and Open Education provide these institutions with the opportunity to draw on the resources of richer universities and communities, with the caveat that the geographical context complicates issues of access and the level of funding limits the pace with which new technology can be adopted.

Despite these limitations, the institutions benefit from a sense of social engagement and impact that helpfully supports the leadership when engaging in

change processes aligned with the external social context. The leadership challenge embodied in this scenario is identifying the values the institution shares with the society it is part of and creating organisational structures to integrate the university strongly within its community. And doing so while still retaining intellectual coherence and focus in the face of the 'alien' influences and opportunities influencing that society.

20.2.14 The Technological Singularity

The Technological Singularity is the idea, anecdotally attributed to mathematician John von Neumann in 1958, that the continual acceleration of technological progress and discovery will culminate at a point where much of what we understand of human civilisation and identity will cease to have any meaning, requiring a complete rediscovery of ourselves. Futurist Ray Kurzweil is strongly associated with the idea of the Singularity and predicts it will occur around 2045 (Kurzweil, 2005), well within the lifetime of many academics and most students. While the specifics of Kurzweil's analysis can be criticised and that date remains significantly in question (Barrat, 2013), it seems likely that at some point in the next few decades, a meaningful form of general-purpose artificial intelligence (AI) will be invented, which will start to redefine the capabilities of human civilisations (Vinge, 1993).

Barrat (2013) describes the risks artificial intelligences might bring to society, particularly given their probable creation by the military or people interested in making a financial killing. He points out that unless AI is developed with a version of the Hippocratic oath 'first do no harm' as an ethical framework embedded within its world view, it is inevitable misbehaving or misused AIs will seriously disrupt human societies.

This scenario imagines a world where the invention of some form of AI has happened and education needs to respond to a technology with identity and self-awareness. The Singularity explores a successful collaboration between humans and artificial intelligences. The first AIs will be large and expensive, possibly the most expensive technological artefacts ever created. They will plausibly be able to collaborate in their own improvement, working with human scientists and engineers to rapidly develop and improve the platform of technologies, driving down the cost and increasing performance to the point where we can imagine education in a world of people working in partnership with at least one personal artificial intelligence.

The impact of this scenario is suggested by considering the impact devices and networks are already having on classes (Chap. 12). The qualitative consequences are of a different order, as it is possible to imagine an AI capable of monitoring and responding to context in ways far beyond our current systems. The Apple Knowledge Navigator (Apple, 1987) shows one way this partnership might be experienced, with the AI taking on the role of a diligent and comprehensive personal assistant. An attentive AI would help focus our attention, remediating any lapses of focus and mitigating the impact of distractions. It would augment our

memories and actively direct our awareness to the implications of global events in real time. The effects could be quite sophisticated, particularly if the AI was able to draw on developments in personal health monitoring technologies and consequently tailor its advice and guidance in response to our physical state.

This partnership would need to be more like a genuine collaboration rather than simply cooperation if it is to avoid the dystopian consequences of a manipulative AI imagined by Arthur C Clarke in his novel 2001: A space odyssey (Clarke, 1968). HAL has defined AI for decades, and a fundamental element to this scenario is how sense-making repositions AI positively in human lives. In the early stages of development of personal AIs, it is plausible to imagine the devices being deferential and submissive in their collaboration, but ongoing development is almost inevitably going to result in AIs with personality and self-motivation. This scenario is predicated on the basis that, for technological or political reasons, this would be managed to avoid direct conflict.

Education in such a world is an interesting phenomenon. We could plausibly experience a Socratic ideal, a personal tutor knowledgeable beyond all experience to date, tireless and continually present to pick the perfect moment to teach new ideas. University in such a world is inevitably universal, returning to the medieval root *universitas* and encompassing the whole of human experience. The campus dissolves into the world and classes are wherever they are needed. Critical and creative thinking, the ability to make intuitive leaps and to engage on a purely emotional level would be the priorities for human development as much of the normal grind of modern work is made effortless. The most successful people will be those who are able to maintain their personal energy and focus on tough challenges, wicked problems with irresolvable conflicts between different elements. Universities may still exist in name as a mechanism for signalling and sustaining a collegial engagement with issues of common interest. Expert knowledge will be replaced with expertise in leading and shaping the collective energies of individuals working in collaboration with their AI supports in a synergistic intellectual process. Inevitably, some of these new universities will focus on philosophy, creating a modern Athenian idyll in a digital Agora, others will be driven to further advance technology and to undertake basic research.

To be clear, the Singularity is not automatically a utopian vision. There is no particular reason why the creation of real AI will make humans more moral, nor will it automatically see all social problems resolved in a burst of pure rationality. Human knowledge may grow rapidly for a time as unexpected connections are made between unrelated areas but at some point we will need to engage with genuine discovery and creativity owned by non-human intelligence.

Setting aside the pathway of future development and considering the point in time where effective AI-based personal assistants are possible, the impact will be most dramatically felt by the early adopters. The technology of AI removes any sense of equality of capability between people. Those with the benefit of AI augmentation will outperform those who lack it. This advantage will first be apparent in the collective spheres of politics, diplomacy and commerce. Whichever nation first has the ability to magnify its intellectual capability in this way will benefit from a

stimulation of technological development in every aspect. AI-enabled robots will see our understanding of the deep ocean and other planets expand dramatically. This will inevitably be translated into material exploitation of new frontiers through deep sea and asteroid mining. The resulting wealth will further reinforce the dominance of the society that first achieves AI.

In some cultures, these benefits will be widely shared and generate the widespread adoption of personal devices noted above. In others, the technology will be used to reinforce the position of dominant élites, further strengthening class structures and protecting the privilege of the few. A dangerous possibility is the distancing of leaders from the human cost of conflict and war, already evident in the proliferation of drone technology (Chap. 10).

The Singularity is potentially such a disruptive scenario that it is hard to imagine a sensible pathway for a modern institution to prepare itself, other than by investing in the computer sciences to develop the technology first for itself. Successful institutions will be those able to navigate the disruption the initial invention and disclosure of AI in limited forms will create. The ability of the university to guide society and reassure those troubled by the creation of a new intelligence will be essential to wider stability of communities. Academics need to be able to understand for themselves and for their students how technology enables creativity and critical thinking.

Institutions wanting to be well positioned to respond to dramatic shifts in technological capability need a strong foundation of knowledge and experience in the complex interplay between technology and academic work. They need to control the development of their own technological capability to push beyond mere responsiveness to technology as a commodity, to lead our society and balance the pressures from purely commercial interests.

A key strategy for responding to the potential of genuinely disruptive technology is to maintain academic engagement with modern technology, in terms of fluency of use, and in imagining new opportunities for changing patterns of scholarship. Treating the use of technology as a distinct activity, surrendering control of its development and future direction, disconnecting technology from the normal life of the university, is unlikely to support the sophisticated understanding needed maintain this engagement. The close relationship between information technology and modern scholarship means its place in the institution cannot be disregarded, or even outsourced to the lowest cost provider like plumbing or financial services.

Sense-making and sense-giving by leaders wanting to shape the role of technology and build institutional capability are dependent on leaders who are personally and deeply engaged in the use of technology themselves. This scenario highlights the potential for such radical technological change that any organisation not maintaining currency will simply cease to exist. The first-mover advantage will leave all but the very fastest followers so far behind in capability that it can never be recovered from.

20.2.15 Xanadu

The Xanadu Scenario is based on the ideas of early Internet thinker Ted Nelson. In 1960, nearly thirty years before the creation of the World Wide Web, he created but subsequently failed to successfully implement the idea of a hypertext environment supporting knowledge, work and collaboration (Nelson, 1974; Wolf, 1995). Xanadu™ was inspired by the post-war vision of Vannevar Bush (Bush, 1945) who describes how technology can be used to improve the management and use of information using early models of computing. Unlike the simple open structure of the WWW, Xanadu™ explicitly managed the connections between content and included a payment model that created a virtual information economy. Lanier (2013), building on Nelson's vision, argues that the creation of a micro-transaction system, directly paying creators for the use and reuse of their work, will act to reduce exploitation of individuals by large aggregating services like YouTube.

In this model, each time someone views, copies or edits to create a new version of a digital artefact, the original creator, and plausibly those responsible for subsequent derivative versions, is automatically paid a tiny amount of money—a micro-transaction. In a properly functioning system, the aggregation of those micro-transactions will generate an income sufficient to encourage the ongoing creation of new content. Unlike the modern WWW, every piece of information on the Xanadu system is interconnected so users can always return to earlier versions, or explore derivative versions. This essentially provides a technology framework for a universal network of citations, maintained automatically as information is accessed and used.

Limited elements of the Xanadu micro-transaction model can be seen in the way advertising revenue is shared with publishing users on YouTube and through mobile device applications such as the Apple iOS platform. The Xanadu Scenario is not a world driven by advertising. The scenario imagines a functioning model of revenue distribution, enabling collective engagement with digital content without needing to involve a third party adding additional costs or exploiting others for their own benefit. The connections between content are apparent in the creation of similar features in the Google Scholar tool and the commercial platforms used by journal publishers. These are more fragile than the model proposed by Nelson, needing to be constantly maintained and updated, and depending on a process of review and similarity matching that is prone to errors.

Udemy (Young, 2015a) provides an educational example of how aspects of Xanadu might operate. Essentially a MOOC infrastructure provider, Udemy operates an educational marketplace where individuals or organisations can publish short courses, accessible freely or for a small fee. Students can rate their experience, and there is a minimal vetting of the material for legal issues, but essentially there are no quality controls or accreditation, and the market decides whether or not a course has value. The Udemy model shares many features with the Apple music and application marketplaces, which have provided a mechanism for many small

businesses and individuals to distribute their products without having to create a commerce infrastructure.

In the higher education context, the Xanadu Scenario imagines a form of universal education operating outside of the model of the formal Humboldtian university of today. In a return to a form of ultimate academic freedom, individual scholars can create works that contribute to research or teaching and be directly recompensed and rewarded through micro-payments as those works are read and engaged with by others.

This scenario replaces much of the current academic publishing model with a new framework. The process of reviewing, publishing and sharing scholarly work is already under pressure as many institutions and academics question the control and profits being taken by the large publishers. Under this scenario, the micro-transactions would provide the revenue needed for either individuals or scholarly organisations to self-publish. The framework that enables payment would easily support an evolution of the models of academic recognition, as it would be easy to demonstrate use of scholarly works. It would even be possible to recognise contributions such as peer-review and editing through their own micro-payment royalties associated with the published version of a work.

Inevitably, there will still be some form of collegial organisation and many academics will need to be part of research institutions or enterprises. This could resemble elements of what Wissema (2009) describes as a Third Generation University, where the commercial exploitation of scholarly work is explicitly supported through strong collaboration with commercial enterprises and research institutes. The role of disciplines and scholarly organisations would become more dominant. Many academics already construct their identity in disciplinary terms rather than institutional ones. It is not hard to imagine that some subjects might choose to operate primarily as a single, worldwide ‘college’, with local presences offered through a mix of partners.

Recognition of the value an individual contributes means Xanadu shares some features with the Marxist collective ownership scenario but a different path is followed. In this scenario, individual academics remain in control of their educational activities. It is possible to see elements of this arising from an evolution of the MOOC idea, particularly cMOOCs offered by academics outside of the direct control of an institution and without dependence on the consortium publishing model which replicates many of the undesirable features of current journal publishers and digital content aggregators. The Xanadu Scenario also recognises the contribution students make to the learning of others and their contributions to discussions, group collaboration and assessment would be generating income from micro-transactions. A valuable insight or substantive contribution is automatically rewarded.

A successful university in this scenario has reaffirmed the centrality of a collegial academic culture in the institution. Academic freedom is enhanced by their ability to generate an independent income through the use of their scholarly work. There needs to be changes in the revenue models and management of finances, which will see a dramatic reduction in the scale and scope of the university administration. One

possible model is the university retaining its value as a provider of a structured educational experience, anchored in a scholarly campus environment, operating physically and virtually to support communities of students and scholars. Micro-payments can be used to pay for access to structured curricula, learning support services and facilities. Staff will share a proportion of their royalties if they use university facilities to create or distribute their scholarly work.

The leadership challenge in this space is working with academics as peers, enabling them to be more productive and supporting their collegial engagement in shared scholarly work. The economic freedom offered by micro-transactions, the rapidly declining cost of creating and maintaining an online infrastructure for scholarly work and the opportunity to engage with colleagues through disciplinary organisations means institutions must provide other compelling reasons for academics to be members of their community. An important role of leaders is engaging with the disciplinary and professional collectives to sustain the relationship and maintain the value of the university to academics. Students are also an important constituency as they access educational materials directly or through a variety of providers, assuming the university had not paid academics an additional fee for exclusive rights to formal educational uses.

20.3 Conclusion

The fifteen scenarios presented above are not intended to reflect a comprehensive or rigorous overview of all possible futures. They are an initial provocation for creativity and sense-making within individual universities. Table 20.3 extracts the strategic prompts each scenario raises for a university considering this narrative of their possible futures. When considering multiple scenarios, these can be combined and analysis undertaken with the goal of defining strategies and decisions responding positively to all of the scenarios.

The questions provided in Table 20.3 complement the questions posed in the previous chapter framing the agenda for change and the university's understanding of its context. The questions are stated in analytical terms to stimulate research and analysis, but the answers need to be considered in terms of positive action and a contribution to change rather than merely as an exercise in accountability or compliance.

Scenarios are not strategies. A given scenario explores the logical consequences of particular environmental characteristics interacting with strategic decisions to help understand the implications of different strategies under a range of conditions. Good scenarios force planning to go well beyond the scope of the status quo. Any university's strategic plan and actions should be tested against many scenarios to build resilience into the plan, rather than assuming the organisation and its staff will embody that resilience intrinsically. Wherever possible, scenarios should be informed by and triangulated with other forms of organisational analysis, such as benchmarking and the environment scanning approach outlined in Chap. 19.

Table 20.3 Scenario prompts for strategic analysis and decision-making

Adam Smith's Invisible Hand	How is the university managing the mix of élite, mass and universal offerings that it operates? How is the university diversifying and protecting its revenue streams? How is the university defining its identity and brand in key external contexts? What are the possible sources of competition or disruption to the university's activities? How are relationships with external partners managed to maximise the contribution they make to the university's activities? Are there opportunities for new outsourcing arrangements that help improve the focus and efficiency of university activities? How is the university workforce managed to maximise productivity and sustain future growth?
Cardinal Newman's Educational Theocracy	How is the core ideology of the university sustained and expressed in tangible forms? How are élite standards sustained at the point of entry by students? How does the university use its relationships with key external stakeholders to sustain its élite status and distinct place in society? How is the university's reputation being enhanced in relation to other universities in the local context and in competition with élite universities globally?
The Chinese Dragon	How does the university benchmark and monitor the operational efficiency and outcomes of its activities? How are external performance outcomes reflected in university systems and used to drive continuous and substantive improvement? How does the university engage with and demonstrate its commitment and support for system-wide strategic priorities? How does the university ensure that its activities are well-aligned to its context? How is the relationship with government regulators and agencies proactively managed? How does the university use its relationships with key external stakeholders and other educational providers to maximise the value of collaborations and demonstrate coordination in its activities?
Dr. Strangelove's Solution	How is the core ideology of the university sustained and expressed in tangible forms? How is the ongoing impact of technological change managed and used to sustain substantive change and improvement in university activities?
The Digital Agora	How are staff and students active partners in the governance and operation of the university's activities? How does the university use its relationships with other organisations and communities to maximise the value of collaboration and its impact on university activities?

(continued)

Table 20.3 (continued)

	How is the core ideology of the university sustained and expressed in tangible forms? How are the technology services and infrastructure of the university managed to maximise their value to staff and students?
The Economic Powerhouse	How does the university benchmark and monitor the operational efficiency and outcomes of its activities? How are external performance outcomes reflected in university systems and used to drive continuous and substantive improvement? How are relationships with external partners managed to maximise the contribution they make to the university's activities? Are there opportunities for new outsourcing arrangements that help improve the focus and efficiency of university activities? How is the relationship with government regulators and agencies proactively managed? How does the university use its relationships with key external stakeholders, particularly employers, to maximise the benefit the university delivers? How is the university workforce managed to maximise productivity and sustain future growth?
The Expanding Universe of H.G. Wells	How is the core ideology of the university sustained and expressed in tangible forms? How are staff and students supported in coping with the impact of continuous change? How does the university use its relationships with key external stakeholders and other educational providers to maximise the value of collaborations and demonstrate coordination in its activities? How is the ongoing impact of technological change managed and used to sustain substantive change and improvement in university activities?
The Ivory Cybertower	How are élite standards sustained at the point of entry by students? How does the university use its relationships with key external stakeholders to sustain its élite status and distinct place in society? How is the university's reputation being enhanced in relation to other universities in the local context and in competition with élite universities globally? What are the possible sources of competition or disruption to the university's activities? How are the technology services and infrastructure of the university managed to maximise their impact on the élite character of the university's activities?
The Malthusian Collapse	How is the ongoing impact of technological change managed and used to sustain substantive change and improvement in university activities?

(continued)

Table 20.3 (continued)

	How is the university managing the impact of the scale of its operations and the demand for further continual growth? How does the university use its relationships with key external stakeholders to mitigate the impact of ongoing growth and change? What are the possible sources of competition or disruption to the university's activities? How does the university benchmark and monitor the operational efficiency and outcomes of its activities? How is the core ideology of the university sustained and expressed in tangible forms?
Marxist Collective Ownership of Education	How are staff and students active partners in the governance and operation of the university's activities? How does the university use its relationships with other organisations and communities to maximise the value of collaborations? How is the core ideology of the university sustained and expressed in tangible forms? How are the technology services and infrastructure of the university managed to maximise their value to staff and students?
The Modern Academy	How does the university benchmark and monitor the operational efficiency and outcomes of its activities? How does the university use its relationships with key external stakeholders and other educational providers to maximise the value of collaborations and demonstrate coordination in its activities? How is the ongoing impact of technological change managed and used to sustain substantive change and improvement in university activities? How does the university ensure that its activities are well-aligned to its context? How is the university workforce managed to maximise productivity and sustain future growth?
Rousseau and the Spiritual Malaise	How is the core ideology of the university sustained and expressed in tangible forms? How does the university ensure that its activities are well-aligned to its context? How does the university use its relationships with key external stakeholders and other educational providers to inform and sustain improvement in its activities? How is the ongoing impact of technological change managed and used to sustain substantive change and improvement in university activities?
The Star Trek Academy	How is the core ideology of the university sustained and expressed in tangible forms? How does the university ensure that its activities are well-aligned to its context?

(continued)

Table 20.3 (continued)

	How is the ongoing impact of technological change managed and used to sustain substantive change and improvement in university activities? How does the university use its relationships with key external stakeholders and other educational providers to maximise the value of collaborations and demonstrate coordination in its activities?
The Technological Singularity	How is the ongoing impact of technological change managed and used to sustain substantive change and improvement in university activities? How is the core ideology of the university sustained and expressed in tangible forms? How does the university enable substantive collaborations between staff and students? How does the university use its relationships with key external stakeholders and other educational providers to maximise the value of collaborations and demonstrate coordination in its activities?
Xanadu	How is the core ideology of the university sustained and expressed in tangible forms? How does the university enable substantive collaborations between staff and students? How does the university use its relationships with key external stakeholders and other educational providers to maximise the value of collaborations and demonstrate coordination in its activities? How is the ongoing impact of technological change managed and used to sustain the growth in the scale and complexity of information creation and use?

It is worth engaging with one argument against the anti-transformational approach of this book. Papastephanou (2014) suggests that arguments against utopian thinking, such as the narratives or scenarios of those promoting fundamental disruption and transformation of higher education, are deliberate attempts to suppress diversity and plurality aimed at deflecting challenges to the status quo by emphasising the inherent implausibility of significant change. The argument made here is not against change, indeed much of the book is intended to show the necessity of change, but rather that technology defines and shapes the change in a deterministic and narrow way. Scenarios provide a means for other important influences on the trajectory of change to be highlighted and for the place of technology as primarily a catalyst to be recognised.

Van Der Heijden (2005) suggests successful use of scenarios for strategic planning has the following impacts on the organisation:

- Initiatives result in most resilient and robust changes, strengthening the organisation's ability to operate under a range of conditions arising from a dynamic environment;

- The organisation develops a stronger capacity to plan for ongoing change;
- Staff become more aware of the possibility of change, more able to recognise cues for sense-making, and the organisation becomes more agile and responsive to change;
- Leadership models become less autocratic and centralised, enabling the distribution and development of leadership throughout the organisation, while retaining coherence through recognition of the complex nature of the organisation's context.

This emphasises the way that scenarios support the ongoing nature of sense-making informing decisions but also building capacity for change in the future. This shift in thinking from solutions to continuous development and change is a key success factor for universities in the future. The final chapter considers how leaders can use these various tools and respond to the wicked problem of change, which has been illustrated by the diversity of the scenarios presented above, and start the process of building the capacity for agility, resilience, confidence and imagination in their own universities.

Chapter 21
Sense-Giving and Leadership

Abstract Collective leadership is fundamental to sustaining the ongoing nature of the sense-making process in the face of continuous change. The nature of the wicked problem posed to the university by the forces outlined in this book is its inherent insolvability. Leadership as sense-giving is an ongoing conversation reflecting the core ideology of the university and the need for collegial coherence while respecting the realities of the wicked problems posed by the dynamic context facing all universities globally. The forces provoking change covered in the first two sections are reprised here, and the ways that they can be influenced and shaped by effective leadership are discussed. No single solution is presented (such an idea is meaningless within a wicked problem space), rather the focus is on the mechanisms by which leaders can engage with a wicked problem effectively and productively.

> … the deliberate transformation of a university requires two miracles. One is to get started, facing down the fear of failure before beginning. Many universities will simply not try to start down the new road. It is risky; a hallowed institution may be laid low. The other miracle is sustaining a virtuous circle of accomplishments over a decade or more, facing down the multitude of conserving tendencies in organisations - especially universities - and among organised sponsors - especially ministries - that bring change to a halt. At the heart of each miracle lies wilful agency. It is not the demands of the day in themselves that drive a university to change, we now know, but rather the many specific responses to those demands, in the form of emergent acts of will, that are summoned from within. (Clark, 2004, pp. 94–95)

> The metatechnology of the university is 'half invented' (Taleb, 2012, p. 189)

Change is a constant feature of the contemporary university, a major theme running through this book. Technology is but one of many sources of this change, enabling and catalysing other changes and introducing new ways of living, working and learning. Leadership provides the means to catalyse change in organisations. Leaders enable and sustain the processes of sense-making allowing change to occur without losing the essential human element that gives social institutions, such as universities, their meaning and value to society.

The sense-making tools presented in the previous two chapters, strategic planning and scenarios, provide a mechanism for catalysing change but they require

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human agency to have any impact on the trajectory of the university. Recognising the centrality of agency as a tool for managing change helps identify the importance of leadership expressed in multiple ways, rather than in the default authoritarian, hierarchical and heroic modes.

The diversity of leadership roles required to cope with the wicked problem generated by the complexity of the forces outlined in the first half of this book was noted in the Introduction. Junior staff show personal agency and leadership through their energy and engagement in daily operational challenges and in empowerment to suggest and provoke change based on their experience. Middle managers show leadership through their responsiveness to the idea of change regardless of the source and are able to synthesise the broader strategic messages and detailed operational realities into a coherent narrative that enables their team and stimulates ongoing change from other managers. Senior leaders facilitate this through their provision of a collective sense of direction and energy, building and sustaining confidence and success.

This is leadership as sense-giving: an ongoing conversation reflecting the core ideology of the university and the need for collegial coherence while respecting the realities of the wicked problems posed by the dynamic context facing all universities globally. This chapter explores how leadership expressed throughout the university and in society generally can respond to the complex problems of change, engaging with the diverse groups of stakeholders and creating change processes that avoid the fallacies of transformative thinking.

21.1 Bringing a Diverse Group of People with You

> It is not so much the productiveness of the technology that bestows power, however; it is the way that technology plays into the political process of organizations that makes it a variable determining organization structure. Ultimately the political process rests upon social and cultural ground – the ground of human manipulation of communications into various kinds of interpersonal networks. (Collins, 1979, p. 27)

Agility and responsiveness to change is rarely a feature of large, highly structured organisations. The growing use of models of disaggregated organisations in various commercial spheres and the emergence of the networked (Standaert, 2012) or ecological university (Barnett, 2011) suggest that the need for new forms of structure is recognised by many (Bennett & Hempsall, 2010; Bolden, 2011; Fletcher, 2004; Gronn, 2000). Engaged, distributed and agile teams (Bennis, 1999; Flutey, Smith, & Marshall, 2017; Jones, Lefoe, Harvey & Ryland, 2012; Marshall & Flutey, 2017), capable of using technology to accelerate necessary change and working outside rigid hierarchies and roles, are an important enabler of this type of organisation (Whitchurch, 2008; 2009a, 2009b). The creation of this latter environment may represent a significant challenge for those academics who regard the university as a space primarily established for scholarly ends.

Leadership in this flexible new university is enacted by even the most inexperienced staff through their engagement in their daily operational roles and their empowerment as sources of ideas and provocations for change. Their managers should demonstrate leadership through their responsiveness to change, drawn from any source regardless of status or role. Managers need to synthesise the broader strategic messages of the university with detailed operational realities into a coherent narrative that enables their team and stimulates ongoing change from others. Rouleau (2005) notes that middle managers, operating in what he describes as 'hybrid' roles, perform the important role of interpreting and selling strategic change, mediating processes of sense-giving and sense-making engaged in by a wider range of stakeholders. Senior leaders need to create the environment for the work of other leaders by giving the university a sense of direction and positive energy that builds and sustains confidence and success.

A clearly articulated core ideology and authentic strategic planning and implementation are major success factors. Behind these sits a culture of trust and transparency, quite at odds with the all-to-common characterisation of university staff as impediments to change (Chap. 4). Bergquist (1995) identifies the necessity for senior leaders to demonstrate a willingness to take risks, to accept a shift in management styles, to tolerate ambiguity and to accept the shift from hierarchical authority to personal agency. These are all enablers of the high trust environment necessary to foster change. Klaussner (2012) notes active leadership is needed to build and maintain trust in this way as there is a natural bias towards distrust, noted above, which is the responsibility of leaders to resolve. Trust is ultimately a consequence of leadership behaviour (Dirks & Ferrin, 2002) that must be sustained and expressed continuously in an ongoing process of sense-giving and engagement, what Knight and Trowler describe as 'interactional leadership' (2000, p. 78) practised at all levels throughout the university.

The alternative, the ongoing maintenance of systems demonstrating a lack of trust through rigid management and accountability, generates a form a failure similar to that described by Gresham's Law (Sect. 15.1). The systems of the university operate visibly as required, while failures of change initiatives evident to the staff working within those systems are suppressed, ultimately preventing the university from evolving to meet the needs of its changing context. In this negative environment, a range of pathologies grow, preventing change and frustrating attempts to achieve even the most minor of organisational shifts.

21.2 Leadership Sense-Giving Strategies in Response to the Forces for Change

> … sustainable adaptive universities do not depend on ephemeral personal leadership. Charismatic leaders can serve for a time but in the lifetime of universities they are here today and gone tomorrow. Lasting transformation also does not depend on a one-time burst of collective effort occasioned by a dire environmental threat; it does not

> wait upon a fortuitous favorable convergence of old contending interests. Rather, whatever the initial stimulus, it depends on those collective responses that build new sets of structures and processes - accompanied by allied beliefs - that steadily express a determined institutional will. (Clark, 2004, p. 5–6)

Collective leadership is fundamental to sustaining the ongoing nature of the sense-making process in the face of continuous change. The nature of the wicked problem posed to the university by the forces outlined in this book is its inherent insolvability. These forces cannot be resolved, and the university cannot return to a quiet cloistered existence free from change. Acceptance of the inability to radically transform the university, to shift from a faith in quick fixes and silver bullets, is perhaps the greatest challenge facing all leaders. The forces for change need a range of leadership responses enacted at multiple levels throughout systems of higher education.

The different national responses presented throughout the book illustrate the need for governments to engage with the social and economic context of higher education. Courage and imagination is required, rather than simply pursuing simplistic and flawed policies driving the university towards a commercial enterprise model, such as the New Public Management ideology (Sect. 14.4). Policy frameworks and funding models need to enable agility and manage risk as a tool for improvement, not as a punishment for necessary failures caused by the honest attempt to find new solutions for society. As Selwyn (2014) argues, the regulations and incentives operating throughout higher education must recognise broader social goals addressing inequality caused by shifting patterns of employment and long-standing structural failures in social systems. Success needs to be framed in richer ways than purely economic measures such as GDP, which are environmentally and socially unsustainable.

The university needs to be reaffirmed as a critical institution of society (Acemoglu & Robinson, 2012; Waks, 2007). Positioning the university in this way helps balance the many ways purely economic models are changing the experience of education. If we think about the social value of education, rather than the purely economic outputs, we start to recognise the importance of a diverse range of disciplines as a means of enriching the human experience. In doing so, the passionate argument on the value of the humanities by many in the academy will be realised (Anderson, 1996; Aronowitz, 2000; Bailey & Freedman, 2011; Brabazon, 2007; Collini, 2012; Hersch & Merrow, 2005; Holmwood, 2011; Nixon, 2011; Readings, 1996). This cannot be solely the result of a bureaucratic system imposed and sustained externally, as argued by Selwyn (2014), but must reflect leadership within universities as well, actively building connections with other educational providers and community and commercial organisations.

Individual academics and managers need to engage with sense-making from their personal perspectives. The ambiguous nature of the wicked problem facing the university means change projects are likely to generate conflicting organisational narratives (McClellan, 2011) reflecting those personal perspectives. Leaders throughout the university must engage with this conflict in a positive way, shaping these narratives in a sense-giving process that builds on commonalities, including the core ideology of the university.

21.2.1 Scale

Managing the problems caused by growth is perhaps one of the greatest challenges facing any leader. Although the benefits of an educated population are significant, nationally unconstrained growth in higher education represents an unaffordable burden on any society. As Hirsch notes '[t]he central issue … is an adding-up problem: what individuals want and what individually they can get, society cannot get; and society has to find some means for determining how the difference should be reconciled' (Hirsch, 1976, p. 106). Commercial market approaches struggle to cope with situations where an individual's actions in their own best interest collectively damage the greater good, the well-known 'tragedy of the commons'.

For the leadership of any institution, management of the scale and scope of educational provision are inextricably linked to important issues of financial viability, reputation and the relationship between the university and its local communities. For academics and other professionals, issues of scale and scope are daily challenges affecting decisions about the design of courses and various support services affecting students and staff.

Within universities, there is often a visible disjunction between the expectations of students and other key stakeholders, and the perceptions of many staff regarding the nature of the institution's activities, the systems operating as a result of external accountability changes and the introduction of new technologies. The accounts of many academics (Anderson, 1996; Aronowitz, 2000; Bailey & Freedman, 2011; Brabazon, 2007; Collini, 2012; Hersch & Merrow, 2005; Holmwood, 2011; Nixon, 2011; Readings, 1996) reflect the tension and conflict arising when individuals believe they are working in a purely élite context, while the university employing them is operating in an unacknowledged mix of modes. This is not necessarily the fault of the staff as they may have started their employment at an élite model university, which has subsequently evolved quietly over decades into a hybrid institution supporting a range of modes.

The pathologies of this disjunction between the imagined and real model of the university play out as change occurs. With the changing reality these staff experience in their work, new ideas are a source of blame rather than being seen as tools for managing and responding to the needs of the students they now have. Leadership in this case starts with articulation of the reality applying to the specific context of the university and the sub-context the leader operates within. Leaders in academic departments must show the value society gains from the mix of élite, mass and universal models applied to their specific part of the university and describe how disciplinary concerns are integrated within systems and learning designs aligned to the models in place. Élite modes need to reflect the high-intensity relationships that mentor students within this model. Leadership is apparent in the creation of spaces which push students to excel and to demonstrate autonomy and leadership in ways that are valued by the élite community.

Mass modes need to respond to the expectations of students and other stakeholders that their education is efficiently and effectively delivered in ways that are

highly integrated into the wider economic and social needs of society. Leadership is needed to build the connections between the educational experiences and the context people are being educated for. Rather than focusing on the needs of a scholarly or élite community, academic and professional leaders need to actively engage outside the institution and draw the resulting knowledge and relationships into the university in meaningful ways. Leadership must drive the adoption of new ideas that enable improvements in the efficiency of provision. Institution-wide initiatives inevitably need to be re-framed and contextualised to be useful at the disciplinary or service level. Sense-making leadership is apparent in those who can recognise the affordances of new ideas that strengthen their area of work, rather than being captured by the pre-existing systems.

The transition to universal provision represents a particular challenge for leaders throughout the university. The shift in salience back to the student is often not acknowledged, with most universal initiatives framed around the needs and perceptions of institutions or individual academics. Universal education is a function of scale and defined by the need to design and operate educational experiences accessible to anyone. The leadership challenge is creating a context to help students realise that potential without compromising the educational outcomes and to do so in a way that sustains the ongoing existence of the systems creating universal experiences.

Scale is a major factor nationally influencing higher education strategy and policy with direct implications for related areas of economic and social development. Trow's three archetypes of higher education—élite, mass and universal—were identified through his exploration of the differences between the national systems operating the in the UK and the USA. The challenge facing governments is how to enable the growth of a diverse system of élite, mass and universal provision with strong links to the local context and leadership in shaping the experiences of learners. Failure in this space looks like the problems of the Korean system (Sect. 6.4), a model defined by the degree driving an unsustainable and unworkable scale of provision.

21.2.2 Stakeholders

Barnett's conception of the 'multivocal university' (Barnett, 2013) captures the discordant perspectives of the multitude of internal and external stakeholders of any university. Sense-giving leadership needs to engage with these different voices and articulate a narrative reflecting the different perspectives and valuing the diversity it brings to the evolving conception of the university.

A common response when engaging with stakeholders is to adopt defensive strategies, deflecting criticism from stakeholders whose perspectives are inconsistent with those of leaders (Mampaey & Huisman, 2016). This reflects a broader trend in universities towards a homogenisation of views driven by dominant managerial ideologies such as NPM (Sect. 14.4).

Brynjolfsson and McAfee (2014) observe that one of the consequences of technological change in commercial organisations is the flattening of organisational structures. Managers can engage with and supervise many more staff, as technology facilitates communication and provides enhanced performance monitoring. Much larger operations, enabled by a combination of technology and modern collaborative business models, mean managers can practically oversee more ambitious ventures than was historically possible. The consequence of having fewer managers with greater responsibility and impact is the increased pressure to employ the best possible person and the need to pay much higher executive salaries.

This same dependence on an ever more exclusive group of 'superstars' drives some future visions of academic roles. Resisting this systemic shift in the nature of the university requires a leadership actively avoiding the 'grandiosity' narratives afflicting many societies. This is particularly challenging if universities are captured by a perceived need to succeed in winner-takes-all performance ranking systems (Sect. 16.3) that reward the few at the expense of the many. Narratives of competition, winners and losers are disempowering and are particularly exclusionary to people drawn from minority populations.

Governments must be important stakeholders in higher education in all but the most limited élite contexts. Diverse agencies often represent a slightly incoherent force acting upon the university. Leadership within government agencies must recognise the disproportionate power they can impose on universities, which can lead to risk aversion and inhibit change (New Zealand Productivity Commission, 2017). There is the responsibility to engage with the needs of society at large and not be captured by important but partisan economic interests. Leaders in government agencies need to be wary of transformation narratives suggesting specific groups, such as vendors or commercial providers, have technocratic solutions to the problems inherent to higher education. Belief in the market as a solution is merely another attempt to avoid engaging with the real complexity of higher education and its role as an institution of society. The UKeU (Sect. 9.1.6) illustrates the way that politically driven desires can fail to reflect the complex reality of higher education systems and ultimately fail by blindly following a simplistic commercial narrative.

21.2.3 Finance

A major driver of the wicked problem facing higher education is the funding model used in many countries, which reinforces inequality even as politicians claim to be investing in education as a solution to social problems. The pervasive myth of human capital theory (Sect. 6.2) in many countries justifies a funding model that can only fail in the face of wider economic, technological and social change.

National strategies for funding higher education need to recognise the role of the university primarily as a social institution enabling a just and equitable society. This is not to say the university should abandon its role as a source of education and ideas enabling economic growth but to recognise the negative impact privileging

these outcomes has had on society. Government agencies need to lead through their recognition of a wide range of outcomes, enabled by higher education for society, measuring and reporting on non-financial returns and providing analyses that respect diverse outcomes. Simplistic national performance measures homogenise away important information on the myriad ways different communities could benefit from higher education. The value of a richer range of success measures needs to be actively advocated for and their use defended by political and public service leaders in the face of pure market ideologues.

University leaders face significant challenges in addressing the cost disease and its implications. Avoiding prestige seeking and grandiosity funded by students, their families and society at large is a difficult problem in a world influenced by facile marketing and branding which obscure substance and meaning. Institutions need to collectively engage with models of success that are less competitive and driven more by the impact the university has on its context. This represents a particular problem for senior leaders, who need to acknowledge the damage their ego and personal career ambitions can have over time. A potentially positive outcome of more distributed leadership models adopted within the university is the likelihood these will identify and promote a wider range of success measures, framed more closely with outcomes than with inputs and external values.

The leadership challenge for academics and other professionals is recognising that individual actions taken in response to change, particularly the introduction of new modes of technologically enhanced teaching, significantly influence the cost of higher education. Existing modes of teaching and student support rarely scale well and are a key contributor to the cost disease, particularly if staff treat new ideas as ways of merely sustaining the existing expectations.

21.2.4 Qualifications

> There is nothing, for instance, in the work of an American sales-girl that explains why, thirty years ago, junior high school was considered adequate preparation for the work while today the applicant is expected to have finished high school and preferably a few years of college as well. Nor does today's salesgirl at the age of 18 or 20 produce any more sales than the 15-year-old salesgirl of 1935, or the 12-year-old salesgirl of 1910. (Drucker, 1969, p. 261)

The significance of degree qualifications to the modern university reflects a combination of a characteristic mass model need for economically efficient systems to manage human talent and the forces of globalisation driving the need for a way to facilitate the international movement of that talent. The power of the qualification mindset is illustrated by the way the MOOC is increasingly positioned as merely another mode by which degrees are obtained rather than an alternative, more flexible and granular way of educating people.

The Korean case study (Sect. 6.4) and the decline in the success of the University of Phoenix (Sect. 9.2.1) show that if these forces continue to act without

leaders reshaping them, the result will be a declining value of the qualifications people already have and an unsustainable educational hyperinflation of credentials.

The contrasting German (Chap. 5) and Korean case studies highlight that solutions to the fundamental unaffordability of large-scale higher education require leadership in creating a social context disconnecting the positional value for qualifications from the educational value they represent for individuals and society at large. Government funding policies driven solely by the linkages between qualifications, particularly those tied to specific disciplines such as science and engineering, and economic models framed by neoliberal market philosophies only exacerbate the problems caused by positional values and drive up the direct and indirect costs of higher education.

Within universities, leaders need to be vigilant in their management of the qualification profile of their institution, resisting the temptation to turn education into yet another product defined by market segmentation and the proliferation of degrees. As universities transition to more substantive engagement with universal provision, there is a need to lead society in recognising other ways to demonstrate educational achievement. Tools like e-portfolios enable students to represent their skills and knowledge in more flexible ways but their use is dependent on universities accepting the need to move away from dependence on limited assessment tools, such as exams, which provide little useful evidence for students to share. Universities need to look outside their walls and value what people bring from their learning in other contexts, recognising the value of diverse experiences and activities as contributors to education are equally as important as scholarly papers and lectures. Leadership is needed to drive the necessary changes in practice, as many within the university still see exams as a primary tool and depend on excuses such as the need to validate achievement or the desire to minimise the work of assessment.

Leadership is needed to defend the integrity of university education represented by the degree, to resist the temptation to dilute the experience of sustained and deep exploration of human knowledge in the service of economic or political expediency. This must be done through engagement with society in order to show how the university experience contributes to wider social outcomes, by recognising and supporting the value of credible non-degree alternatives, such as the German Hauptschule and Realschule, and ongoing education delivered in universal modes to adults in employment and other settings. Instead of depending on the prestige of the historical university and assuming society needs universities to validate its civilised nature, university leaders need to articulate the ongoing criticality of the university as an institution of society.

21.2.5 Technology

The use of technology to sustain the university has been discussed extensively in this book. The university depends on a sophisticated and expensive technological

infrastructure to operate (Chap. 12), and it is reasonable to regard the university itself as a metatechnology. Despite this, it is hard to escape the sense that a failure of leadership continues to prevent the university from using technology in ways that substantially enable its ongoing evolution.

One of the ways the desire to avoid substantive change frames technology is by constraining the scope of the measures used for success. Treating technology as a tool for reducing the cost of provision is an effective way of constraining the nature and type of change it is used for. Technology is often positioned as a means of reducing the costs of higher education (Noam, 1995; West, 1998), and it is not hard to find university strategic plans advocating the use of technology on that basis. The problem is that evidence of any saving is weak, and the modern consensus in the literature is technological models of education are no different than other forms in terms of cost (Chap. 5).

Another failure is seeing Internet use and modes of provision such as the MOOC, as merely marketing tools rather than using sense-making cued by this technology to stimulate and sustain the evolution of the university. The mass education model and the challenging funding model facing many universities see technology framed as a solution for achieving scale and efficiency with improving the nature of educational experience a minor priority at best.

The pace and complexity of technological change is an issue for universities. There is every reason to believe that this will continue and may get significantly harder to manage (Chap. 8). Leaders need to consider how they can design and shift to organisational structures that sustain the execution of organisational change in line with the increasing pace of technological change. This includes recognising the need to support people throughout the organisation in developing effective personal strategies. The university benefits in many ways from the wisdom and depth of experience of scholars and professionals with decades of employment, leaders need to ensure these people continue to be recognised for their valuable contributions and are supported in using evolving technological systems.

Technology provides the university with significant opportunities. Many of the challenges technology poses to the university as an organisation are mirrored in other walks of life. Universities that can help their own staff maintain currency, confidence and imagination in the use of rapidly changing technological tools should be able to translate that into compelling educational programmes for society at large. Academic leadership in this space demonstrates the ongoing relevance of the university to modern life.

The extensive report on the implications of technology as a catalyst for change created by MIT provides an excellent example of institutional sense-giving leadership shaping that university's future (Willcox, Sarma, & Lippel, 2016). Starting from a strong affirmation of the educational and scholarly values at the heart of the university, they recommended the promotion of technology as a dynamic scaffolding mechanism enabling education. They advocate the creation of dedicated support roles operating in the third space of the university to promote and sustain technology-enhanced learning activities. They recognise the necessity for the development of organisational models that better enable universities to undertake

continuous change and improvement. Most importantly, this report shows how the unique character and core ideology of the university can be sustained with technology rather than 'transformed' into something else.

21.3 Sense-Giving Leadership as an Antidote for Transformation Thinking

> Simple understandings lead to general rules to be applied in all situations; complicated understandings suggest that situations differ and that reliance on experiences of the past may prove dysfunctional. … Only complicated understandings can see the many and conflicting realities of complicated situations. (Birnbaum, 1988, p. 209)

At the heart of transformational thinking lies a belief in the myth of epiphany (Berkun, 2010). This is the common misconception that significant change occurs as the result of a moment of inspired creativity, an epiphany, which reveals a transformative reality such that its implications are immediately understood and valued. This flawed thinking is central to the argument for the necessity of technological transformation in the face of otherwise inevitable failure of the university (Carey, 2015; Christensen, Horn, & Johnson, 2008; Christensen & Eyring, 2011; Ernst & Young, 2012; Zemsky, 2009).

Alvesson and Sveningsson (2015) suggest that, rather than a single act of transformation, change is a continuous process encompassing four major leadership challenges:

- Active re-framing of the context of the university in order to challenge complacency and to provide an ongoing narrative of its evolving state;
- Structuring the university to enable and sustain ongoing change, creating integrated 'third spaces' that provide safe ways to challenge the existing orthodoxy of the university while sustaining the education of existing students;
- Providing mechanisms that support distributed leadership, agency and ownership of change and its implications in detail throughout the university; and
- Responsiveness to the problems caused by overloading people's capacity to deal with change.

Sense-giving is fundamentally a process of active re-framing, a narrative generating cues for individual and collective sense-making. Simplistic technocratic narratives created by transformational thinking, such as the Virtual University, Digital Native and the MOOC, alienate many within academia preventing a positive engagement with the genuine opportunities technology provides to enhance higher education's wider impact on society. As Pegrum (2009) warns, we need to find a path through the fallacies of both technological and social determinism, recognising that change is a process reflecting the evolution of both technology and society in a complex metatechnological synthesis.

Sense-giving processes, grounded as they are in identity construction, reflect the core ideology of the university but also stimulate a re-examination of how it is

enacted and experienced by the various stakeholders in its success. Understanding the evolving nature of success in ways that reflect the diversity of stakeholders in any university is an important element of the re-framing process. The conception of quality as sense-making provides a way of using information about the university, its context and the outcomes it generates, to define success in ways that respond to change rather than inhibiting or constraining it. Smerek (2011) emphasises the importance of 'holding knowledge cautiously' (p. 85) as a tool for leadership sense-making, allowing others to engage in sense-giving processes upwards in the leadership hierarchy.

Change requires an environment receptive to new ideas—'cues' in sense-making terms—and supportive of those suggesting them (Chap. 17). Kezar (2013) identifies the need to engage with both the depth of processes supporting change and the breadth of the engagement across the organisation. Creativity in organisational change requires deliberate acts of leadership to protect ideas while they are in the early and fragile state of development. It needs to support the perseverance and resilience needed to translate potential into reality and to sustain the execution of change as it impacts over time. Inevitably, this creates a tension between the ambiguity of the new and the necessity of the university to sustain its activities. Few universities have the luxury of recreating their systems in isolation from the need to maintain commitments to their existing students and the associated income.

Recognising the distinction between uncertainty and equivocality is important when navigating through an ambiguous and dynamic space. Uncertainty is lacking information, having inadequate understanding and having alternatives that are undifferentiated (Lipshitz & Strauss, 1997). Equivocality is having too many meanings to choose from (Weick, 1979), often a strong feature of wicked problems contributing to strategic paralysis (Yarmolinsky, 1975) and inhibiting action.

The temptation is to avoid committing to change solely by creating completely separated spaces; technocratic and sterile 'innovation incubators' disconnected from the university and free to change without impacting business as usual. The virtual university and the MOOC provide such spaces and illustrate the challenge of relating change in a disconnected organisation with change in the university itself. All too often, these become tools for avoiding change, corralling it safely away from any risk of influence on the university. The third space described by Whitchurch (2008, 2009a, 2009b) is a place within the university where the possibility of new ideas is welcomed as traditional systems, roles and hierarchies of the tribal university are challenged. Such third spaces maintain the connections and influences of change on the wider university, avoiding the sense of 'otherness' that so often defines technocratic forms of change.

Drucker's (1999) conception of modern professionals as organisational volunteers and the inherently distributed nature of academic leadership align strongly with the social nature of sense-making. The concept of a university implies the role of academic must retain significance. But the complex challenges facing a modern university suggest this social engagement needs to extend to a much wider group of

stakeholders in all but the most traditionally framed élite universities. Supporting the creation of third spaces is one of the tools leaders can use to enable agency and ownership throughout the university to acknowledge the ongoing importance of academic disciplines while recognising the importance of the spaces connecting academics with the university as a collective organisation.

Part V
Conclusion

Chapter 22
Conclusion

Abstract Success in shaping the future of the university does not come from a magical transformative power of technology, a real-world expression of happy endings. Resolving this wicked problem depends on human leadership, enacted with courage and determination, informed by wisdom and the ongoing search for the unexpected. The construction of the wicked problem throughout the book is considered and a summary of the key features presented along with ideas for what shifts are needed to enable a future for the university in a world without limits.

> History grants no essential or eternal role to the modern research University, and it is necessary to contemplate the horizon of the disappearance of that University. Not to embrace the prospect of its vanishing, but to take seriously the possibility that the University, as presently constituted, holds no lien on the future. (Readings, 1996, p. 129)
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> Roulette … gives a fairly accurate image of this imaginary universe of perfect competition or perfect equality of opportunity, **a world without inertia**, without accumulation, without heredity or acquired properties, in which every moment is perfectly independent of the previous one, every soldier has a Marshall's baton in his knapsack, and every prize can be attained, instantaneously, by everyone, so that at each moment anyone can become anything. (Bourdieu, 1986, p. 46, emphasis added)

Bourdieu's description of 'a world without inertia' lies at the heart of the fallacy of transformative thinking. By subjecting the university to attempts at radical transformation and reinvention through simple acts of technocratic disruption that fail to acknowledge the wicked nature of university change, the rich and important role of the university is devalued, and the opportunity to use technology for meaningful change is lost.

22.1 Summarising the Wicked Problem

Engagement with wicked problems needs to start with the recognition of the often contradictory features and affordances of the space being analysed. The university is an astonishing and awe-inspiring creation. It provides a place for society to engage with the entirety of human knowledge and experience. At their very best,

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universities are where heresies and troubling ideas flourish, where the comfortable orthodoxy of complacent privilege is challenged and critiqued with energy and impunity. Society needs a space where intellectual growth and excellence can be nurtured in all their forms, safe from the direct pressures of day-to-day life but aware and engaged with the reality of the modern existence.

In the full flight of mass education's drive for economic outcomes, it is easy to lose sight of the individual experience of education and the way it can enable people to achieve significant change for themselves and their communities.

Just a few minutes in the future…

Ibrahim is a young Sudanese man living near the town of Dongola on the upper Nile. Like most in this region, his extended family earn their living from agriculture, growing a range of cash crops for both domestic and export markets. He has ambitions to operate a business supporting farmers rather than work the land himself. Ibrahim was lucky enough to get a good school education courtesy of United Nations, World Bank and Chinese investment in local schools. This funding means that he can access the Internet using a cheap laptop computer and a wireless access point maintained at the community centre in his village.

Formal university education remains expensive and generally inaccessible to many people in northern Sudan but Ibrahim is able to access a wide range of freely available open education resources online. Using these, he taught himself to program and he now has growing business writing software to support local agriculture by both individual farmers and cooperatives. A recent application he wrote for inexpensive smartphones is designed to help farmers manage the various insect pests that destroy crops, helping them manage the use of expensive insecticides and so reduce costs and maximise the potential for exporting organic, pesticide-free produce to better paying international markets. His application was funded by the UN Food and Agricultural Organisation who use the information on insect species distribution, morphology and density as part of their programmes managing pests such as the desert locust.

As well as studying various software topics, Ibrahim learnt the basics of small business management, financial planning and marketing. The UN funding he received was a direct consequence of his education, stimulated by a course on gaining investment in small business, which helped him prepare a formal proposal and business case. He continues to take courses on business strategy to help him decide how he will grow his business, technical courses to help him identify other possible agricultural products and courses on how to manage staff as he considers taking the big step of expanding the scale and scope of his operations.

The courses Ibrahim takes are developed in Sudan by educators employed through a combination of private, UN, WTO and Chinese aid funding targeted at the creation of a universally available programme of adult education.

The courses are created using local assets and open educational resources sourced online. All materials are translated into local languages and reflect the pragmatic and cultural realities of Sudan and North Africa. There are no formal qualifications but a badging system has been created as a guide for students, helping them identify productive pathways for their learning. Rather than formal assessments, an active online community operates with participants sharing their experiences of applying their knowledge, helping each other with advice on any problems arising and celebrating successes. In many cases, the material shared online is used to improve and extend the courses offered. Similar but smaller scale communities operate in villages and towns as learners gather in the evenings at the Internet access points.

Ibrahim has no plans to turn his studies into a degree but he recognises that a more structured programme of study would help fill the many gaps in his knowledge. His hope is the success of his business will allow his children to go to a local university and gain a degree so they can travel and work internationally. For now, he is confident he can find what he needs online and is very happy that he can immediately apply it to his needs.

Ibrahim's story is a work of fiction that illustrates the lives of young entrepreneurs in developing countries. This scenario describes a plausible educational system for an emerging economy developed without recreating the history of the university systems in other countries. Such models are essential if we are to achieve the equitable and affordable access to quality technical, vocational and tertiary education aspired to in the UN Sustainable Development Goals (United Nations, 2015).

The vast expansion of education over the last century has seen the development of industry and a dramatic improvement in the quality of human life. Kerr (1978, cited in Kerr, 1987) summarises the modern institutional purposes of higher education as including:

- Transmission of a common culture;
- Contributions to the development of individual students;
- Extension of greater equality of opportunity;
- Contributions to research and scholarship;
- Advancement of human capability to meet labour market needs;
- Public service, in its many forms, to society.

Similarly, Brown (2011b, p. 4–5) identifies a number of features of a healthy higher education system demonstrating the extent the university as an institution of society has transcended a purely scholarly focus:

- It is valued for the intrinsic contributions to knowledge and extrinsic impact on broader social, economic and political goals that it makes;

- It pursues goals that reflect the perspectives of diverse internal and external stakeholders, and is regulated to ensure the outcomes these goals;
- It balances the public and private purposes and benefits of higher education;
- It embodies a careful balance between the individual institution's interests and autonomy, and the wider interests of society and
- It has sufficient diversity of forms of provision that it can be responsive to a diverse and dynamic range of societal expectations.

These varied purposes and values illustrate the significance higher education plays as an institution of modern civilisation (Waks, 2002; 2007). Institution is often a synonym for organisation but in this context a more significant meaning is identified. The sense used here is the 'social institution' of Hamilton (1932), attempting to capture the nebulous influences social systems can have on a variety of human activities. Waks defines this broader sense of the word institution as:

> … social arrangements establishing, ordaining, or authorizing the ideas, norms, organizations, and frameworks that regulate the processes of human interaction in the primary areas of human life. Institutions establish, set up, and arrange social life — they put it in order and set it to work. Sociologists recognize the major institutional spheres as the family and kinship, education, economics, politics, and culture; there is an additional sphere of stratification, which regulates differential distributions of positions, resources, and rewards within a society. (Waks, 2007, p. 285)

Universities operate within a complex web of social and economic forces that this book has shown combine to create a highly interconnected wicked problem. Change within a university can only be properly understood if it is seen in that wider context, taking note of the ways by which external and internal influences interact and modify its processes and the outcomes experienced by staff and students.

Kerr (1987) describes the shift in focus from the traditional university to a system of higher education as the third major wave of change, following the expansion of US universities in the 1970s and the growth of higher education as a driver of economic growth internationally. This expansion to a wider system is seen as reflecting the convergence of these earlier trends, with the economic need for a substantial proportion of the population to be educated intersecting with the democratic political drive for the equality of opportunity in Western societies. The modern knowledge economy is a descendent of the university; an expansion of the value academics put on information placed in a broader social and economic context.

Positioning higher education within a wider social context helps maintain an awareness of the diversity of experiences and contexts facing organisational leaders. Leaders of universities in the USA operate in a different context to those in the UK, Europe, Australia, China, India and elsewhere. Despite these differences, the same forces can be seen to be acting on all of these systems of higher education, although perhaps with different priorities and specific cultural and social challenges complicating the organisational response.

The failure to account for the social context of higher education is seen in the ways change has been previously misunderstood. The Vice Chancellor of the University of Melbourne, a leading Australian research university, while caught up in the hysteria of the Virtual University, predicted that over the first decade of the new millennium there would be a dramatic change threatening existing institutions:

> Most formidably, the challenge to established universities will come from the international giants of the communications, information technology and multimedia industries—global providers, replete with capital, able to access outstanding international scholars and teachers, skilled in providing in situ student support simultaneously in many countries, and capable of brokering professional accreditation and recognition around the world. Quality in the resulting 'global virtual universities' will be high, standardisation will create cost structures that are mightily competitive, brand recognition will be obtained, perhaps by embracing one of the great Ivy League institutions as a partner, or alternatively by migrating into higher education a dominant brand from the communications or computing industries. (Professor Alan Gilbert, Vice-Chancellor, The University of Melbourne quoted in Cunningham et al., 1997, p. 1)

This conception of higher education as simply another type of media industry is flawed on a number of levels, not least in the idea television companies have any ability to support learning at the level of complexity represented by a university degree. It reflects the pernicious nature of prestige-seeking and grandiosity as influences over university leaders who become victims of their own marketing.

> At one extreme, marketing shapes organisational/educational change … It is always tempting to use marketing to 'solve' short-term problems. At worst, this results in destabilisation. The university finds itself in a grey zone between public relations and real transformation. The colours of one superficial makeover after another start to blur. Marketing and student recruitment become decoupled from teaching and research programs, customer expectations are neither consistent nor met, longer term evolution becomes the random aggregation of short-term market reactions. Institutional identity is undermined. Marketing can be a good servant, but it is a bad master. (Marginson & Considine, 2000, p. 221)

Perhaps the most significant social impact of higher education comes at the threshold of the transition from childhood to adult life. Most western countries strongly encourage young adults into some type of formal education before they substantively enter the workforce. While this does educate them with the skills and knowledge needed for entry into many forms of employment, it also acts as a division between the highly structured and controlled life of a child and the freedom and responsibility of adulthood. The move to an often fully residential college as the first steps of adult life is widely recognised in the USA but even without that experience, higher education provides a transitional space where students are expected to start identifying the character of their adult life.

Higher education often starts the process of socialisation into the cultures of particular professions or disciplines, educating to 'be' as much as to 'know'. Much is made of the role universities play in introducing people to a life of scholarly work but the majority of students do not become academics, opting instead for professional lives.

> … education is part of a system of cultural stratification and that the reason most students are in school is that they (or their parents on their behalf) want a decent job. This means that the reasons for going to school are extraneous to whatever goes on in the classroom. Reformers expecting that intellectual curiosity can be rearoused by curricular reforms or changes in the school authority structure were projecting their own intellectual interests onto a mass of students for whom education is merely a means to a nonintellectual end. (Collins, 1979, p. 192)

Universities are often accused of being 'ivory towers', isolated from the mainstream experience. While there may be some truth to this in some disciplines, most academics are people with substantial experience in public and private life, actively involved in the economic life of their discipline. It is not uncommon to see people moving back and forth between academic and private or public roles. Higher education institutions and their staff are important components in the web of professional relationships facilitating efficient and productive work. This movement is supported through the offering of a range of postgraduate qualifications to help people explore complex issues in their profession and develop specialist expertise important for the advancement of their career and their profession. Postgraduate qualifications help people move between professions or to shape their careers, often independently of their employers. The combination of expert knowledge and the opportunity to make new professional contacts helps sustain social and professional mobility.

Higher education courses in a wide range of professions introduce students to the norms and expectations of that profession and to the, often unacknowledged, codes of conduct and etiquette leading to inclusion within a profession. Students start the process of building social networks for their professional life through the contacts they make with other students, staff and working professionals met during their studies. Often these contacts are key to the student obtaining their first job in the profession and may influence the student's career success over their entire lifetime.

As Barnett's predictions quoted in Chap. 1 note (1992, p. 5), higher education is intimately part of the social and economic apparatus of modern life so it is inevitably subject to political influences and accountabilities. These drive the intensity and scope of the stakeholder interest in universities, as does the interconnected reality of the increasing scale and scope of education and the constraints of available resources. Contention between the different stakeholders is a result of the need to make political choices favouring one group over another. Much of the interest in open models of education are attempts to grapple with the social and economic realities of education but such models can only deliver on their promises if technology sustains the necessary changes in the experience of learning. Technology promises cheaper education through the potential lowering of some costs and an increase in the scale and reach of education but it is unclear if it can do so rapidly enough to keep pace with the demographic and financial challenges facing most societies.

It is hard to escape the sense that society is no longer benefiting from the growth in the scale and scope of education to the same extent as during the twentieth

century. Goldin and Katz suggest countries like the USA will benefit from reducing the level of access and freedom inherent to their current education system:

> The virtues of openness and forgiveness served Americans well when educational attainment was low. As educational attainment increased and the quality of education has expanded the tide has turned. Forgiveness and an absence of strict standards might further years of schooling but they do little to increase the quality of education. Furthermore, a second-chance system can lead some to delay finishing their education. (Goldin & Katz, 2008, p. 345)

This can be seen as arguing for a restricted access to education, with a growing rift developing between the highly skilled and those lacking modern skills. Such an unsustainable exploitation of human cognitive potential can be seen as paralleling the unsustainable use of fossil fuels that drove the first and second industrial revolutions. Continuing the metaphor a little further, we need to avoid the development of unbalanced and unequal economies like those seen in many oil-producing states where wealth from fossil fuels has been monopolised by an élite at the price of creating unjust and unstable societies.

22.2 Engaging with the Wicked Problem

The complex relationships between its formulation and solution that define any wicked problem suggest that we need socially sustainable models that are anti-fragile (Taleb, 2012), gaining strength from change, able to benefit all people, and that respect the limitations of both humans and their environment (Rifkin, 2011). Rather than depriving people of the opportunity to obtain an education with all the associated social costs, we need a way to combine solutions, much as the California Master Plan envisioned in the 1950s and 60s for mass and élite education (Coons et al., 1960; Marginson, 2016), but reflecting the shift to universal education and the opportunities offered by technology. Such a plan for the twenty-first century must respond to all of the forces identified above. In particular, it is hard to imagine how such a plan could be feasible in the absence of strong involvement from employers as this will provide a financial discipline to the education provided and a social context to help balance many of the negative implications of unemployment and disengagement from society.

> An instructed and intelligent people are always more decent and orderly than an ignorant and stupid one… they are more disposed to examine, and more capable of seeing through, the interested complaints of faction and sedition, and they are, upon this account, less apt to be misled into any wanton or unnecessary opposition to the measures of the government. (Smith, 1776, vol. 2, p. 373–374)

Technology can support the basic structures of adult education, as demonstrated by the MOOC, but that experience shows the need for models of universal education to be integrated into a wider social and economic context. Employers need to demonstrate a willingness to engage with new educational modes in the ongoing

development of their workforces, helping people maintain relevance in their skill sets using technology, even as technological change rapidly redefines their jobs and the industries they are part of.

The pace of modern technological change is such that one lifetime is likely to see multiple revolutions in society equivalent to the impact of the Internet. Life-changing developments in artificial intelligence and robotics, miniaturisation, power generation and storage, networking, and biomedical science seem inevitable given the scale of investment and research currently underway. Despite the culture of youth apparent in the mass media, it is impractical to imagine society remaining stable with massive underemployment of those unable to constantly adapt to novel innovations in every aspect of life. Employment in particular industries can provide people with a continuity and stability of life balancing the other changes.

Mass and élite education remain important in this world of universal education but with a greater focus on major transitions in life. The élite institutions, with their focus on the development of the very brightest students studying and researching at the boundaries of human knowledge, are needed and likely to remain very similar to their current form. University research, enabled by postgraduate and doctoral education has sustained much of the growth in human knowledge and technology apparent over the last century and ongoing investment in the top research universities is essential. Mass education, however, can and should change.

Analysis of the economic impact of higher education covered earlier describes the consequences of the unconstrained growth of mass education models and their poor linkages to the social and economic outcomes for individuals and society. This laissez-faire approach is unsustainable and risks losing the genuine benefits of formal education by damaging the viability of institutions forced to try and expand their offerings to more students, many of who are not well prepared to succeed. Employers must accept their responsibility to invest in future generations by employing more people without in-depth training and skills. The apprentice model of earlier generations can be reinvented to incorporate the technologies and approaches of universal education, linked and integrated into the school system and providing a means of reducing the unsustainable and unaffordable pressure on students to immediately obtain degrees.

Education and technology are both fundamental components of modern society. Education embodies our knowledge and our aspirations. The act of becoming educated is to explore basic questions about individual capability and identity, to assert a place in society. Technology enables many of the features of modern culture. The diverse scenarios explored in Chap. 20 illustrate the many different ways technology interacts with political, social and economic factors to influence higher education. The few scenarios that reject technology completely, such as Cardinal Newman's Theocracy, convey a sense of otherworldliness and disengagement from the mainstream experience of the world, suggesting that, at best, they describe the experience of a small minority.

The range of possible future higher education environments conveys the challenge facing any leader in higher education. None of these scenarios describe the future with any accuracy and no one scenario can possibly encompass the future

range of different systems of higher education that will be created internationally in response to the needs of different cultures. This book has argued strongly that technology cannot and should not be seen as a technocratic silver bullet transforming higher education but as one of a number of interrelated forces driving the evolution of education.

There is no silver bullet, no tidy solution to the wicked challenge apparent in higher education. We can try to find ways of engaging with elements of it however, using the tools of sense-making and sense-giving to identify positive strategies for higher education systems and organisations. An important strategy is to recognise any effective response must engage both within and without the organisation. The dynamics of human status seeking, the treatment of education as a product of scarcity hoarded by misers, does not come from the university. It is a product of a social, political and economic system that creates a rigged competition with increasingly few winners.

What does a sustainable model of higher education look like? Two major challenges emerge from the forces of change outlined at the beginning of this book. The first is the qualifications arms race, which sees students competing for positional advantage over their peers, an advantage increasingly harder and more expensive to obtain and to maintain over time as expectations shift within many workplaces. The second is the broader economic shifts, a product of technological innovation that increasingly disrupts the historic patterns of employment and may see large numbers of people alienated from employment permanently.

The economic challenges associated with higher education are complex, and, as discussed in Chap. 5, the affordability of the current system is doubtful. A further complication is evidence suggesting structural changes in the operation of economies is seeing a shift in wealth distribution back to that last seen prior to World War I, with the top 0.1% to 1.0% of the population gaining disproportionately (Piketty & Saez, 2013). Analysis of income growth data over the last 40 years suggests that, rather than being more broadly distributed, 70% of the income share going to the top 1% is being received by executives, managers, supervisors and financial professionals (Bakija, Cole, & Heim, 2010) and that this top 1% has captured 95% of the income gains made since the 2008 recession (Saez, 2013). For the individual, this reinforces the importance of obtaining qualifications from high-status, élite institutions, which provide the connections needed for membership of these privileged groups (Rivera, 2011; ibid, 2012).

This lack of proportionality in the distribution of economic growth suggests sustaining the large debts currently accruing is even more problematic. US educational debt is running at well over US$1.3 trillion. Much of it is falling on people outside of the top 1% who pay for their children's education out of existing wealth. If only 5% of the growth in income can be used to address the educational debt, this means the US needs to see growth in its GDP of around US$20 trillion to recover this investment, just in present dollar terms. Given the US GDP in 2012 was around US$15 trillion dollars (World Bank, 2014), the implication is that over the 40 years of a typical working career there needs to be a further annual growth in the US economy equivalent to 5% GDP growth per annum. This growth must be entirely

attributable to the increased productivity arising from education attained, more than a little unlikely given the US GDP has averaged well under this for the last decade. This analysis allows for interest rates, underlying GDP growth and the addition of new debt annually.

Interestingly, if the GDP growth is less than a total of 7% on average over this period, the debt is never repaid and effectively represents a systematic devaluation of the US currency. In reality, the situation is more complicated, as this analysis fails to account for changes in the value of currency over time, which acts as a form of invisible debt reduction. It likewise does not account for the reality that people would not tolerate using such a large proportion of their incomes to service debt, potentially increasing defaults, penalty rates and so forth.

The impact of student debt is not only seen through GDP growth. It is seen through significant improvements in quality of life through reduced costs enabled by a more educated population. Sadly, these wider indicators of the benefits of education appear lacking in the international performance systems used to monitor higher education (Chap. 16).

Part of the problem is GDP was created as a measure of productivity in a world without limits and without consideration of the many different ways progress can be measured. Simon Kuznets, inventor of GDP, noted in his 1934 report to the US Congress '…no income measurement undertakes to estimate the reverse side of income, that is, the intensity and unpleasantness of effort going into the earning of income. The welfare of a nation can, therefore, scarcely be inferred from a measurement of national income' (Kuznets, 1934, pp. 6–7). New technologies adding significant new features and a much higher quality experience may drive a reduction in GDP if the cost falls faster than the scale of use. When technologies saturate a market, a naïve economic analysis can frame progress as stagnation.

The failure of the Eastman Kodak Company with the associated loss of employment and decline in contribution to the US GDP is a case in point (Gerhson, 2012; Tesfaye & Nguyen, 2012). Kodak was at its zenith in 1997 (Eastman Kodak Company, 1998), producing chemicals and products for the photographic industry its founder, George Eastman, created. The share price peaked at US$94.30 with annual revenues of US$7.7 billion and it employed nearly 55,000 people in the US alone. Despite their invention of many key technologies for digital photography and a diversification into related printing and consumer markets, Kodak failed to change in response to the evolution of the photography business (Gerhson, 2012; Tesfaye and Nguyen, 2012). Its entire business essentially failed in the face of miniature digital camera chips so inexpensive that many devices now have multiple cameras. In GDP terms, this represents a disaster for the USA as most digital camera chips are made in Taiwan and Korea, but people are very happy with the convenience of digital cameras in their phones if the replacement of the 'Kodak moment' with the 'selfie' is to be credited.

Governments struggle to value non-GDP measures of progress. The currently preferred response to economic change is quantitative easing, currency inflation devaluing the material economy. This widens the disjunction between those in the material economy and those with access to assets in the positional economy, such as

high-status qualifications. Positional assets gain further value and the real cost of attaining them becomes almost unreachable for those not already benefiting from positional wealth. The example above uses readily available US data. Similar outcomes are apparent in other western countries, such as the UK, Australia and New Zealand, although with less economic imbalance apparent in the latter two (Piketty & Saez, 2013).

Several of the scenarios presented earlier see these challenges resolved to the detriment of society, excluding many people from a meaningful role in their community and destroying the positive contribution made by higher education. These represent the outcome of decisions made by those who refuse to engage with the idea of collective benefit, ensuring that everyone is given the benefit of the wealth flowing from our technological growth. Economists, such as Piketty (2014) and Stiglitz (2015), warn us of the growing inequality in society and the capturing of that wealth by a privileged few. A similar inequality is apparent in our systems of higher education.

Technology is disrupting employment in ways that suggest a spiralling disengagement of larger proportions of society over time. Robots replace workers in many forms of industry, communication technologies remove administration and management roles, and new industries no longer need large numbers of staff to deliver products. The inevitable endpoint of virtualisation and disaggregation of commercial activities seems to be mass unemployment.

Instagram, the modern web equivalent of Kodak's photography business, illustrates how much technology changes the relationship between employment and commercial success. Sold to Facebook in 2012 for one billion US dollars, at that time Instagram employed just 13 people, representing a financial return of US $77 million per employee (Thompson, 2012). The key point is not the valuation but recognising that it only took 13 people to sustain a worldwide operation of such scale.

If the development of technology continues to increase productivity while decreasing the need for direct human labour, then it is inevitable we will need fewer people working. Education is increasingly essential to a society that no longer needs to directly harness human creativity to meet our physical needs but still must build and preserve the quality of life and human dignity. Many positive outcomes of education are related to confirmation of individual worth and maintenance of social contacts and engagement. We need to find something meaningful to replace work as an enabler of these outcomes.

The technological changes influencing the university mirror those more widely apparent in society. The forces described in the chapters on qualifications, cost and economics are intertwined with the changes arising from technological development throughout the economy. As scholars and educators, we must consider what skills are needed for the future, for ourselves and for our students. As Dreyfus (1992) points out, computers currently lack intuition and more than twenty years of research shows no sign they will gain it in the immediate future. The ability to make educated, intuitive jumps in creative reasoning appears to require an, as yet, uniquely human model of thinking. Computers are much better than humans in

organising and arranging existing knowledge but are incapable of original creative thought, a concept described as ideation. The challenge for higher education is how we develop human creativity and ideation so the majority of society remains productive, participating in and contributing to economies constantly reshaped by technological developments.

Goldin and Katz (2008) show ongoing demand for technological skills is a normal state of the US economy and responsible for a sustained inequality or premium in wages that has accelerated in recent decades. The challenge for individuals and governments is the way this evolving demand for specialisation sees large numbers of lower skilled jobs permanently replaced with fewer more highly skilled ones. Routine clerical tasks, which were initially supplemented with computers resulting in a shift in employment prior to the 1990s, are changing further as newer technologies now replace mid-level jobs and switch the focus of employment to more skilled people with strong problem-solving skills, able to realise the impact of technologies in specific business contexts (Autor, Katz, & Kearney, 2006, 2008). The trend is for a shrinking élite of professionals earning very high salaries and constantly updating their skills as technology evolves, while a growing majority of the population experience declines in their standard of living as their jobs are replaced by new technologies or outsourced to low wage economies in the global market.

The industrial revolution saw muscle power replaced with machine power and the need for mass labour in many industries declined. We are currently experiencing another reduction in need for human labour in many repetitive tasks, even those involving complex reasoning, such as driving. It is no great leap from the Google self-driving car to public transport drivers replaced with computers. White-collar jobs are also at risk from new technologies as many routine jobs associated with information processing are replaced with complex computer systems. Secretaries, journalists and tax-preparers have seen their jobs replaced with software while librarians are rapidly redefining their roles as information access and use rapidly changes. Whether you call it a second machine age (Brynjolfsson & McAfee, 2014) or a third or even fourth industrial age (Greenwood, 1997; Schwab, 2016), technology is driving rapid changes in employment and individuals are forced to learn new skills ever more rapidly or see their jobs vanish from the economy.

The relative decline in educated people Goldin and Katz (2008) identify as driving up wage premiums since 1980 suggests the education system has stalled and is not keeping up with the demand for skills and knowledge in the wider economy, even as the numbers of qualified people continue to grow exponentially. Why this has happened is a complex question. It may be our economies are making unrealistic requirements of our populations or there simply may not be enough sufficiently intelligent and well-motivated people able to learn the advanced skills needed in many professions. For much of the twentieth century, western societies benefited from the greater equality obtained by women (Acemoglu, Autor, & Lyle, 2004; Archer, 1979; Blau, Ferber, & Winkler, 2006) and other minority groups. There is still some room for improvement but perhaps the easy gains have been achieved? Education providers find themselves having to solve harder challenges,

educate less well-prepared or less able students to a higher level, respond to technological changes making established courses and knowledge less relevant to a modern society, and all while having to reflect on the way new technologies are redefining scholarship and research.

Employers can choose from a pool of people educated at no cost to the enterprise and there is no negative consequence to the seemingly inevitable replacement, for commercial reasons, of large numbers of employees with fewer, younger, more recently qualified people familiar with the newest technologies. If this became unacceptable, a moral stain on the character of those choosing to focus on efficiency over all else, then elements of it can be mitigated. If qualifications are replaced with systems rewarding direct experience in specific contexts, if employers are required to retain staff and facilitate their ongoing transition to new models of work, if they are required to employ young people directly from school, then this spiralling pattern can be reversed.

Collins, in his analysis of the social role of education, proposed the radical solution of Credential Abolitionism; abolishing the credential system by forcing institutions into a situation 'where they must support themselves by their own intrinsic products rather than by the currency value of their degrees. Legally, this would mean abolishing compulsory school requirements and making formal credential requirements for employment illegal' (Collins, 1979, p. 198). This involves a dramatic and implausible scenario of workplace socialism:

> … elimination of educational requirements for jobs would be a necessary step in any overall restructuring of the occupational world to produce greater income equality. The key would be to break down *current forms of positional property*. … By job rotation across the existing lines of authority and specialization, all types of work would become subject to a common labor pool and respond to the same wage conditions. This would mean that opportunities for learning *various* kinds of work on the job, including technical and managerial work, would have to be rotated or otherwise widely shared, possibly by rotating apprenticeship of "assistant-to" assignments. To do so would require eliminating current definitions of jobs as allegedly based upon prior, external preparation by specialized education. (Collins, 1979, p. 200, emphasis in original)

While this type of radical restructuring might work in theory if somehow a society could be persuaded to abandon much of the history of human status-seeking, it fails on the basis that it positions an economy in isolation. The modern interconnected nature of the world economy means any such scenario must be analysed in an environment where capital and individuals can move freely and the dominant market model sees organisations and individuals acting to maximise their outcomes in an international space. Activities such as the European Bologna process illustrate the pressures facing governments with highly connected economies.

Collins' model does have some plausible aspects, such as employers taking responsibility for ongoing development and education of their workforce, especially for staff transitioning jobs within an industry as new technologies, innovations or business directions remove the need for existing jobs. This equally applies to higher

education institutions as employers face a changing environment and need to evolve a workforce with deep experience and knowledge of specialist areas.

An ongoing focus on mass education maximising the material value of education and using commercial models of management and cost containment (Martin, 2011; Vedder, 2004; Zemsky, 2009), is the alternative default strategy adopted in many countries. The problem is it fails to address the issues of qualification creep and the realities of positional status discussed in Sect. 6.1.

In addition to his preferred model of *credential abolitionism*, Collins identifies (1979) a number of political positions to resolve these challenges. *Credential capitalism,* the default position historically taken in many countries, is the idea individuals should act to maximise their personal educational outcomes, attempting to outcompete others in a laissez-faire market of educational and employment opportunities, while ignoring any obligation to engage with wider social implications and the almost inevitable inflationary result.

Credential socialism, a more democratic model, uses government intervention to ensure equal opportunity to education. Aspects of this socialist approach are apparent in the funding policies of many western democratic governments, although many implement a more focused position that Collins calls *Patronage-credentialism* or *Ethnic-patrimonial credentialism*, where disproportionate support is directed at specific groups. This preferential status is positioned as protecting ethnic minorities at disproportionate risk of underachievement, such as the New Zealand focus on Maori and Pasifika students (Ministry of Education, 2014) or the Australian support for indigenous Aboriginal and Torres Strait students (Harvey, Burnheim, & Brett, 2016). It can be used to enhance the outcomes for majority groups in strong political positions, such as in South Africa where policies are aimed at reversing the historic effects of the apartheid system (Seepe, 2017) or Malaysia with the support for Bumiputera (Pak, 2013). In extreme forms discriminating against specific groups this is described as *credential facism*.

Other models include the ideas of *credential radicalism* where students enact a form of educational communism and are in full control of the entire system. A number of these student-led universities, or 'free schools', operated in the USA during the 1960s but ultimately they failed, perhaps inevitably given the lack of any sustainable foundation or broader societal connections. In contrast, *credential Keynesianism* explicitly creates a currency system built around credentials, which are used purely to sustain economic activity while other aspects of the system are manipulated, typically by governments, to maintain its operation. Aspects of this system can be seen in countries such as New Zealand, where educational funding is disproportionately allocated to school leavers to minimise immediate unemployment rates during the international financial downturn (Ministry of Education, 2014). This system drives credential inflation and overeducation but can, in theory, be managed if it is expected to operate over a relatively short period of time and then reversed once economic recovery and alternative employment pathways exist. The risk, in New Zealand and other countries, is the economic changes experienced turn out to be permanent, reflecting a structural change in the global economy,

so resources and time are wasted in sustaining a model needing to be substantively reformed to support a new set of political, economic and social outcomes.

22.3 Realising a World Without Educational Limits

The contribution technology makes to ongoing growth in wealth means fundamentally there is no reason why everyone cannot have their basic needs for food, shelter, health, education and access to society met through a collective system such as the Universal Basic Income (Van Parijs, 2004). Freed from the concern for basic needs, there is still the psychological challenge of ensuring people maintain their self-worth. Education can sustain a different model if society is prepared to recognise a greater diversity of positive contributions beyond the participation in a salaried work environment. The patterns of modern work are themselves a type of technology, a response to the needs of the industrial revolution building on the model of society created by the discovery of agriculture.

What would such a new pattern of life look like in a world enabled by the ongoing development of technology and associated wealth? Consider the paradigm of the hunter-gatherer in a world of virtual environments connecting people across the weakening boundaries of physical and cultural distance. Meaning and self-worth under such a model flow from people's exploration of their environment with communities of supportive and like-minded people. The collaborations they engage in encompass the creation of new industries, services and products but also in social, cultural and creative work enriching the participants and those vicariously experiencing the outcomes. Key to this model is recognising human self-worth and dignity must have existed before civilisation and are not predicated on our modern economic and political frameworks.

The role of universities and academics in such a world is that of mentors rather than traditional instructors. Both of the scenario capsules outlined in the Introduction are consistent with this role for formal institutions. Realising this future requires a significant change in institutional thinking. Universities must build stronger relationships with employers, enabling continuous movement of students between study and work. Qualification models must evolve to respect learning undertaken in other contexts, implying significant changes to the way curricula are defined and students assessed. The roles and relationships of stakeholders in higher education, particularly those of academics and students, must be redefined.

Some cultures have the potential to realise a new model more easily than others. The idea of collective social responsibility and intervention into employment and industry is hard for a highly individualist society such as the USA. The great cultural diversity of that country is a strength, but it also provides fracture points all too easily exploited by those interested in maintaining inequality and privilege. Singapore, Germany and other cultures with a more collectivist disposition and a history of managed social and economic activity may be able to impose the model of wider social intervention in employment described above. Cultures with a similar

disposition, such as China, may struggle as they adopt a model of self-interested commercial and educational activity modelled on the apparent success of the USA but without the historic advantages of geography and social order enjoyed by that country over the last two hundred years.

It can be argued that many of the negative consequences of unemployment arise from the societal opprobrium placed on people who are framed as immoral, lazy or parasitic on society (Ottosson & Rosengren, 2014). Education, particularly a freely available universal form supporting a range of intellectual capabilities and interests including practical and applied skills, has the potential to establish a culture that values other contributions to individual and community well-being beyond the endless cycle of production and consumption.

Technology is fundamental to any realisation of these alternative models of education. At a basic level, it enables the generation of the wealth sustaining the economic model underpinning society. Communication technologies lower the barriers preventing collaboration and reduce the cost of exploring new ideas to a sustainable level. Once access to information and to collaborators is assured, the limiting factor becomes imagination and creative energy, personal attributes not subject to the limits of positional goods or hoarding by a privileged élite. The success of impoverished fishermen and rural entrepreneurs in Africa (Jensen, 2007) demonstrates the way technology can strip away barriers but it also challenges those in wealthier countries with greater existing resources to demonstrate a similar level of commitment and creativity in their own society.

Success in shaping the future of the university does not come from a magical transformative power of technology, a real-world expression of happy endings. Resolving this wicked problem depends on human leadership, enacted with courage and determination, informed by wisdom and the ongoing search for the unexpected.

> The analysis presented here has been seen to have definite but restricted implications for policy. It points to dangers in the current line of advance and suggests a direction that looks more promising. It does not offer an operational blueprint for such advance. Faith that such a blueprint must be available—that specific operational solutions for social problems must be there to be found—is an obstinate and probably fortunate remnant of the belief in progress: it has been called the non-fiction version of the happy ending. This is a part of the pragmatic faith in piecemeal incrementalism, a faith that is as Utopian as the Utopianism it seeks to replace. The latter conception rests on a benign implementation of a planned order of society; the former rests on the benign interaction of spontaneous actions and piecemeal tinkering with their results. The hidden Utopian assumption is that progressive evolution will look after us and meanwhile there is always some way of tinkering that will plug the holes. (Hirsch, 1976, p. 189–190)

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