The creative university is a new concept that has a number of competing conceptions emphasizing digital teaching, learning and research infrastructures, the paradigm of intellectual property, creative social development and academic entrepreneurship. Not only does the concept include the fostering and critique of creative content industries and new forms of distance and online education but more fundamentally it refers to a reassessment of neoliberal strategies to build the knowledge economy. The economic aspect of creativity refers to the production of new ideas, aesthetic forms, scholarship, original works of art and cultural products, as well as scientific inventions and technological innovations. It embraces open source communication as well as commercial intellectual property. All of this positions education at the center of the economy/creativity nexus. But are education systems, institutions, assumptions and habits positioned and able so as to seize the opportunities and meet the challenges? This book uses different contexts to explore these vital issues.
Re-imagining the Creative University for the 21st Century
The knowledge, learning and creative economies manifest the changing significance of intellectual capital and the thickening connections between economic growth, knowledge and creativity. Increasingly economic and social activity is comprised by the 'symbolic' or 'weightless' economy with its iconic, immaterial and digital goods. This new digital knowledge economy includes new international labor that rely on developments in information and communication technologies (ICTs) that are changing the format, density and nature of the exchange and flows of knowledge, research and scholarship. Delivery modes in education are being reshaped. New global cultures of knowledge and research networks are spreading rapidly. New forms of openness and networking, cross-border people movement, flows of capital, portal cities and intensive development zones all are changing the conditions of imagining and producing and the sharing of creative work in different spheres. At the centre of is the economy/creativity nexus. But are education systems, institutions, assumptions and habits positioned and able so as to seize the opportunities and meet the challenges? This new series investigates all the aspects of education in (and as) the creative economy in order to extend the dialogue about the relationship between contemporary higher education and the changing face of contemporary economies.
Re-imagining the Creative University
for the 21st Century

Edited by

Tina (A.C.) Besley
Michael A. Peters

University of Waikato, Hamilton, New Zealand
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"The Creative University" was the theme for an international conference held by the Centre for Global Studies in Education, University of Waikato, New Zealand, 15–16 August, 2012. It focused around ideas associated with education and the creative economy, knowledge formation, global creation and the imagination, under the following description:

Education and research have been transformed in the development of knowledge economies. The knowledge, learning and creative economies manifest the changing significance of intellectual capital and the thickening connections between on one hand economic growth, on the other hand knowledge, creativity (especially imagined new knowledge, discovery), the communication of knowledge, and the formation and spreading of creative skills in education. Increasingly economic and social activity is comprised by the ‘symbolic’ or ‘weightless’ economy with its iconic, immaterial and digital goods. This immaterial economy includes new international labour markets that demand analytic skills, global competencies and an understanding of markets in tradeable knowledges. Developments in information and communication technologies (ICTs) not only define globalisation they are changing the format, density and nature of the exchange and flows of knowledge, research and scholarship. Delivery modes in education are being reshaped. Global cultures are spreading in the form of knowledge and research networks. Openness and networking, cross-border people movement, flows of capital, portal cities and littoral zones, and new and audacious systems with worldwide reach; all are changing the conditions of imagining and producing and the sharing of creative work in different spheres. The economic aspect of creativity refers to the production of new ideas, aesthetic forms, scholarship, original works of art and cultural products, as well as scientific inventions and technological innovations. It embraces open source communication as well as commercial intellectual property. All of this positions education at the center of the economy/creativity nexus. But are education systems, institutions, assumptions and habits positioned and able so as to seize the opportunities and meet the challenges?

The conference, attended by scholars from Australia, USA, UK, Germany, Taiwan, and New Zealand, was a venue for exploring all the aspects of education in (and as)
the creative economy. The objective was to extend the dialogue about the relationship between contemporary higher education and the changing face of contemporary economies provocatively described as “cognitive capitalism”, “metaphysical capitalism”, “intellectual capitalism”, and “designer capitalism”. The conference was an attempt to describe the relationship between the arts and sciences and this new form of capitalism looking at the global reach and international imperatives of aesthetic and scientific modes of production, the conditions and character of acts of the imagination in the range of fields of knowledge and arts in this period, and the role of the research university in the formation of the creative knowledge that has a decisive function in contemporary advanced economies.

Waikato University Vice Chancellor, Professor Roy Crawford opened the conference with a brief address. Keynote speakers were: Simon Marginson, Professor of Higher Education, Centre for the Study of Higher Education, University of Melbourne, Australia, ‘The changing geo-politics of creativity; rise of the Post-Confucian university. Peter Murphy, Professor of Creative Arts and Social Aesthetics, James Cook University, Australia, ‘Beautiful minds and ugly buildings: object creation, digital production and the Research University. Critical reflections on the aesthetic ecology of the mind.’ Michael A. Peters, Professor of Education, University of Waikato & Emeritus Professor University of Illinois at Urbana Champaign, ‘Open science economy: collaboration and creativity.’ Tina Besley, Professor of Education and Director of the Centre for Global Studies in Education, University of Waikato, ‘Academic entrepreneurship, creativity and re-imagining the university.’ Concluding remarks were provided by Dr Brian Opie, School of English, Film, Theatre, and Media Studies, Victoria University, Wellington, ‘Thinking through the humanities to innovation.’

The conference followed several other initiatives globally that position the university critically in relation to the notion of the creative economy. In particular, Richard Florida et al (2006) had examined the university’s role in the Creative Economy through the lens of the “3T’s” of economic development: Technology, Talent, and Tolerance. Their main message seems to be that the university is the “new engine of innovation”:

The changing role of the university is bound up with the broader shift from an older industrial economy to an emerging Creative Economy. The past few decades have been one of profound economic transformation. In the past, natural resources and physical capital were the predominant drivers of economic growth. Now, human creativity is the driving force of economic growth. Innovation and economic growth accrue to those places that can best mobilize humans’ innate creative capabilities from the broadest and most diverse segments of the population, harnessing indigenous talent and attracting it from outside.

In examining the three T’s, Florida and his colleagues conclude, “To harness the university’s capability to generate innovation and prosperity, it must be integrated
into the region’s broader creative ecosystem.” While Florida’s work has been criticized, the report provides an excellent introduction to the relevant literature and an attempt to measure creativity at the institutional level.

Creativity in Higher Education: Report On The EUA Creativity Project 2006–2007 (EUA 2007) represents another attempt to harness creativity and innovation of the university in the service of economic development:

Creativity has received a high degree of attention from scholars, professionals and policy makers alike in recent years. Yet, despite the significant overall interest in the topic, so far relatively little attention has been paid in Europe on how creativity and innovation can be enhanced within and by academe. This is particularly unexpected given the key role assigned to higher education for the development of a knowledge society and for achieving the Lisbon objectives of the European Union. Progress towards a knowledge-based society and economy will require that European universities, as centres of knowledge creation, and their partners in society and government give creativity their full attention. (EUA, 2007)

Usefully the report considers creativity in terms of a number of related themes including: Creative partnerships: HEIs and external stakeholders; Creative learners: Innovation in teaching and learning; Creative cities/regions: HEIs, NGOs and governments; Creative HEIs: structures and leadership. The EUA report seems to uncritically accept Florida’s theoretical work and the current European emphasis on innovation.

Jamie Peck’s (2005) critique of Florida and human capital construction of the creative class and economy provides a useful benchmark:

Both the script and the nascent practices of urban creativity are peculiarly well suited to entrepreneurialized and neoliberalized urban landscapes. They provide a means to intensify and publicly subsidize urban consumption systems for a circulating class of gentrifiers, whose lack of commitment to place and whose weak community ties are perversely celebrated. In an echo of the Creative Class’s reportedly urgent need to validate’ their identities and lifestyles, this amounts to a process of public validation for favored forms of consumption and for a privileged class of consumers. (p. 764)

He suggests that “the notion of creative cities extends to the urban domain the principles and practices of creative, flexible autonomy that were so powerfully articulated in the libertarian business ideologies of the 1990s” (ibid). Peck ties the script of creative cities and creative class to “the entrepreneurial efforts of deindustrialized cities” the “creative-capital” of “creative productionism” that empowers an “unstable networks of elite actors” that “reconstitute urban-elitist, ‘leadership’ models of city governance” and “lubricate new channels for rapid ‘policy learning’” for fast capitalism and the fast market (p. 767). Others critics seeing Florida’s work as the most widely adopted urban growth strategies in decades
have found little theoretical support for the connection between the creative class and economic development (Hoyman and Faricy, 2009).

Clearly, similar critiques could be mounted of the “creative university” although the concept might be given a range of different interpretations that do not rely on neoliberal constructs or theory. By comparison, “creative universities” might embrace a myriad of different descriptions based on user-centred, open-innovation ecosystems that engage in cocreation, coproduction, codesign and coevaluation emphasizing theories of collaboration, collective intelligence, commons-based peer production and mass participation in conceptions of open development. This latter view that is only now beginning to be theorized seems able to recuperate many of the grass-roots participation, consciousness-raising models, and user-oriented action research paradigms of the 1960s and 1970s first invented and developed by feminists and eco-social movements to marry these political models with new social media and technologically-enabled social production infrastructures embodied in crowdsourcing community informatics, and peer learning strategies.

Underlying this alternative is an account of the way in which there has been a paradigm shift in understanding creativity. The model of creativity that has proved so enduring and alluring is that which emerges from German idealism and German and English Romanticism: the paradigm of creativity based on the individual artist of genius. Peters (2009) argues that this model emerges in the literature from sources in the Romantic Movement emphasizing the creative genius and the way in which creativity emerges from deep subconscious processes, involves the imagination, is anchored in the passions, cannot be directed and is beyond the rational control of the individual. This account has a close fit to business as a form of ‘brainstorming’, ‘mind-mapping’ or ‘strategic planning’, and is closely associated with the figure of the risk-taking entrepreneur. By contrast, Peters argued for ‘the design principle’ that is both relational and social, and surfaces in related ideas of ‘social capital’, ‘situated learning’, and ‘P2P’ (peer-to-peer) accounts of commons-based peer production. It is seen to be a product of social and networked environments – rich semiotic and intelligent environments in which everything speaks.

Most recently the theme of the creative university was taken up at the conference “Organisation and the New” organized by Professor Susanne Weber at Phillips University, Marburg University, Germany. An international symposium visited the theme of the creative university with contributions from Peter Murphy (James Cook, Australia), Ruyu Hung (National Chiayi University, Taiwan), Amanda Bill, (Massey University, NZ), Ronald Barnett, (University of London), Nesta Devine, (Auckland University of Technology), Till Stellmacher (ZEF Bonn, Germany), and Dorji Thinley (Royal University of Bhutan). These contributions promised a new conception of the creative university nicely summarized and demarcated by Ron Barnett in terms of a multiple conceptualization comprising (a) an intellectual creativity (a creativity in research and in knowledge generation); (b) a pedagogical creativity (a creativity in curriculum design and in the pedagogical process); (c) an environmental creativity, and (c) a learning creativity (a creativity among students,
INTRODUCTION: COMPETING CONCEPTIONS OF THE CREATIVE UNIVERSITY

in their learning accomplishments). In addition to these four levels of creativity, he adds (d) a reflexive creativity in which a university demonstrates its creativity in its capacities for understanding itself and its possibilities. The alternative possibilities of the creative university was the ethos that provided both a critique of mainstream accounts of the creation of economic value and an orientation towards universities as creative institutions that have a role to play in forms of global “creative development”, a counter-discourse that takes form as an alternative “development” agenda that actively employs the “technologies of openness”.7

The chapters that comprise this collection have been selected from the Waikato conference and subsequently revised. One set of papers from this conference have already been published as, *The Creative University* (Peters & Besley, 2012). All the other chapters in this volume deal with the original concept and attempt to explain a case for widening the parameters of the discussion for the concept of the ‘creative university’ now and in the future. This is why as editors we chose the title, *Re-imagining the Creative University for the 21st Century*, focusing on the plural possibilities it invites.

The book is divided into two parts with Part 1, focusing on ‘Re-imagining and theorizing the University in 21st century’ a more philosophically oriented section, while Part 2, ‘Educating creatively in higher education in neoliberal contexts’ emphasizes more specific practical aspects.

Part 1 begins with a chapter by Tina Besley & Michael A. Peters, ‘The Creative University: Creative Social Development and Academic Entrepreneurship’ that uses and updates some of Tina’s keynote address and in undertaking the task of re-imagining the university and expands on the term ‘academic entrepreneurship’ as has recently appeared in academia. The chapter briefly discusses the discourses of ‘re-imagining’ the university including several recent reports and the relatively new term ‘academic entrepreneurship’. It puts the case for what constitutes the university, elaborates on the notions of ‘crisis’ in the university and how socializing academic entrepreneurship is a creative open education based way of proceeding. Chapter 2, ‘Agile methods for agile universities’ by Michael B. Twidale and David M. Nichols explores multiple meanings of ‘agile’ a term now used being used in various workplaces and universities, but focuses on its meanings in the realm of software development where it addresses certain problems with that have interesting analogues in the university context. They argue that ‘a reflection on agile methods may be a useful heuristic for generating ideas for enabling universities to be more creative.’

Part 3, ‘The University Beside Itself’, referring to the university ‘as an object of invention, or discovery, rather than as an existing institution. Being “beside itself” can mean ‘to be at a complete loss, not to know – or to know how to know – what to do.’…” The university is beside itself in a second sense: it is made up of bodies beside bodies.’ In considering these ideas, Sturm and Turner call on work by Spinoza, Peirce, Deleuze’s ‘pedagogy of the concept’, Foucault and others. They point out that ‘Setting out the nature of the creative – or, strictly speaking, critical-creative –
activity that for us defines the university, and in terms of which the existing institution may be considered to be beside itself, our construction is *seismotic.*' In a further play on terms and words, Chapter 4, ‘Intellectual Property: Oxymoron or Antinomy’ by Robert J. Clougherty Jnr, discusses and teases out the issues highlighted by the all important concept of intellectual property – its history, definition, and the nature of intellectual property by starting with a genealogy of copyright legislation. The chapter discusses the idea and the notion of exchange value of intellectual property, especially in our networked and interconnected world. He refers to ways intellectual property are dealt with in educational settings and delves into the advantages of open education. In answer to the question: “what is the relationship of copyright and intellectual property to the future of education?” Clougherty states that ‘copyright and intellectual property are economic and legal models which stand in the way of education adopting the form which it needs to move into its future.’ In effect, arguing for more open models. In Chapter 5, ‘Towards a unified concept of distance learning’, Luke Strongman’s three objectives are discussing the pedagogical context of technology in distance learning, describing the four main dimensions of distance learning, and steps toward a unified concept of distance learning. He notes that many influential theories can be applied to distance education and e-learning pedagogy without any fully capturing the holistic dynamics of such modes of learning, pointing out that ‘a unified concept of distance learning would need to encompass both pedagogical theory and learning dimensions.’ Chapter 6 by Joy Whitton, takes the ideas of French philosopher Paul Ricoeur, generally considered a hermeneutic phenomenologist, to describe, ‘Using Ricoeur to Interpret Acts of Imagination in a University Physics Class.’ Whitton uses Ricoeur’s theory of productive imagination which entails metaphor, models and narrative, that links imagination, reason and language. She argues that this ‘provides a useful framework to understanding how imagination is integral to the creation of knowledge and to learning, and why it should be cultivated in undergraduate education.’ This chapter ‘contributes to the debate about the relationship of the arts and sciences to new forms of contemporary capitalism and the investigation of acts of imagination in a range of fields by focusing on what we mean by imagination and its role in a university education which creates citizens and future leaders in all sorts of domains.’

Part 2 of the book comprises seven chapters with a general focus on the neoliberal context. Chapter 7, ‘Autonomy interrupted: creativity, context and the ‘independent scholar’’ jointly written by Robyn Barnacle, Jennifer Sinclair, and Denise Cuthbert, asks whether or not in the contemporary context where not only does social networking emphasize the possibilities of collaborative creative creation of new knowledge, governments now promote the potential of research to foster innovation and economic growth, does a research degree prepare graduates to imagine and create and new knowledge. To analyse this question they examine ‘the “independent scholar” in accounts of research education and practice,’ … using ‘preliminary analysis of data collected on the role of the doctorate in mid-career research success based on a survey of Australian Research Council Future Fellowship recipients.’
INTRODUCTION: COMPETING CONCEPTIONS OF THE CREATIVE UNIVERSITY

They ‘identify intriguing tensions and contradictions in the ways in which being and becoming a successful researcher are conceived. Most notably, the findings suggest that success can be achieved through different modes of working – and being trained – as a researcher. These have implications for universities seeking to promote researcher collaboration and creativity.’

M. J. [Margaret] Stuart, harnesses both research and personal experiences in the professionalization of Early Childhood Education (ECE) in Private Training Establishments (PTE) in New Zealand in Chapter 8. ‘On the outside looking in: The Creative University and its poor relation, Private Training Establishments.’ Margaret Stuart points out that ECE training was once solely provided by the university, but now most beginning ECE teacher training is now offered outside the university in Private Training Establishments (PTE) which unlike universities, are generally limited to offering vocational training. Stuart’s genealogy of the discourse of teacher-as-globalised professional uses Human Capital Theory (HCT) which in the neoliberal environment assumes that education is a private good, rather than how education was formerly in pre-neoliberal times viewed as a public or social good. Part of the neoliberal agenda locates the credentialism of professionals as of key the importance in terms of quality. Stuart asks ‘what creativity is possible in a two-tier system, where the instrumental, narrowly vocational emphasis is on skills and credentials at the expense of a wider knowledge and pedagogy that includes a philosophy of creativity.’ Continuing the focus on Early Childhood Education (ECE) in New Zealand, in chapter 9, ‘Ignorance in a knowledge economy: Unknowing the foreigner in the neoliberal condition’, Sonja Arndt notes how contemporary immigration means there are now many foreign born ECE teachers in New Zealand. Arndt uses French philosopher Julia Kristeva’s notion of the foreigner within each of us to explore ‘immigrant student teachers’ self-formation as academic subjects with the suggestion of unknowability and ignorance as a realistic orientation to subvert the need for certainty. I represent the uncertainty of the erratic, seductive neoliberal condition with Bauman’s notion of liquid modernity, and argue that knowledge of the other, even if it were possible, would be superseded and obsolete as rapidly as it is acquired. A fresh conceptualization of ignorance stretches the imagination of what is, inherently, a boundaryless educational space.’ Still focusing on neoliberalism in New Zealand education policy, chapter 10, ‘Emergentism and Social Realism: How do these approaches to knowledge inform teacher education and curriculum in New Zealand?’ Leon Benade argues that the aims of education are closely aligned with economic attainment such that new policies are underpinned by a flawed conception of knowledge and pedagogy. Benade argues for both an emergentist position, and a social realist position as ways of informing a creative approach to teacher education.

In chapter 11, ‘Neoliberalism, Privatization and Education in the Republic of Nepal’ Chandra Sharma Poudyal describes and analyses private schooling in Nepal amidst the context of 10 years of civil war and revolution (“Prachanda Path”), and the subsequent regime change in 2008 from a monarchy to a the Maoist Communist Party of Nepal. Political changes in 1990 enabled private schooling to be introduced
and this has continued apace such that it now makes up 20% of schooling, but this sector has now become a target of political parties’ affiliated students’ and teachers’ unions. Maurice Alford’s chapter, ‘Troubling the idea of the individual: advancing a relational context for creativity’ uses Traditional Māori, African, and Samoan beliefs as contrasted with Western approaches to consider different ways of conceptualising what it means to be human and in turn creativity; by contrasting the notion of the individual in the community with the notion of the community in the individual. He ponders what results when we combine evolutionary psychology with ideas about the social construction of an individual. The final chapter, ‘Toward a Quaternary Level of Creative Education’ finds Roger Peters arguing that ‘the ‘Creative University’, while creative on many fronts, has not yet accessed the deepest levels of creativity relevant to a global constituency’ with a significant gap arising from the university’s ‘founding biblical doctrines of 1100AD, which still affect its ability to respond wholeheartedly to the nature-based expectations of a global demography.’ To argue his case Roger Peters uses his work on Shakespeare’s sonnet philosophy.

As both the conference organisers and editors of this and an earlier volume, also published by Sense Publishers whose ongoing support of our work is very much appreciated, we hope readers will find the range and depth of this volume useful, provocative and enjoyable and look forward to your ongoing engagement with the broad notion of the ‘Creative University’ and to future exciting conferences.

Michael A. Peters & Tina Besley
University of Waikato
Hamilton New Zealand
September 2013

NOTES

1 Conference organizers: Michael A. Peters & Tina Besley. See the conference website http://tcreativeu.blogspot.com/


3 This is based on the theoretical work of Richard Florida (2002; 2004; 2005).

4 See Godin (2011).

5 Cocreation and coproduction in open development represents a very different political model from the United Nations’ neoliberal model of creative capital (UN, 2008, 2010).


7 A third creative university conference is to be held at the University of Butan in April, 2014. Those interested in attending should contact Dr Dorji Thinley, Director of Research and External Relations, dthinley6789@gmail.com
INTRODUCTION: COMPETING CONCEPTIONS OF THE CREATIVE UNIVERSITY

REFERENCES

PART 1

RE-IMAGINING AND THEORIZING
THE UNIVERSITY IN 21ST CENTURY
1. THE CREATIVE UNIVERSITY: CREATIVE SOCIAL DEVELOPMENT AND ACADEMIC ENTREPRENEURSHIP

INTRODUCTION

The idea that the university needs re-imagining has gained considerable currency since the 21st century. Just why this should be needs some analysis and an examination of the functions and role(s) of universities. Some universities, especially in USA, have recently conducted exercises to achieve this in specific ways that deal with local issues (e.g. Cornell, Harvard, Minnesota, New York, Brown). It seems that much of the re-imagining discourse focuses on institutional financial issues, and this tends to play out as part of the crisis in universities literature, which may well be related to the crisis in schools and reform movements there as promoted by neoliberal policy agendas. Crisis discourses frequently use economic consultant advisory reports from large multinational companies (e.g. Ernst & Young and Pearson as described later in this chapter) to provide some degree of analysis. More often than not solutions offered tend to promote forms of university that such as the entrepreneurial university that emphasize research and forms of academic entrepreneurship beyond the traditional forms related to publishing. More recently teaching has become the focus in re-imagining as many universities not only become more global in their focus, but as they start to address modalities of pedagogy as presented by recent IT based systems in MOOCs.

SOCIALIZING ACADEMIC ENTREPRENEURSHIP AS A BASIS OF THE CREATIVE UNIVERSITY

In this chapter we make the argument that “academic entrepreneurship” takes on specific forms in the digital age and we argue for a social form of academic entrepreneurship that emphasizes the dimensions of social media, social (co) production, social labor, and the social mind. New digital ecologies promote forms of openness that foster creativity as a form of collective intelligence based on the combined ethos of sharing and collaboration. New social media refers to a process of socialization of media that encourages user-generated exchange of content and ideas utilizing web-based technologies to create highly interactive platforms. These platforms become the basis for social (co-)production where individuals and
communities share, co-produce and co-create content, code and new e-infrastructures and portals. These two processes – social media and social production – depend upon or at least imply a third set of processes that we call social labor as in the concept of co(labor)ation and a general philosophical position called the "social mind". A social conception of academic entrepreneurship encourages and enables an alternative to neoliberal conceptions of start-ups and enterprises based on university research that simply spawn new businesses. The social conception of academic entrepreneurship that we put forward indicates the new constellation of features based on embedded social technologies, epistemologies and ontologies that challenge neoliberal assumptions of the individual entrepreneur and the notion of innovation as based on rational processes of choice-making by individuals that are based on self-interest and the profit motives. In this new conception the social is seen as a complete knock-down argument of neoliberal assumptions of homo economicus – individuality, rationality and self-interest – as providing explanatory power in a networked age.

In mapping this socialization we see four interconnected layers:

• Social Media
• Social Production
• Social Labor
• The Social Mind

These different layers can be seen to be in part a development out of social practice theory.

We start with social media because the case is easy to recognize. It is in some ways an embodiment of the argument we are making. Ten core principles underlie the value of social media, serving to define characteristics that set them apart from other forms of communication and collaboration and while these are contested and struggled over they provide a quick reference to the collective dimensions that now dominant media. The main distinguishing feature of social media is that it is a social environment for mass collaboration: a blending of technology and social interaction for the co-creation of value. We list the core feature below and present these relationships programatically:

**Ten Core Principles of Social Media**

1. **Participation**: user-participation taps projects of mass collaboration and mobilizes the community to capture the “wisdom of the crowd”; user-generated content is the basis of social media: “the user is king”.
2. **Collective wisdom**: users ‘collect’, share and modify user-generated content.
3. **Transparency**: each participant gets to see, use, reuse, augment, validate, critique and evaluate others’ contributions, leading to collective self-improvement.
4. **Decentralization**: from the logic of ‘one to many’ that characterizes industrial media to the flat structures of ‘many to many’ that characterize social media – interactive anytime, anyplace collaboration independently of other contributors.
5. **Virtual community**: sociality based on ‘conversations’ that are relationship-seeking.

6. **Personalization**: personalization refers to the process of tailoring and customization of digital processes based on the individual’s preferences and behavior.

7. **“Design is politics”**: this feature is an explicit recognition of the dimension of power in design: how a social media site is designed determines how people will use it.

8. **Emergence**: emergence refers to self-organizing social structures, expertise, work processes, content organization and information taxonomies that are not a product of any one person.

9. **Revisability**: social media can be altered, unlike industrial media; it can be infinitely updated and added to and allows group editing and individual contestation.

10. **Ownership**: social media are accessible and available at little cost, unlike industrial media that

**The Core Characteristics of Social Production**

Yochai Benkler (2006) coined the term “commons-based peer production” in his *The Wealth of Networks*. Peer production is modular and allows for production to be both cumulative and asynchronous, formatting and developing the contributions of many participants with diverse interests and backgrounds from various places and at various times. The granularity of the modules allows people to work individually and together to co-produce in a social enterprise for the common good.

In *Wikinomics: How Mass Collaboration Changes Everything* Don Tapscott and Anthony D. Williams (2006) elaborate a similar notion called “Wikinomics” based on four ideas: Openness, Peering, Sharing, and Acting Globally and they discuss seven models for mass collaboration. Michelle Bauwens (2012) examines how collaborative, commons-based production is emerging to challenge capitalism. He argues: “We are witnessing the emergence of a new ‘proto’ mode of production based on distributed, collaborative forms of organisation.” And he goes on to write:

The new mode of peer production has features that prefigure a new productive system in the sense that the sharing of knowledge, code or design essentially follows a logic similar to communism as described by Marx: anyone can contribute, and anyone with access to the network can access the resource. Resources are allocated socially, through the decisions of the contributors to allocate their skills and energy to a particular part of the project. The solutions are added back to the same commons, and can be used by all, even where they have been created by developers who are also employees of capitalist companies.

The Peer Economy, then is an emerging concept and practice, that identifies and explains a new mode of production based on sharing and cooperation especially in the realm of information goods that
has spawned whole mature operating systems such as GNU/Linux as well as innumerable other free software applications; giant knowledge bases such as the Wikipedia; a large free culture movement; and a new, wholly decentralized medium for spreading, analyzing and discussing news and knowledge, the so-called blogosphere.5

Social production is the name for these practices, often also referred to as “commons-based peer production” after Benkler’s usage. In From Exchange to Contributions: Generalizing Peer Production into the Physical World Christian Siefkes (2008) writes:

a society based on peer production will be characterized by manifold cooperation both within and between peer projects. We have seen that a society is possible where all economic activity is arranged in this way. In this society, production will be driven by demand and not by profit. There will be no need to sell anything and hence no unemployment; competition will be more a game than a struggle for survival; there won’t be a distinction between people with capital and those without, or between people living in a center and those living in the periphery. In this society, it would be silly to keep your ideas and knowledge secret instead of sharing them; and scarcity will no longer be a precondition of economic success, but a problem to be worked around (192).6

Peer production is no longer simply confined to the realm of information goods but has come to represent the open knowledge economy more generally and is strongly augmented by concepts and practices of co-production and co-creation.7

The Characteristics of Social Labor

Social labor typically refers to two interrelated aspects: first, it refers to human activity which is directed toward the satisfaction of the economic needs of society and second, in the Marxist literature it refers to the inseparable link between purposeful human activity and the social form of human existence. In this latter sense labor is always social and different modes of production give social labor different forms. In the knowledge economy, from a labor perspective rather than the viewpoint of capital (or human capital) knowledge and the value of knowledge is rooted in social relations (Peters & Besley, 2006).

In this context we talk about social labor in terms of two theories: a theory of co(labor)ation and a theory of creative labor (Peters, 2013).

The Social Mind

The social mind is a general label for an evolutionary-cybernetic model of the emerging network society, a kind of super or global brain based on collective intelligence, self-organization and distributed learning.8 We ight refer to this as the resocialization of consciousness and refer in this context to the notion of the emerging World or Global
Brain based on processes of social evolution, complexity and cognition. Central to this philosophy’s the emergence and evolution of organization and in particular the questions: how does a collection of autonomous, but interacting, agents self-organize?; how does it evolve to an increasingly cooperative, adaptive and intelligent system?; and, what does such spontaneous evolution imply for our scientific worldview?9

We maintain that the “creative university” is built on these principles and that by socializing academic entrepreneurship the university can develop policies that enhance its creative social development. In the remainder of this chapter we discuss recent report re-imaging the university and various forms of academic entrepreneurship.

RECENT REPORTS RE-IMAGINING THE UNIVERSITY IN AUSTRALIA AND UK

The Australian report by Ernst & Young, (2012) University of the Future: A thousand year old industry on the cusp of profound change, was an industry wide study by a team headed by Justin Bokor that ‘interviewed more than 40 senior executives from public universities, private universities, policy makers and sector representative groups across Australia’ as well as undertaking ‘secondary research into international developments in higher education, including reviewing higher education markets and developments in: North America, Asia, Latin America, Europe, the Middle East, Africa and Oceania’ (p 30).

The Ernst & Young report begins by stating: ‘The current Australian university model – a broad-based teaching and research institution, with a large base of assets and back office – will prove unviable in all but a few cases.’ (p. 4). Their view is that the higher education sector is undergoing a fundamental transformation in terms of its role in society, mode of operation, and economic structure and value. They outline five trends as drivers of change:

1. Democratisation of knowledge and access – The massive increase in the availability of ‘knowledge’ online and the mass expansion of access to university education in developed and developing markets means a fundamental change in the role of universities as originators and keepers of knowledge.

2. Contestability of markets and funding – Competition for students, in Australia and abroad, is reaching new levels of intensity, at the same time as governments globally face tight budgetary environments. Universities will need to compete for students and government funds as never before.

3. Digital technologies – Digital technologies have transformed media, retail, entertainment and many other industries – higher education is next. Campuses will remain, but digital technologies will transform the way education is delivered and accessed, and the way ‘value’ is created by higher education providers, public and private alike.

4. Global mobility – Global mobility will grow for students, academics, and university brands. This will not only intensify competition, but also create
opportunities for much deeper global partnerships and broader access to student and academic talent.

5. Integration with industry – Universities will need to build significantly deeper relationships with industry in the decade ahead – to differentiate teaching and learning programs, support the funding and application of research, and reinforce the role of universities as drivers of innovation and growth. (Ernest & Young, 2012, p. 4)

While they think that university business models are likely to become more diverse, they suggest three likely business models:

1. ‘Streamlined Status Quo’ – Some established universities will continue to operate as broad-based teaching and research institutions, but will progressively transform the way they deliver their services and administer their organisations – with major implications for the way they engage with students, government, industry stakeholders, TAFEs, secondary schools, and the community.

2. ‘Niche Dominators’ – Some established universities and new entrants will fundamentally reshape and refine the range of services and markets they operate in, targeting particular ‘customer’ segments with tailored education, research and related services – with a concurrent shift in the business model, organisation and operations.

‘Transformers’ – Private providers and new entrants will carve out new positions in the ‘traditional’ sector and also create new market spaces that merge parts of the higher education sector with other sectors, such as media, technology, innovation, venture capital and the like. This will create new markets, new segments and new sources of economic value. Incumbent universities that partner with the right new entrants will create new lines of business that deliver much needed incremental revenue to invest in the core business – internationally competitive teaching and research. (pp. 4–5)

Initial reactions to the report seemed to be doom and gloom at the suggestion that there is only 10–15 years to adapt to become more lean and mean like business. There seemed to be broad agreement on the drivers of change, but discussions about how to adapt were in fact already well underway. In interviews in The Conversation, Belinda Robinson, Chief Executive of Universities Australia, noted seemed to accept the three-type model advising that the challenge ‘will be to ensure that we have the policy, regulatory and funding frameworks in place that will enable each and every institution to find their place of best fit in this brand new world’ (http://theconversation.com/universities-must-adapt-or-perish-report-10293). Vicki Thomson, Executive Director of the Australian Technology Network of universities, seemed enthusiastic in support of the report as ‘a wake-up call for government, industry and universities “that to prosper, grow and support our national economy, universities must be front and centre of that game change.” “The report reinforces the role of universities as educators, export revenue earners and leaders in research
but we can’t do that in isolation. We must have a system that is well supported by Government and industry,” she said. “The ATN applauds the findings that universities need to develop significantly deeper relationships with industry to develop a competitive advantage.” (http://theconversation.com/universities-must-adapt-or-perish-report-10293).

However, the emphasis private sector as the third business model is undoubtedly part of a neoliberal agenda, unquestioningly (and perhaps not surprisingly considering they are a multinational accounting and consulting company) adopted by Ernst & Young. In University Affairs (November 6, 2012), Australian Senator Lee Rhiannon, education critic for the Green Party says, “The report is fashioned to smooth the entry of private sector providers at the expense of a robust and equitable public university sector,” she says. “‘Market contestability’ and ‘competition’ are buzz words designed to paint increased funding cuts to public universities as inevitable and the private sector as the saviour of universities.” (http://www.universityaffairs.ca/margin-notes/the-future-of-universities-is-all-doom-and-gloom/).

Leo Goedegebuure, Director, LH Martin Institute at the University of Melbourne while acknowledging, as many seem to, that some shake–up is necessary, offers the following points of critique about the report being superficial and lacking depth, with ‘selective quotes in tabloid style throughout the report at a minimum is misleading. And I assume everyone sees through the simplistic marketing ploy of Ernst & Young’s own “university model for the future”. (http://theconversation.com/the-end-of-universities-dont-count-on-it-10350) Despite their assertion about secondary research, Goedegebuure points out that the report does not use recent work on the topic related to competition and dynamic market changes (e.g. by Tom Kennie & Ifrynn Price, UK; Michael Gallagher, Australia, and Clayton M, Christensen & Henry J. Eyring, USA10). He notes that

‘There are certain defining characteristics that at the very least will help buffer universities from this disruptive change. And current barriers to entry in the Australian university system (keeping Commonwealth Supported Places funding confined to public universities) serve to underline the case in point for Australian universities (although not for our TAFEs as recent history has shown). The report is also selective in its use of data. Staff data in universities is notoriously contentious. But making academic-professional staff ratio comparisons without reference to casualisation makes no sense. It’s one of the crucial variables in the current debate on the academic profession, next to the need to redefine this profession. As is the case for the emergence of new categories of professional staff bridging both categories, the so-called “third-space” professionals. Leaving these aspects out of an analysis of higher education dynamics is very unhelpful.’ (http://theconversation.com/the-end-of-universities-dont-count-on-it-10350)

In March 2013, three personnel from Pearson11 (Sir Michael Barber, Katelyn Donnelly and Saad Rizvi)12, produced a report for the Institute for Public Policy
An Avalanche is Coming sets out vividly the challenges ahead for higher education, not just in the US or UK but around the world. Just as we’ve seen the forces of technology and globalisation transform sectors such as media and communications or banking and finance over the last two decades, these forces may now transform higher education. The solid classical buildings of great universities may look permanent but the storms of change now threaten them.

In *An Avalanche is Coming*, the authors argue that a new phase of competitive intensity is emerging as the concept of the traditional university itself comes under pressure and the various functions it serves are unbundled and increasingly supplied, perhaps better, by providers that are not universities at all (Summers, 2013).

Key points from *An Avalanche is Coming* are: The traditional university is being unbundled. Some universities will need to specialise in teaching alone – and move away from the traditional lecture to the multi-faced teaching. Types of university possibilities now available are: the elite university; the mass university; the niche university; the local university; and the lifelong learning mechanism. With the global economy changing and suffering, the cost of higher education increasing faster than inflation while the value of a degree is falling and content is ubiquitous and competition is increasing, they point out three fundamental challenges facing systems globally:

1. How can universities and new providers ensure education for employability?
2. How can the link between cost and quality be broken?

The Report concludes with Aftermath:

In conclusion, the combination of marketisation – the student consumer as king with options outside universities for talented students too – and globalisation will lead to universities being less and less contained within national systems and more and more both benchmarked globally and a leading part of the growth of knowledge economics – collaborating and competing. In the new world the learner will be in the driver’s seat, with a keen eye trained on value. For institutions, deciding to embrace this new world may turn out to be the only way to avoid the avalanche that is coming.

Just as an avalanche shapes the mountain, so the changes ahead will fundamentally alter the landscape for universities. (http://www.ippr.org/images/media/files/publication/2013/04/avalanche-is-coming_Mar2013_10432.pdf)
The Ernst & Young report forms part of a ‘crisis literature’ in higher education and is something of a variation of a prevalent theme in schooling where the notion of crisis is driving the school reform agenda. Crisis discourses related to higher education is particularly intense in the UK and USA, and although apparent, is somewhat less so in Canada, Australia or New Zealand where universities are largely publicly funded. It does not seem to necessarily be related to whether or not the institutions are publicly or privately funded, but more related to notions of competition related to the various world university ranking mechanisms that seem to induce ‘fear and loathing’ in university administration. In USA most of the top ranked universities (e.g. Harvard, Stanford, Princeton, Yale, MIT, USC, Colombia, Cornell, Johns Hopkins, University of Chicago etc.) are not only widely considered the elite, but are privately owned. Interestingly the University of Phoenix, the largest online provider, is owned by the publicly traded for-profit corporation, the Apollo Group which owns several for-profit educational institutions but is not rated at all. Unlike the USA, in Canada, most universities are publicly funded and private sector involvement largely limited to funding small religious institutions (e.g. St Paul University, Ottawa) and private colleges, charitable donations or sponsorships, and industry-university research partnerships. Where countries have limited corporate entrepreneurial activity and a limited history of research organization in industry and few private universities there seems to be less public interest in change or establishing public-private partnerships unless a forceful neoliberal policy regime exists as in the UK at present.

In contrast to the crisis discourse displayed in the above two reports that overly emphasize neoliberal privatized solutions, Ron Barnett in *Imagining the University* (2012) believes that the contemporary crisis discourse reflects a narrow, impoverished range of ideas of the university that is dominated by the idea of the entrepreneurial university, arguing that there is in fact a broad and even better and imaginative array of ideas of the university, but those ideas are seldom heard. In looking at possibilities, at ‘feasible utopias’, Barnett suggests we consider the complexities and multiplicities of the ecological university that:

- understands its situation – and its unfolding – within *multiple ecologies* (cf. Guattari, 2000), including knowledge ecologies, social ecologies, ecologies of the person, economic ecologies and ecologies of the physical world. It has concern for the sustainability and the self-generational capacities of these ecologies. [It is] ‘not merely interested in sustainability, but in well-being’…
- that looks to continuous flourishing of the many ecologies that intersect with it’, in an ethic of ‘*care or concern* (Heidegger) for the world,’… ‘*is engaged with the world*’… ‘it puts its resources into play such that they serve the world’.

(Barnett, 2012, pp. 136–7 – italics in original)

Barnett’s formulation challenges the narrow formulations of the research university as ‘a university-in-itself’ and the entrepreneurial university as a university-for-
itself’ to promote an ecological one that can continually re-imagine itself (Barnett, 2012, p. 137).

Traditionally universities have been seen to have a combination of primarily teaching and research functions where its academics are involved in academic publishing of their research and scholarly in books and journals. There is no suggestion that these functions, should cease or be limited. On the contrary, there is an increased emphasis on publications as a result of the use research assessment tools being used in several countries. Rather, with a neoliberal economic policy environment having gained ascendency in much of the world, with universities no longer admitting only a small highly intellectually able or socially elite cohorts of students, the contemporary university now faces market forces and competition as never before as education has become just another commodity. No longer viewed as a public good and part of social policy education and in particular university education is now seen as a key part of economic policy, a way for economies to improve and gain as they compete with each other for dominance in the global knowledge economy. Consequently university education, albeit still predominantly provided by publicly-funded institutions world-wide, is now formulated as a private good to be bought by student consumers as they forge an entrepreneurial self (Besley & Peters, 2007).

Without providing a complete genealogy, a landmark text on the notion of university in crisis extends back to the 1990s and to arguments well elaborated in *The University in Ruins* (Readings, 1996) where Bill Readings points out that the liberal university as is in ruins now that the empty nihilistic notion of excellence has superseded the principles of reason and of culture that have traditionally governed the university. Readings traced the history of the modern American university and argued that by promoting and protecting national culture it was clearly linked to the promotion of the nation-state. But as has become apparent since the 1990s, universities have become reformulated more than ever as businesses, many becoming increasingly engaged as global entities and brands with world-wide campuses and firmly committed to principles of export education. In these new business models we find the wholesale and uncritical adoption of neoliberal principles, concepts and theories with an emphasis on human resource management systems and managerialism. Yet it seems still that that the university holds a ‘systemic, schizoid division between a market model and a model of corporate solidarity and collegial responsibility’ (LaCapra, 1998, p. 32).

A further commodification has occurred with the increased use of various forms of ranking institutions, faculties and departments (e.g., QS World University Rankings and Times Higher Education World University rankings) and auditing or accountability measures of teaching and of research through research assessment type accountability systems that emphasize the importance of externally funded research projects, publishing, bibliometrics, and citation indexes to provide funding for universities (e.g. in UK, the Research Assessment Exercise (RAE) is now Research Excellence Framework (REF); Excellence in Research (ERA) in Australia; in New
Zealand it is Performance Based Research Fund (PBRF) (for further discussion about assessing the quality of educational research see Besley, 2010).

In the current environment, a major challenge has involved extending the traditional role of universities, so they become more entrepreneurial in a globally competitive academic world, to bring in money from externally funded research grants, and to establish an international reputation often through publishing in prestigious highly ranked journals (based on SSI citations). Increasingly universities are judged by and have become obsessed with their place in world rankings, and in a climate of financial constraint subsequent to the Great Recession, or Global Financial Crisis that began in 2008, there is a scramble within Anglo-American universities to attract overseas or international students. Universities, and ‘research universities’ in particular, have taken an ‘entrepreneurial turn’ in the last fifteen to twenty years. Why? What constitutes this notion? How are economic and entrepreneurial functions added to the traditional concept of a university? While all universities have similar functions of high-level academic teaching and research, how they formulate these obviously differs from and within countries.

A set of new crises have emerged that affect the funding and viability of public universities in many countries. They revolve around state and national fiscal crises; demographic challenges; high youth and graduate unemployment, and an increased emphasis on internationalizing and export education. With the current challenges in funding universities and the need to become economically viable or sustainable the contemporary university has begun to reconsider its role and function. With the ongoing promotion of neoliberal policies in much of the world, universities have been forced into new economic responsibilities related to marketization and managerialism now that education is treated as just another commodity (Besley, 2002; Peters, 2001, 2011). Many universities are changing their traditional functions from teaching and research to a role of servicing both a local and global community through increased internationalization in both teaching and research, in no small measure prompted by the international emphasis in university rankings such as the QS and Times Higher Education rankings.

Since the beginning of the 2008 Global Financial Crisis (GFC), severe fiscal crises have emerged that reflect long-term structural challenges and funding issues. As a result governments often have been forced to limit funding universities with the result that student tuition fees have risen in many cases, staff-student ratios have increased and programs for staff to take early retirement, furlough or pay cuts have been implemented, temporarily or permanently. Moreover, in many Western democracies with aging populations there are demographic challenges that impinge on the fiscal. As the taxpayer based diminished as an aging population began retiring and suddenly there was higher unemployment especially amongst youth and minorities as the GFC deepened and austerity measures were adopted in a raft of countries (e.g. USA, Greece, Spain, Portugal, Ireland, UK) State services (e.g. health, education, prisons, welfare, etc.) require larger shares of government budgets. Graduate employment rates had always been assumed to be relatively immune ot
general unemployment, but with increased graduate unemployment rates now in many countries, especially the EU, the question the about the effectiveness of what universities provides in terms of employability is now asked.

Diminished funding of public universities has led to an increased emphasis on encouraging faculty to bid for external research funding, and on ways to commercialize functions, in particular to and to develop spin-off companies – to become academic entrepreneurs, in an overly narrow conceptualization of the term that ignores the social including social entrepreneurship and not-for profit aspects. Yet not all countries outside the USA and Europe have an adequate corporate or private sector that can provide such external funding. Many universities have become increasingly internationalized, providing for a global community, and are no longer largely regional learning sites offering a mostly-subsidized education through tax-based support. So the question becomes how to fund this new reality?

ACADEMIC ENTREPRENEURSHIP: ACADEMIC PUBLISHING AND BEYOND

Academic entrepreneurship (AE), a term only recently introduced into academia, is now often being touted as a new aim for the institution, as a means to capitalize on the talents and expertise of its employees, since universities are creative institutions that generate huge amounts of intellectual property (IP) in all disciplines. The term academic entrepreneurship tends to emphasize science, medical and technology areas, aiming to convert scientific breakthroughs and technological achievements into industrial and commercial businesses, to commercialize IP. The specific aims involve the commercialization of knowledge, in developing commercial activities and spin-off companies. But, traditional academic research activities such as publishing books, articles, and reports remain vitally important for universities, their research and scholastic reputations. Other traditional aspects especially in large liberal arts universities include disciplines such as performance activities in art, music and sport; and externally funded research and consultancy should not be excluded from definitions of academic entrepreneurship. These all involve creativity and forms of IP, most of which generate revenue for the university either directly or indirectly (as prestige or international reputation).

In exploring the term academic entrepreneurship further, the notion of entrepreneurship itself needs some interrogation. Based on Schumpeter’s account of the entrepreneur who through innovation ‘creative destruction’ made old ideas, technologies and skills obsolete, and to continuous progress and improvements in the standard of living, there ahhs been a tendency to think of the entrepreneur as a romantic, individualist figure as the hero-entrepreneur. But his analysis was concerned with large scale entrepreneurial activity that led to the building of the railroads, the birth of chemical industries and the exploitation of the colonies but ignored the ‘low level’ activity carried out by small firms (Peters & Besley, 2009). A more contemporary analysis is provided in depth in ‘Academic Entrepreneurship and the Creative Economy’ (Peters & Besley, 2009, pp. 74–75).
Chris Steyaert and Jerome Katz (2004) emphasize spatiality of entrepreneurship suggesting that a ‘geography of entrepreneurship is always a geopolitics’ and that ‘entrepreneurship is a matter of everyday activities rather than actions of elitist groups of entrepreneurs’ (p. 180). They ask us ‘to consider entrepreneurship as a societal rather than a purely economic activity’ and consider a notion of public entrepreneurship ‘which embodies a more innovative and citizen-oriented focus, and new ethnic models, therapeutic communities, artists and artisans who embraced the social concept’ (ibid.).

Spinosa, Flores and Dreyfus (1997) in their book *Disclosing New Worlds: Entrepreneurship, Democratic Action, and the Cultivation of Solidarity* which calls argue that human beings are at their best when they are intensely involved in changing the taken-for-granted, everyday practices in some domain of their culture – that is, when they are making history which refers to changes in the way we understand and deal with ourselves. They identify entrepreneurship, democratic action, and the creation of solidarity as the three major arenas in which people make history, and they focus on three prime methods of history-making – reconfiguration, cross-appropriation, and articulation.

We write in support of entrepreneurial practices within capitalist market economies, of citizens’ action groups in modern representative democracies, and of the culture figures who cultivate solidarity among diverse peoples in modern nations. Indeed, we think that these practices are so important to human life that most of the everyday, conventional aspects of capitalist market economies and modern democratic republics necessary to support them must be preserved. Yet frequently entrepreneurs, citizens in action groups, and culture figures seem to be locked in venomous dispute. This suggests that the skillful way of being human that brings entrepreneurship, citizen action, and solidarity cultivation together is being lost. This book is an attempt to retrieve sensitivity to this skillful way of being. Our main goal is to show how entrepreneurial practices, the practices of virtuous citizens, and the practices of solidarity cultivation are ultimately grounded in and integrated by a crucial skill that human beings in the West have had for at least 2500 years. (Spinosa, Flores and Dreyfus, 1997, pp. 1–2).

Entrepreneurship fundamentally means changing meaning and practices. It does not refer to satisfying consumer’s needs or a market; rather it means creating the product together with the market as when Kodak created the camera and photography. This conception anchored in phenomenology involves engagement and is the very antithesis of detached observation, analysis or reflection. Thus authentic being does not amount simply to being a consumer or prosumer but rather is about disclosing new worlds and new spaces by engaging with the web of practices, meanings and identities that is now called ‘communities of practice’ in terms of one’s situatedness characterized by a certain style that coordinates and integrates practices.
We want to emphasize that this analysis is very different from the traditional neoliberal accounts of entrepreneurial activity or of the ‘enterprise society’ that has now made its way into the public realm and into educational policy. The neoliberal model develops a ‘new prudentialism’ in education that rests on the unreformed and unsocialized concept of the entrepreneurial self that ‘responsibilizes’ the self to make welfare choices based on an actuarial rationality as a form of social security that insures the individual against risk.

ACADEMIC PUBLISHING, CREATIVITY AND KNOWLEDGE PRODUCTION

Academic publishing (books, journals, reports) is a form of academic entrepreneurship. It is a common and traditional form of academic work or labor on that rests so much of academic institutional and individual reputation. Few academics are involved in the technical aspects (i.e. design, copy editing, proofing, indexing, typesetting) either the economic and business aspects or sales and marketing their products which remain the domain of the publisher in an industry now dominated by a handful of major transnational companies. Recently there has been a series of academic publishing company mergers and acquisitions alongside the relative demise of smaller University Presses except for more elite ones. The result is a reduction in the number of outlets and bigger monopolies now with the domination by only a few major transnational academic publishers. The industry is a huge one in money terms by companies estimated to be worth approximately $US80 billion per year. In May 2013, The Economist, for instance, reported that

Elsevier, a Dutch firm that is the world’s biggest journal publisher, had a margin last year of 38% on revenues of £2.1 billion ($3.2 billion). Springer, a German firm that is the second-biggest journal publisher, made 36% on sales of €875m ($1.1 billion) in 2011 (the most recent year for which figures are available).


Traditionally, the content for books and journals is provided free to publishing companies by academics whose salaries mostly paid by public universities. Such work would contribute to the academic’s portfolio and career promotional chances. Peer review is a vital part of the process since it ensures quality in these publications. The peer reviewing that ensures quality in these publications is likewise provided gratis by academics. Publishers usually hold copyright on the content they have acquired for nothing, but charge subscriptions for people and institutions, including the publicly funded universities whose academics have provided the content, monopoly prices to get access to the material. Access to journals is usually via a paywall. Paywalls vary in how they are applied.

“Hard” paywalls allow minimal to no access to content without subscription, while “soft” paywalls allow more flexibility in what users can view without
subscribing, such as selective free content and/or a limited number of articles per month, or the sampling of several pages of a book or paragraphs of an article. (http://en.wikipedia.org/wiki/Paywall)

A paywall means that knowledge is only available to those who can pay, so in effect only some institutions and their students and academics, generally the elite ones in the developed world, can easily access the material. Poorer institutions, students and the general public are shut out, emphasizing not only the digital divide but an information and knowledge access divide, and arguably a limitation on creativity. This practice has seldom having been questioned in the past, but now with Internet, e-journals and open access journal developments, it is now considered to be the privatization of knowledge. Currently, with rapid changes and advances globally in Internet usage and with the increase in open access modes of publication and where journals are now often available in both print and e-versions, the status quo about access to research publications is being challenged.

In the last couple of years, something of a crisis has emerged as individuals such as Tim Gowers and organizations like the Wellcome Trust and the UK and USA governments have begun to notice how the academic publishing industry works and to question not only its massive profits, but how the likes of Thomson Reuters not only control the citation indexes but use those to promote certain journals and databases they own via the ‘Web of Knowledge’13. There is increasing demand that research funded by publicly funded institutions and research organizations must be published outside paywalls.

At the beginning of April, Research Councils UK, a conduit through which the government transmits taxpayers’ money to academic researchers, changed the rules on how the results of studies it pays for are made public. From now on they will have to be published in journals that make them available free – preferably immediately, but certainly within a year.

In February the White House Office of Science and Technology Policy told federal agencies to make similar plans. A week before that, a bill which would require free access to government-financed research after six months had begun to wend its way through Congress. The European Union is moving in the same direction. So are charities. And SCOAP³, a consortium of particle-physics laboratories, libraries and funding agencies, is pressing all 12 of the field’s leading journals to make the 7,000 articles they publish each year free to read. For scientific publishers, it seems, the party may soon be over. (http://www.economist.com/news/science-and-technology/21577035-open-access-scientific-publishing-gaining-ground-free-all)

Moreover, a further funding issue in the field relates to the high costs of access to large databases and of repositories that university and other libraries need to pay to subscribe to so their academics and students have access to research material
is prohibitive for smaller institutions and poorer countries. For example, JSTOR established 1996 and part of Ithaka, a not-for-profit organization is a research database with tiered system of fees, but where annual subscription fees vary considerably for different institutions. Although not a publisher, like most academic publishers, JSTOR does not pay royalties to the academic contributors for their articles and operates a paywall system. The fee may be $US50,000 for many universities, although for high schools it may be approximately $3000/ year (http://about.jstor.org/fees/12980#tab-fees), quite a considerable chunk out of any school operating budget. For individuals not connected to a subscribing library, it is approx. $US20 to access and download an article. But in response to recent criticisms in 2012 it began ‘Register & read Beta’ a free read only on-line access for individuals not associated with a subscribed institution. To improve access, it has begun several initiatives, for example:

Since 2006, JSTOR has waived the standard participation fees (the Archive Capital Fee and the Annual Access Fee) for any not-for-profit institution in a country on the continent of Africa. (http://about.jstor.org/libraries/african-access-initiative)

The UK government supports this position that challenges the charging for access to academic journals, but goes further, favoring the “gold” model, where authors pay upfront to make their papers open access, as highlighted in the Finch Report - Accessibility, Sustainability, Excellence: How to Expand Access to Research Publications (Finch, 2012). The Finch Report’s “Gold” model is likely to cost UK higher education an extra £50 million or £60 million a year. Questions remain about academics paying to publish work: How will it impact on early career academics? How will it impact on academics in contract positions, where an increasing number now are not tenured? What impact on faculty or department finances, if they are expected to pay? Moreover, what effect will it have on non–profit learned societies that as owners of journals receive revenue that their journal publishers distribute as royalties? These societies run their wider educational and charitable objectives including providing scholarships and running conferences, yet the Finch Report seems to expect them to have to adapt to the new business model, although they are non-profit or charitable organizations. The Finch Report provides a picture of measures taken globally by governments and funders to promote open access. (p. 54)

The EU will require all the publications arising from projects funded under Horizon 2020 to be made available on open access terms.

Similarly, the Spanish Government is considering how to implement a law on science, technology and innovation passed in 2011 which requires publicly-funded researchers to make the accepted manuscript of published articles available as soon as practicable, and in any case within twelve months. In the US, the proposed Research Works Act, which would have forbidden open access mandates for federally-funded research, was withdrawn in February
2012; and the proposed Federal Research Public Access Act, which would require federal research funding agencies to provide online access to research manuscripts stemming from their funding within six months of publication in a peer-reviewed journal, was reintroduced. The National Science and Technology Council is currently considering how best to increase access to federally-funded scientific research.

Following from the Finch Report, in the UK, the ‘Research Councils are also now proposing to update and enhance their policies on open access; and the Higher Education Funding Councils are proposing to make open access a condition for the submission of published outputs for any Research Excellence Framework (REF) or similar exercise’ (p. 55). The report acknowledges the potential problems for learned societies and suggests a wait and see approach. Meanwhile, the move towards open access journals and changed business models for academic publishing is well advanced.

UNIVERSITY SPORTS AS A FORM OF ACADEMIC ENTREPRENEURSHIP

While it may not play a prominent role in all universities around the world, in the USA, especially in tier-I, public, land-grant Universities and other high profile private ones, sport is a prime example of academic entrepreneurship where it plays a prominent role in university with college athletics run on business models. Universities spend a great deal on a wide range of high quality indoor and outdoor sports facilities – stadiums, gymnasiums, pools, ice-rinks, therapy facilities that are available at times for all students and faculty to use as well as the sports teams and elite athletes, and use these to entice ordinary students to attend. Sport is an integral part of school and university activities where male and female elite athletes in a wide range of sport and athletics (e.g. basketball, football, soccer, rugby, tennis, skiing, ice hockey, gymnastics, volleyball, athletics, etc – see NCAA at http://www.ncaa.com/) are keenly sought, supported and encouraged through college scholarships and high level coaching systems. NCAA college athletes won 44 medals at the 2008 Olympics. Universities gain huge publicity and prestige, improve their rankings and revenues including gate-takings at stadiums, merchandising, TV and broadcasting revenues, and the all important alumni donations from their intercollegiate athletic programs. With national college level sports tournaments generate huge television audiences top level sports coaches earn more than university presidents. University athletes are not paid and the argument is often raised that they are being exploited by the institution, but by receiving scholarships, do receive some recompense. Sport is often seen as away for poor, but talented youth to gain expertise to become professional athletes later on and to also gain a university education at a reputable institution. Scholarships usually cover tuition, textbooks, food and accommodation, transport (including airline tickets) and other benefits. With sport playing an increasingly important role in the cultural and national identity in US society, there
is something of a harking back to ancient Greek ideals of the well-rounded person in being able to combine athletic and academic ability. In its unique formulation in USA, sport is an important form of academic entrepreneurship. Spin-offs arise in now quite substantial area and subjects such as sports medicine, sports psychology, and physiology yet is seldom considered to be part of academic entrepreneurship.

ACADEMIC ENTREPRENEURSHIP: SPIN-OFF COMPANIES

In exploring the notion of university entrepreneurship, a variation on the term academic entrepreneurship, a 2007 survey of 173 articles published in a variety of academic journals found that four major research streams emerge in this area of study: i. the entrepreneurial research university; ii. productivity of technology transfer offices; iii. new firm creation, and iv. the environmental context including networks of innovation (Rothaermel, Agung, Jiang, 2007, http://icc.oxfordjournals.org/content/16/4/691.abstract). This taxonomy usefully indicates a burgeoning literature, but uses a more limited definition of entrepreneurship that focuses on the commercial for profit aspect. But both IP and academic entrepreneurship are much wider than the ‘hard sciences’. Here some US and European exemplars are outlined.

The University of Illinois Urbana Champaign, NCSA – National Center for Supercomputing Applications (NCSA), funded by the High-Performance Computing and Communications Initiative set up a team led by Marc Andreessen and Eric Bina that developed MOSAIC web browser which although not the first, made a major splash in 1993 and was able to be used on a wide range of computers (1993 Product of the Year, InfoWorld magazine; 1994 Technology of the Year, IndustryWeek magazine). Being user-friendly with integrated graphics, icons and bookmarks, it appealed to ‘non-geeks’. NCSA offered Mosaic free from its website and it rapidly became popular. NCSA discontinued support for Mosaic in 1997 (http://www.ncsa.illinois.edu/Projects/mosaic.html). Andreessen left UIUC and the technology was transferred to the private sector, then with several other Mosaic developers he launched Netscape and more than 100 companies, including Microsoft, licensing the software. Through start-up Spyglass Inc, an offshoot of UIUC, Microsoft licensed the Mosaic source code turning it into Internet Explorer (http://en.wikipedia.org/wiki/Marc_Andreessen).

Such spin off companies are by no means limited to the USA. Four European examples follow, all in the science-technology-engineering areas. Meow Entertainment is a Swedish university spin-off company, based in Science Park Gotland, Visby, Sweden, that is focused on the development of web based MMO’s and Social Games. Their latest release is Fumbies: The Cloud Creatures (http://meow-entertainment.com/). Intellenergia is a university spin-off company owned for the major part by the University of Rome ‘Tor Vergata’ and specifically by Faculties of the Mechanical and Electronic Engineering and Economics Departments. The remaining part is owned by highly experienced engineers in the power plant sector. It is hosted by the “Parco Scientifico” and is involved in designing and managing
renewable power plants and providing high value and impartial technical-scientific services. They have designed 'renewable power plants in Italy territory, for over 150 MW photovoltaic plants, 80 MW wind turbine plants, 10 MW biomass plants and 150 MVA delivery High Voltage stations for Terna provider' (http://www.intellienergia.com/). GEXCEL, Srl, Brescia is an Italian university spin off company in Software Development. The top level product is JRC 3D Reconstructor®, a software originally realised by the European Commission Research Centre and now developed by Gexcel to manage and analyze 3D data from any kind of laser scanner. It merges data from airborne, terrestrial and mobile sensors, maps 2D high resolution images on 3D models and imports topographic data (http://www.gexcel.it/en). SenseFLY, a Swiss company, was founded in 2009

as a spin-off of the EPFL*-based Laboratory of Intelligence Systems, a leading research organization in robotics and artificial intelligence. Since summer 2012 senseFly is member of the Parrot group [listed on NYSE, with headquarters in Paris, over 700 employees worldwide]. We develop, assemble and market autonomous mini-drones and related software solutions for civil professional applications such as accurate mapping of mining sites, quarries, forests, construction sites, crops, etc. senseFly counts around 40 employees taking care of R&D, production, marketing and sales. At senseFly, we are always on the edge of technology innovation. The company holds several patents in the field of aerial robotics and is pursuing multiple research projects to expand its offer range. (http://www.sensefly.com/about/company-profile.html)

SOCIAL ENTREPRENEURSHIP AND EDUCATION

The term academic entrepreneurship should also involve social entrepreneurship and public entrepreneurship as a form of creativity in the public domain. i.e. it should encompass not-for-profit and social enterprise, which may be mixture of public and private aspects. Some universities, especially in USA are now providing courses in Social entrepreneurship and supporting ventures et up by their students. At UIUC, the Academy for Entrepreneurial Leadership was established in 2004 with a 5 year $4.5 million grant from the Kauffman Foundation. Faculty Fellows were feature established in the Academy aiming to:

- broadening the understanding, appreciation, and inclusion of entrepreneurship in all disciplines. The program is based on a comprehensive definition of entrepreneurship that embraces the social, intellectual, and economic value created through the application of entrepreneurial principles. We view entrepreneurship as a process of opportunity recognition and resource acquisition that leads to the creation of something new, whether a new business or new approaches to solving social problems. Entrepreneurial behaviors can benefit larger corporations, and independent artists pursuing innovative strategies for career management. The Faculty Fellows program is designed
to stimulate and support the development and teaching of entrepreneurship courses in disciplines across the curriculum (http://business.illinois.edu/aefaculty/).

Both Michael Peters and I became Faculty Fellows in 2009 in College of Education and established a new course in the Global Studies in Education program (http://business.illinois.edu/aefaculty/fellows/education.html).

As part of its work associated with the Center for Social Innovation, Stanford Graduate Business School offers an Executive Program in Social Entrepreneurship, noting that

Social entrepreneurship is a phenomenon that has captivated the public, the media, activists, philanthropists, and social change agents alike. Around the world, social entrepreneurs are revolutionizing the approaches to problems like education, the environment, poverty, health care, and social justice. (http://www.gsb.stanford.edu/exed/epse/)

It declares that it

is distinctive in the cutting edge topics addressed, including tapping the social capital market, balancing social and economic value, blending nonprofit and for-profit legal forms, sustaining innovation, leveraging social innovations through technology; and creating effective cross-sector partnerships. The program also incorporates pioneering research from Stanford’s world-renowned Center for Social Innovation. (http://www.gsb.stanford.edu/exed/epse/).

Many of the examples of social entrepreneurship in education seem to be established by an individual with a strong sense of social justice and a belief that they can change lives for the better. In USA, the desire to ‘give back’ – an important cultural value – is apparent in some business circles e.g. NBA All-Star and now Sacramento Mayor, Kevin Johnson established St HOPE in Sacramento in 1989 to ‘revitalize inner-city communities through public education, civic leadership, economic development and the arts’ (http://www.sthope.org/history-1.html). Unless they have established a very profitable business and then seek to do philanthropic work via a private or family foundation, with associated tax advantages, like the Skoll Foundation or Ashoka Foundation, they often start small and have to spend some time not only seeking financial backing, but establishing credibility. Two exemplars are Camfed and Citizen Schools, but there are many more. Camfed (Campaign for Female Education) established in 1993 by Ann Cotton to educate girls and support young women to help tackle poverty in rural African communities, states that ‘Education can change everything.’ Approximately 2 million children in the poorest areas of Ghana, Malawi, Tanzania, Zambia and Zimbabwe have benefited from our innovative education programs. Investing in girls and women is a proven way to improve the health and wealth of a whole nation.’ (https://camfed.org/). Like many social entrepreneurial organisations, Camfed harnesses donations form a wide range
of individuals and business and community donors. Founded in 1995 in Boston USA, Citizen Schools works with existing schools to develop afterschool programs that include ‘apprenticeships, academic support, college to career connections and a culture of achievement’ for middle-school students in low-income areas. They have programs operating in California, Illinois, Massachusetts, North Carolina, New Jersey, New Mexico, New York, and Texas. The organisation works to balance grass roots work and policy work and actively seeks financial investors from the business sector. Social entrepreneurs often have to spend too much time to collect funding (http://www.citizenschools.org/).

Social entrepreneurship involves creating, developing, implementing and evaluating the success of social innovations. As applied to education it might be establishing a new organization or institution that addresses social needs, or creates an important social change or impact, so this week we begin by defining our terms, then examining education statistics to establish areas of potential for change. Education is profoundly social and linked with much more of the wider community than simply delivering a curriculum within schools. It can and should be considered in relation to social entrepreneurship. Yet social entrepreneurship is seldom studied or even promoted in university education faculties which have an over-emphasis on the schooling sectors and tend to ignore anything that mentions entrepreneurship, even the social and that associated with education. Rather social entrepreneurship tends to be located in business schools or management departments. More collaboration between the two would seem an obvious way to address social issues and education.

Despite this range of exemplars of academic entrepreneurship, the major aspect of academic work involves publishing, clearly points that the current formulation of academic entrepreneurship is overly narrow since it ignores the input of the sciences and humanities to knowledge cultures.

NOTES
2 This list is a compilation and development from many sources including Benkler, Rheingold, and Bradley
3 See the wiki at http://www.benkler.org/wonchapters.html
4 See http://www.redpepper.org.uk/the-coming-of-the-commons/
5 See http://peerconomy.org/wiki/Main_Page
7 The literature on coproduction and cocreation is now quite extensive. See Sheila Jasanoff (2006) States of Knowledge: The Co-Production of Science and the Social Order and Hans Harbers (2005) Inside the Politics of Technology: Agency and Normativity in the Co-Production of Technology and Society,
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on how experts can cooperate with amateurs to generate new knowledge. Perhaps more importantly see the literature on the coproduction of public services. ‘Co-production’ was originally coined in the late 1970s by Elinor Ostrom to explain the delivery of public services in an equal and reciprocal relationship between professionals and people using public services. See, for example, Alford, J. (2007) Engaging public sector clients: from service delivery to co-production; Taco Brandsen and Victor Pestoff (2012) (Eds), New Public Governance, the Third Sector and Co-Production. On co-creation, an idea that developed initially in a business context to coopt customer competence in strategy and value creation but has now been applied much more widely see for example Prahalad, C.K.; Ramaswamy, V. (2004) “Co-Creation Experiences: The Next Practice in Value Creation” and Spohrer, J. & Maglio, P.P. (2008). “The Emergence of Service Science: Toward Systematic Service Innovations To Accelerate Co-Creation of Value”. See also Francis Gouillart’s blog on co-creation at http://francisgouillart.com/ and the Guardian story http://www.theguardian.com/best-awards/co-creation-is-the-new-crowdsourcing.


9 See e.g., http://globalbraininstitute.org/


11 Pearson is a British multinational listed on the London Stock Exchange, the largest education company and the largest book publisher in the world that includes imprints such as Penguin Random House, Financial Times, the Economist and many other acquisitions with approx 37, 00 employees worldwide. In 2012, revenue was GBP5 billion; operating income 515 million with net income of 286 million (http://www.pearson.com/content/dam/pearson-corporate/files/press-releases/2013/2012-RESULTS-FULL-PRESS-FINANCIALS-25–02-2013.pdf).

12 Sir Michael Barber is the chief education advisor at Pearson, leading Pearson’s worldwide programme of research into education policy and the impact of its products and services on learner outcomes. He chairs the Pearson Affordable Learning Fund, which aims to extend educational opportunity for the children of low-income families in the developing world. Michael also advises governments and development agencies on education strategy, effective governance and delivery. Prior to Pearson, he was head of McKinsey’s global education practice. He previously served the UK government as head of the Prime Minister’s Delivery Unit (2001–05) and as chief adviser to the secretary of state for education on school standards (1997–2001). Micheal Barber is a visiting professor at the Higher School of Economics in Moscow and author of numerous books including Instruction to Deliver: Fighting to Improve Britain’s Public Services (2007) which was described by the Financial Times as ‘one of the best books about British government for many years’.

Katelyn Donnelly is an executive director at Pearson where she leads the Affordable Learning Fund, a venture fund that invests in early-stage companies serving low-cost schools and services to schools and learners in the developing world. Katelyn is also an active advisor on Pearson’s global strategy, research and innovation agenda, as well as a consultant to governments on education system transformation and delivery. She serves as a non-executive director and strategic advisor for several start-up companies across Europe, Asia and Africa. Previously Katelyn was a consultant at McKinsey and Company and graduated from Duke University with high distinction in economics.
Saad Rizvi is Pearson’s executive director of efficacy, leading a global team to ensure delivery of learning outcomes and performance across all the company’s products, services, investments and acquisitions. Previously he was at McKinsey and Company, where he led innovation and strategy work for several Fortune 100 companies. Saad has advised education systems in Asia, Europe, Africa and North America on delivery, reform and systemic innovation. He graduated with distinction from Yale University with degrees in economics and international studies, and currently serves as a non-executive director at a number of companies in the education and technology spaces. (http://www.ippr.org/images/media/files/publication/2013/04/avalanche-is-coming_Mar2013_10432.pdf).

13 "Thomson Reuters Web of KnowledgeSM is a research platform that gives you access to objective content and powerful tools to search, track, measure and collaborate in the sciences, social sciences, arts, and humanities. This intelligent research platform provides access to the world’s leading citation databases, including powerful cited reference searching, the Analyze Tool, and over 100 years of comprehensive backfile and citation data.

With Thomson Reuters Web of Knowledge, you choose the resources that you need - there’s no need to subscribe to unnecessary or extraneous databases. Combine renowned multidisciplinary databases with content-specific selections and tools for analysis and measurement to create the Web of Knowledge that turns raw data into the powerful knowledge you need. "(http://wokinfo.com/about/whatitis/)


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2. AGILE METHODS FOR AGILE UNIVERSITIES

INTRODUCTION

Universities are strange organizations. They are charged with multiple, perhaps contradictory, and certainly mutually complexifying missions. These include teaching, research, and service to local, national and international communities, economic regeneration and urban revitalization. They are expected to be memory institutions, preserving and passing on ancient truths, of telling people who we are and where we came from. But at the same time, universities are expected to be places of discovery, innovation and creativity. Scientific research is all about discovering and doing new things, but so too are the social sciences, the arts and the humanities. Innovation is disruptive and unsettling, challenging the old ways.

Universities have progressed for many years dealing with the balancing act of being both preservers of continuity and disruptive innovators. But every so often we should think about how these issues affect, or should affect, our own processes. A variety of current challenges relating to technological development, funding and international competition create a threat to traditional practices in universities – and a need to do things better, faster and cheaper.

In this thought piece we want to explore a term, Agile, that is being used in a number of workplace settings, including the management of universities. We explore a particular set of meanings of the term agile from the world of software development. Agile methods were created to address certain problems with the software development process. Many of these problems have analogues in the context of universities and so may serve as inspiration for the development of analogous solutions. We do not have a magic bullet (Brooks, 1995) to offer as a solution. But we do believe that a reflection on agile methods can be a powerful heuristic for generating possible solutions. The guiding principle throughout this essay is the perhaps troublesome idea that an innovative research university should really be doing more research on itself to innovate new ways of operating.

A NEED FOR FASTER AND FLEXIBLE ORGANIZATIONAL PROCESSES

A number of books and articles have appeared recently noting the various challenges that universities have to confront (e.g. Christensen & Eyring, 2011). For many western universities this change includes greater global competition in research, expectations of higher standards from governments, increased comparative evaluation through both national and global university rankings, changes in funding sources (typically

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declines in government funding), limits to the possible growth of fees, and the potential of technological disruptions from growth of computer hardware, software and networking. Current interest in Massively Open Online Courses (MOOCs) is an example of such a possible disruption; we return to MOOCs later in the paper, using them as a case study for a more agile university.

It is always tempting to claim that the period that we are living through is special, and different from what is gone before. It can feel to those of us currently working in universities that there are particular pressures that did not apply in the past – ever greater expectations, more metrics, declining resources, greater competition, less well-educated students, etc. Regardless of whether the current moment is actually all that special, we would claim that there is a widespread pressure for universities to be ever more innovative in exploring new solutions and seizing opportunities. Unfortunately this innovation can at times feel to be impeded by a rather bureaucratic set of processes. We need to be more innovative in not just what universities do, but how they do it. Compared with small companies, and especially high technology start-ups, a university can seem rather slow in its ability to innovate. If start-ups are said to work on internet time then universities seem to work on ivy time - whereby their own organizational structures seem to stretch and warp how long things take to do.

It is in this context that the word ‘agile’ is often used as a desirable attribute (Elementa Leadership, 2012). It is more likely to be used as an aspiration rather than a description of what currently happens. That is, people may note that it would be very desirable if a university could be more agile in how it operates and reacts to changes in the environment. The irony is clear - universities are demonstrably successful in generating ideas and undertaking successful research to change the way we see the world, and to change what we can produce. Why is it so hard for universities to innovate their own processes?

**Physician Heal Thyself: University Research Thyself**

It would be desirable if a university could try things out really quickly. What if a university could do little experiments to see if a new way of doing things was better than the existing way? If only we had any skills in doing research. The irony is glaring although pointed out less than it might. How is it that an organization committed to world class research, which is held out as a beacon of innovation, can be so reluctant to do research on itself and especially to experiment with its own managerial practices? The idea might seem utopian, but the experience with adaptable agile methods in corporate settings makes us suspect that it might be possible in some form.

**COLLOQUIAL AGILITY: FAST AND FLEXIBLE**

Prior to a consideration of agile software development as a source of inspiration for the agile university, it is important to note that sometimes ‘agile’ is used in a
more colloquial way. Agility as applied to a person carries connotations of flexibility and speed, often with aspects of balance. An agile person is less likely to fall over and can cope rapidly with both challenging and changing situations. When they do (rarely) stumble, they are less likely to injure themselves. These are qualities that we may well want to ascribe to organizations too. In this colloquial use of the term agile, it is used to describe what an organization has managed to achieve (such as seizing an opportunity, responding to a threat, quickly changing what it does or changing its internal processes in the light of circumstances, etc.).

The term agile may well be used negatively – to complain that our organization has failed to or is incapable of responding in a fast and flexible manner. It seems hard to object to this idea of agile – of course being fast and flexible is good (though we will revisit that later). People and organizations can be called less agile, but it is very rare to call a person or an organization “too agile”. In this colloquial sense agile is an attribute. But little is said about what could or should be done in order to become more agile. Agile describes the outcome, but rarely does it tell us how we might get there. For people, it may involve various kinds of stretching exercises, but what should an organization do in order to become more agile? An email from university management saying “be more agile, right now!” is not enough.

One aspect of colloquial agility that does give a clue to one way to achieve agility is around size and age. Small organizations and new organizations are often able to be fast and flexible. Decisions can be made quickly because there are fewer people you need to ask, to tell, to persuade or to lobby. New organizations are typically small, and so gain this advantage solely by virtue of size. But new organizations have an additional advantage with respect to speed and flexibility - they lack precedent. In a new organization, the way you do things are new, and change may be less disruptive. At its simplest, it is less likely that someone will be able to say “but we’ve always done it that way”. A new organization competing in a market may need to be deliberately different in order to stand out from more established competitors, creating a bias towards novelty and experimentation. Do these issues apply to organizations that happen to be universities? Are smaller universities often faster and more flexible? What about newer universities? We are not sure, but it would be interesting to investigate.

AGILE SOFTWARE DEVELOPMENT

Software development is a complex, fraught activity. Many things can go wrong, leading to projects that are delivered late and over budget, fail to do what the customers want or need, or fail to be delivered at all. The research area of software engineering was developed to try and understand why this happened so often and to develop approaches for mitigation. Within software development, a variety of different practices were developed. One group (that included the methods of Extreme Programming, Adaptive Software Development, Crystal, and Scrum) had a certain
set of characteristics that led to the development of a shared vision to articulate what they had in common - and indeed how they were different from other practices. The Agile Manifesto (Figure 1) was written in February 2001.

The manifesto can be seen as a set of philosophical values. It is clearly not a recipe for exactly how one should do software development. But the various methods that were determined as being agile had those characteristics in common, as did their subsequent refinements. These methods are often contrasted with other methods that emphasize the items on the right of the manifesto to a far greater extent. For agile advocates, those elements may be carried to extremes resulting in overly bureaucratic plan-driven (and non-agile) development.

In addition to the manifesto, twelve principles underlying it were also articulated (Figure 2).

Since 2001 agile methods have been adopted by many software development teams around the world. There has been an accompanying research interest in agile, trying to understand whether it works, if it is in fact more efficient than other methods, and if so, why. It has inspired a substantial literature of books describing detailed processes derived from it, case studies, how-to advice, empirical evaluations, training materials, applications in other contexts, and reflections on how to introduce the ideas into organizations that have pre-established processes and may have individuals and whole groups who are very skeptical about the idea. In a recent review of the literature, (Dingsøyr et al., 2012) found 1551 research papers from 63 countries on agile software development in Web of Science published between 2001 and 2010 (inclusive).

Although not the dominant form of software development, agile methods are now a well-established niche with strong empirical evidence of success. The different methods can however seem somewhat cult-like to outsiders with partisan claims around efficiency and effectiveness.
AGILE METHODS FOR AGILE UNIVERSITIES

THE NEED FOR AN AGILE APPROACH IN SOFTWARE DEVELOPMENT

Agile methods emerged as a reaction to sets of processes developed to try and address the difficulties of software development by very careful precise specification, planning and documentation of what to do in advance. Then the code is written, tested and then deployed in the customer’s setting. This very logical, rational process is sometimes called the Waterfall method (Royce, 1970). Such an approach can seem eminently reasonable. It is in part inspired by processes that have proved to be highly effective in mass production, and in construction. But the development of something as logical as software seems to be strangely resistant to excessively logical and rational methods that try to plan everything in advance and then to systematically execute each element in a logical order. This might be because our understanding of software development is underdeveloped. Or, as agile advocates often claim, it could be that there is something fundamentally different about software development.

Many of the problems arise around the issue of requirements capture - determining what it is exactly that the client wants: “Traditional approaches assumed that if we just tried hard enough, we could anticipate the complete set of requirements early

We follow these principles:

- Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.
- Welcome changing requirements, even late in development. Agile processes harness change for the customer’s competitive advantage.
- Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.
- Business people and developers must work together daily throughout the project.
- Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.
- The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.
- Working software is the primary measure of progress.
- Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.
- Continuous attention to technical excellence and good design enhances agility.
- Simplicity – the art of maximizing the amount of work not done – is essential.
- The best architectures, requirements, and designs emerge from self-organizing teams.
- At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

Figure 2. Principles behind the Agile Manifesto (http://agilemanifesto.org/principles.html)
and reduce cost by eliminating change” (Highsmith & Cockburn, 2001). Various
document-centric methods were developed in reaction to unsuccessful software
projects that resulted in dissatisfied clients, breakdowns in trust and communication,
and indeed lawsuits. If the developers can show that they have delivered exactly
what the clients asked for, by referring to a voluminous requirements document, then
surely the client has no reason to complain, or indeed to sue. The problem is that the
client may not know exactly what they want, or what they want may change before
the product is delivered. That is not because the client is confused or naive, just that
interactive software products are immensely difficult to think about - even for skilled
software developers.

It should be noted that many software engineers regard the waterfall method
as something of a straw man. Different software development methods are often
explained and justified in contrast to this hypothetical waterfall method - including
methods that are not agile. However, in the literature on agile methods ‘waterfall’ is
often used as a catch-all term for all non-agile methods that although not as linear
and rigid as pure waterfall, are far less flexible and adaptive than agile. We will use
the terms traditional software development and plan-driven development to refer to
these non-agile methods.

Agile methods seem to work by acknowledging human fallibilities - the difficulties
that clients have in knowing what they want and articulating it, the difficulties that
developers have in completely understanding those wants and needs, the errors that
inevitably arise in software development, and our inability to predict future needs.
The manifesto proposes that the way to address to all these problems is to focus on
tight iteration loops and different kinds of rapid testing and evaluation. Particular
methods vary in exactly how they achieve this, but they all focus on building and
testing minimal versions of the desired product very quickly and then progressively
adding more features over time. This is a more organic kind of growth process (like
a tree that starts off as a seedling) than say a typical construction project (where we
do not begin with a tiny shed and grow it into a mansion). The result is that at all
stages the client has a product that at least does something even if it does not do
everything desired. Rather than trying to plan everything correctly in advance, the
methods allow for much more rapid adjustment on the fly in the light of inevitable
human error and externally changing circumstances.

Agile methods seem to be especially effective in novel design settings, where
developers and clients may not be exactly sure what the best software solution is,
or indeed what is really needed from the software in order to do the job. The focus
on early delivery of working software (versions that successfully execute just a few
of the features of the envisaged final product) allows for different kinds of testing
and revision of the requirements, allowing for fast and flexible response to a rapidly
changing world - or indeed participants’ rapidly changing understanding of the
world.

Nevertheless, agile can seem a very alien way of working, and switching to agile
is not a trivial matter. It feels good to have a clearly worked out plan to follow. It
feels like good management to begin by working on such a detailed plan. Agile is
not about an anarchic free for all. But it emphasizes that plans will inevitably have to
change as circumstances dictate (Suchman, 1987), and so detailed upfront planning
may not be the most efficient way of working. Rather what is needed are ways to
dynamically re-plan, but in a systematic manner.

Planning is one of the most difficult concepts for engineers and managers to re-
examine. For those raised on the science of reductionism (reducing everything
to its component parts) and the near-religious belief that careful planning
followed by rigorous engineering execution produces the desired results (we
are in control), the idea that there is no way to “do it right the first time”
remains foreign. (Highsmith, 2002)

AGILE AS A METAMETHOD

The substantial literature on agile methods can be rather challenging to read. It can
seem slippery in what it actually advocates. This is in part because although it talks a lot
about methods, it is really much more focussed on how to design methods, and indeed
how to create a setting where methods themselves are continually being redesigned
and improved to meet the demand of local circumstances. Highsmith & Cockburn
(2001) describe agile as using generative rules: “a minimum set of things you must do
under all situations to generate appropriate practices for special situations.”

This abstraction is why we believe it can be applied to university settings. It
operates through a process of first articulating values that lead to principles and
thence to the development of particular practices (Beck, 2005, p. 15). Testing and
review does not just apply to the outputs (the software produced), but also to these
practices. These practices are systematically reviewed and refined as a team learns
more about what it does, and how it can change its practices in order to do things
better.

As an illustration of values informing method design, consider the first value in
the manifesto:

– Individuals and interactions over processes and tools

Cockburn and Highsmith (2001) note: “it’s not that organizations that employ
rigorous processes value people less that agile ones, it’s that they view people, and
how to improve their performance differently. Rigorous processes are designed
to standardize people to the organization, while agile processes are designed to
capitalize on each individual and each team’s unique strengths.” This value in
concert with the other three and the twelve principles leads to practices such as
pair programming (two developers sitting side by side at a computer working on a
single task) and an emphasis on informal communication and consensus-building;
but also techniques to ensure that conversations and meetings do not go on forever,
and decisions are made quickly. It also leads to approaches to how teams should
be managed: “However, “politics trump people.” Even good people can be kept
A substantial part of an agile team-leader’s role is identifying and removing barriers to a team being able to do its job.

Although the agile approach criticizes an excessive focus on documentation, the processes developed do allow teams to track their progress and indeed their rate of progress (often termed ‘velocity’). Public displays, known as ‘information radiators’, enable a team to see how they are progressing in producing working software that accomplishes an increasing number of desired features. The aim is to work towards a constant sustainable velocity as teams learn to more accurately estimate the costs of developing each component of a project and can thereby reliably deliver working products while also being able to dynamically adjust requirements by re-prioritising the task list. This information on processes is obtained as a by-product of actually doing the work, rather than additionally documenting what is to be and what has been done. The process information allows teams to periodically reflect on their processes and to revise them to further increase productivity and minimize errors.

APPLYING AGILE SOFTWARE DEVELOPMENT APPROACHES TO PROCESSES IN A UNIVERSITY

Universities are not (centrally) about developing software, so it is unlikely that we can just apply a set of methods from one setting into this wholly other setting. However, universities do face analogous kinds of complex problems and so some of the underlying philosophies may be useful as a means to develop analogous processes. In particular, universities of course have to deal with a rapidly changing world. For many western universities this change includes greater global competition in research, expectations of higher standards from governments, changes in funding sources (typically declines in central funding), limits to the possible growth of fees, etc. (e.g. Christensen & Eyring, 2011).

Coupled with these external challenges, many academics feel that their internal administrative processes tend to hinder rather than to enhance progress. Bureaucratization of processes typically looks much more like a waterfall method than an agile method. New initiatives have to ripple down through many layers of approval, and documentation can appear greater than that the real work that the documentation is intended to support. Indeed it is easy to begin seeing the documentation as the actual real work. Is it possible to make some of a university’s processes agile? Is it desirable, and is it effective, assuming we can agree on what counts as effective? Universities often address ideas in a very careful, analytic and systematic way. That has many virtues. We do not want to waste money, and in particular we want to be careful about creating a series of costly ongoing commitments or precedents. However the deliberation process can also be perceived to be extremely slow, perhaps unnecessarily so. We believe that it is worth investigating if there are ways to develop alternative processes that are faster and more flexible, and yet can still deliver useful results while avoiding waste.
Nevertheless, all those university rules, processes, procedures, approval levels etc. were created for a reason. They are there because of real concerns. The same applies in software development. Agile is not anarchism, it does not claim that just because these rules, documents, etc. can slow things down that we can and should abolish them, and then everyone will be able to get their real jobs done much faster and more flexibly. Rather it acknowledges the problems these structures were developed to mitigate and proposes different ways to mitigate these same problems that also allow greater speed and flexibility, acknowledging human fallibility (Highsmith, 2002).

We have noted that the reaction to the software development crisis was an understandable inclination to try and systematize software development by greater documentation and oversight. There are remarkably similar pressures in universities for documented accountability, both internal and external. Some of these are very difficult to ignore or to change - they may have the force of law or contracts behind them. The agile manifesto does not reject clear plans, contracts, documentation and processes (those items on the right of Figure 1). Rather it claims the greater importance of other aspects (the items on the left). For example, a military software development contract may have documentary requirements that seem onerous and inefficient to an advocate of agile methods, but there may be no opportunity to ignore or change them. The same applies with certain processes at a university that may be mandated by laws or by a contract with a funding body. Nevertheless, there may be some room for creative manoeuvre even with parts of these, and certainly with those processes, rules and documentary requirements that originate within the university itself.

The radical, disruptive and innovative approach of agile is to question if those rules are really strictly necessary, or indeed desirable, and to design and propose alternative processes that can be tried - and tested - to see if they are actually better. Some of the activities that universities do are large, complex and have difficult to understand interrelationships. Existing structures have been developed to provide checks for effectiveness and unintended consequences. We see many similarities with large complex software development projects that may contain bugs and unanticipated interactions that need to be addressed. Given that an agile approach has been found to be an effective way of tackling software complexity, maybe an analogously agile approach can be developed to tackle some of the problems that universities face in their development of teaching, research, outreach and other activities.

CONSIDERING RESEARCH

In many respects, at certain levels of analysis, the way that universities handle the management of research is actually reasonably agile. Researchers are typically empowered to try and pursue external and internal funding by writing grant proposals. Universities provide centralized shared resources such as libraries, central purchasing and account administration. Great efforts are taken to support the acquisition of
grants and to not hinder this process. Well-run universities treat this active support of, and non-interference in, the research processes themselves as a critical managerial function. Small, fast and flexible research teams are able to seize opportunities of new discoveries by themselves or others as well as explore funding opportunities. There is often strong encouragement and explicit support for writing grant proposals and for the creation of spin-off companies based on the findings of research.

However, this agility may not apply at all levels of analysis, and so there are opportunities for improvement. No doubt grant holders and the managers of laboratories can identify various examples of non-agility. There may even be recurrent patterns in the ways that similar extant processes at many universities slow down the research process by imposing requirements that researchers perceive as distractions or burdensome hurdles. Seemingly petty rules about travel reimbursement immediately spring to mind. The agile challenge is to try and design processes that achieve the (perfectly legitimate) aims of the current rules, but in a more efficient manner that is in better alignment with the core values. But overall, we suspect that it is possible to find many exemplars of agility and process innovation in the supporting of research. Having examples of agile process innovation from within the same institution can be helpful in showing that these kinds of innovation are possible in that particular institutional context.

CONSIDERING TEACHING: TOWARDS AN AGILE MANIFESTO FOR A UNIVERSITY’S TEACHING MISSION

Revisiting the Agile manifesto of Figure 1, note that it is very short and written in clear language. It describes a set of aspirations, perhaps an underlying philosophy. How might this manifesto, written for the context of software development, be rewritten for the context of a university? It is not a simple matter, because there is no single clear agreed upon activity that a university does. We suggest one example of applying agile here (Figure 3), focused just on the teaching mission of a university.

We are uncovering better ways of developing **students** by doing it and helping others do it. Through this work we have come to value:

- Individuals and interactions over processes and tools
- Demonstrable **student achievements** over comprehensive documentation
- **Dynamic learning discussions with students, (as well as parents, government employers and other stakeholders)** over **documents, metrics and policies**
- Responding to change over following a plan

That is, while there is value in the items on the right, we value the items on the left more.

*Figure 3. A first draft at an agile manifesto for a university’s teaching mission.*
university - as a provocation. We hope that it might inspire the reader to come up with a better example, maybe tailored to her university and within that institution, to an area that could benefit from a more agile approach.

This manifesto focuses on the teaching mission of the university. Even the act of rewriting the manifesto can force a degree of reflection and raise interesting questions about what it is we actually do, and what it is that we actually want to do when we teach:

- What do we actually aim to produce as output?
- What would we want to measure, assuming that it is possible or feasible?
- Who are our “customers”? The students, or others who contribute to paying the bills: parents and the government? What about employers? The local community and its economy? Society? The country?
- Who should have an influence in what we teach?
- Who should have an influence in how we teach?
- Is something important lost when we even try to equate software development with student development?

“Developing students” is a deliberately provocative rewrite of “developing software” in the original agile manifesto. An alternative, perhaps closer to the nature of the software development task might be “developing learning experiences”. Like software, these can be difficult to develop, the process can be inefficient, as can the learning that they are intended to achieve, and they can certainly be buggy or error prone in failing to achieve the desired outcomes.

The thinking behind the agile manifesto reminds software developers that just focusing on software that works, although very important, is insufficient. Yes indeed, the software needs to work, but it also needs to do what the customer actually needs. Approaches that address the challenges of software development (processes, tools, documentation and plans) can be valuable, but carry the risk of becoming the main focus of attention rather than producing working software that does what the customer needs. These development foci can also distract developers from the reality that the customer’s needs may be evolving. The agile approach tries to help developers - and the practices that they create - to stay on track.

Similarly, we don’t (or rather we should not be tempted to) just create courses, syllabi, lectures, assignments, learning experiences etc. as ends in themselves. What should matter as a central concern is the impact that they have on our students as they engage with them. How much learning happens? Are we able to handle evolving learning needs?

12 PRINCIPLES WALK INTO A UNIVERSITY...

Figure 2 shows the 12 Principles behind the Agile Manifesto. This is the next stage elaboration of the agile approach. There is still little exact detail of what you might do in an agile software development process, but there are indications of the kinds
of activities you might expect to see. The principles are also articulated to contrast with some of the features, or consequences, of traditional software development processes. For example, consider the second principle, to “Welcome changing requirements, even late in development.” Changing requirements are traditionally rarely welcomed. They are disruptive, can render prior work wasted, cause delays and complexities and often lead to bad feelings between customers and developers because of a lack of understanding of exactly what is being requested and how difficult it is to provide.

Just as with the manifesto, it can be an interesting exercise to try and translate these principles to a university context. Immediately in principle I we revisit the challenge of “who is our customer?” If we decide to focus on the student, then we have a thought-provoking idea of satisfying them “through early and continuous delivery of valuable learning experiences”. This may not be too controversial in the abstract, although on reflection some of us may wonder if we have ever considered course design from this perspective. There are some courses where students can feel frustrated at all the rather tedious prerequisite knowledge and skills that they have to master before they can get to the concepts that they care about. Similarly certain courses may only come together and make sense right at the end. These require trust on the part of the student that all the effort will be worthwhile. Where possible it is certainly pedagogically desirable if the student feels that they are making clearly observable progress and accumulating skills or insights that they deem valuable as they go. So we might ask ourselves what, if anything, we should do if our students do not regard the learning experiences that we deliver as “valuable” but rather as arbitrary points that must be accumulated to gain the prize of a certificate. It is certainly sobering to ponder this question.

To take another example, consider principle two:

– Welcome changing requirements, even late in development. Agile processes harness change for the customer’s competitive advantage.

This might be adapted to:

– Welcome changing learning needs, or (syllabi), even late in the semester. Agile processes harness change for the student’s personal development.

This principle could be a mixture of the obvious and the incendiary. It hardly needs an article on the agile university to note that it can be a good idea for university professors to introduce topical issues into their lectures in order to illustrate the power and applicability of abstractions and theories to give analytic purchase on contemporary problems. Good teachers have always seized teachable moments. Great teachers may discover (to their surprise and disappointment) part way through a semester that a substantial proportion of the class lack a certain set of prerequisite knowledge or skills, or harbour a major misconception. That changes the requirements of the learning and the teacher re-plans accordingly. Again, such flexibility already occurs in many (but by no means all) classes. This re-planning
can look very problematic to a standards-based approach which believes that good teaching only comes from careful lesson plans and sticking to the syllabus. Changing the syllabus as you go seems foolhardy as well as impossibly expensive in time and effort. Do we really want to welcome changing the syllabus as you go?

Again, we have to ask ourselves who our customer actually is. The example above assumed it is (just) the student. But maybe the real customers are an agglomeration of disagreeing stakeholders including students, the government, society, parents, future employers, and accreditation bodies. If so, we may realize that we have multiple kinds of customers all at once. Suddenly it becomes a little clearer why universities have major problems with focus and prioritization, let alone speed and flexibility.

Taking the problem back to agile software development, developers may successfully interact with a single customer representative and be able to welcome changing requirements from her. However, if the team has to deal with an array of customer stakeholders with very different views of what the software is for, then there may be rather too many changing requirements to welcome.

Agile values working software over comprehensive documentation; such as a syllabus, lesson plans, learning outcomes, rubrics etc. As the manifesto states, this documentation is not worthless; its value is recognized. It is just that something else is valued more, namely working software - which all this documentation is created to facilitate. Similar issues arise with documentation around teaching. However, in addition to any disagreements about what exactly is being taught, we also have the challenge of multiple stakeholders, including those who only or mainly focus on the documentation, not the real ‘product’ - our ‘developed students’. Imagine how a non-agile accreditation body would react to a professor who said: “Yes I know it says I would teach that in the syllabus, but by being more customer-centric with my students I decided very late in the semester to teach them something else that they wanted and needed to learn more”.

Finally, we wish to note the emphasis in the principles on sustainable development. This is a reaction to software projects that hit deadlines and then expect developers to work excessive overtime in order to meet the deadline. The claim is that agile methods allow for a much more sustained and sustainable process where people are less likely to be exhausted (and thereby make mistakes) and also to be subject to burnout, quitting the job and thereby losing substantial personal and organizational investments in skill development. Certain agile methods include the bizarre notion of the 40 hour work week (Glass, 2001). This is another dangerously radical and controversial health-promoting idea that we would like to bring to the university.

COUNTEREXAMPLE: SPECIAL TOPICS SEMINARS ARE ALREADY (SOMETIMES) AGILE

Although university processes may veer more to the “comprehensive documentation” side of the agile description, there are counter examples and precedents. We claim that an agile university is a radical notion, but innovative universities always contain
pockets of agility that can serve as precedent and reinforce that the very idea is by no means alien. In the context of course design, many universities have a special case for a faster and more flexible approach, one that may more easily evolve as it progresses, often through necessity or the seizing of opportunity – classic drivers of agility.

One example is the “special topics” lecture course. This is a course that acts as a placeholder for a variety of different courses. It is widespread at the graduate level, but there may be undergraduate versions as well. They allow for one-off teaching of a particular topic, typically an advanced one. This might be by a visiting researcher, or by a faculty member trying out something new, or who perhaps is in the process of writing a book and wanting to test it out chapter by chapter on a student audience. Such a special topics course has many of the attributes of agility. It may be next to impossible to fully specify in advance – because the requirements are still in flux. However, these may be rather un-agile instructor-centric requirements considered in terms of what the instructor wants to cover. The experimental nature of the course is flagged by its official name. The instructor may further note its experimental nature and solicit feedback to enable greater interaction and responsiveness. Students will need to expect that things may well go wrong pedagogically, but that is the price they pay for encountering something exciting and novel. The course is usually optional, creating a greater acceptability for the inevitable uncertainty of outcomes.

After a series of (often rather informal and impressionistic) iterative testing of the components over the semester, the course may be abandoned, turned into a book, or revised into a more traditional, more fully documented course. As such it has another component of agile software development that is sometimes missing in university settings - a defined end point. This is significant because one of the powers and problems with universities is the issue of continuity. A software project is delivered and done. Yes it may be revised, but this is treated as a new project. By contrast, traditional courses are taught many times over many years and other aspects of universities like departments, libraries, research institutes and centers are typically expected to persist for years, decades, even centuries. This very persistence can be one reason why university structures have been set up to be rather slow, un-agile and rather risk averse. Unlike software developers, they are not mostly dealing with a set of complex one-off projects that must be delivered before moving to the next one. Rather they have to deal with structures that are assumed to persist for many years and that can well persist longer than is desired. Creating something new can imply a continued commitment to maintaining it and so creation is a matter to be treated with extreme caution.

Even conventional courses have a small aspect of agile development in how they operate. In traditional software development, the requirements are fixed in advance, and the time and resources to complete the project are estimated. Unfortunately these estimates are very frequently wrong and overwhelmingly are under- rather than over-estimates. Of course it would be nice to fix everything in advance, but we are fallible human beings. Agile recognizes that fallibility but suggests fixing
the time and resources available in advance, and estimating the features that will be delivered. Then when, sadly, problems arise, a product will be delivered, on time and on budget, but not necessarily doing everything the client may want. The features it does successfully deliver have been the result of a process of reprioritization negotiations to maximize the utility of what can be done with fixed resources. This approach is called timeboxing (Highsmith, 2002). Note that this is actually how we teach. Teaching is timeboxed at the level of the semester and the lecture. Despite frequent problems of students lacking prerequisite knowledge, struggling to understand what the instructor thought obvious, ‘bugs’ in pedagogy etc., it is extremely rare for a course to overrun the semester or to exceed its budget. Instead, time and budget are kept fixed and instructors change what they planned to cover, in what depth and in what form. Whether this is an optimal or negotiated reprioritization as occurs in agile methods is quite another matter, but again we note that several agile elements can already be found in universities.

THE PROBLEMS TO BE TACKLED: INERTIAL DAMPENERS OF INNOVATION

There can be a number of reasons, some very laudable, why a university may not be very agile. We consider these to be the inertial dampeners of innovation. Understanding what these might be is useful in appreciating what a more agile approach will need to address, and indeed the likely opposition to agile adoption. We list a few inertial dampeners here, but do not claim to have the complete set. As a simple first example, a notable feature of agile groups is the use of fluid role definitions (Beck, 2005). This is something that universities can be rather inflexible about.

A university is a memory institution that may consider itself as a preserver of tradition. Large size and the age of an institution can have associated features that can slow down innovation. Much of the activity is about managing flows rather than products. Structures that are created may create commitments to continued preservation and may be very difficult to close down, creating a disincentive to risk creating new ones. Many universities have a consensus-based, collegial management structure that means that a lot of people have to be consulted before a decision can be made, slowing the process considerably. This inertial dampener is especially odd in the context of agile, because at the micro level of the agile software development team, consensus-based decision making is actually a core component of agile and one that is contrasted with other more managerially top-down development methods.

There are also issues around risk management, and cultures of risk taking and risk aversion. Universities may be culturally rather risk averse at the level of management and institutional structures. Although exhorted to be more entrepreneurial by many politicians and commentators, these same groups would not doubt be equally condemnatory if the university gambled and lost a substantial fraction of its assets in high risk venture capital deals. Entrepreneurial risk taking sounds exciting, but it rather depends upon what the consequences are of failure. Public universities may
be required to provide greater access to information about everything that they do, successful and unsuccessful, and this can interact with a public feeling a sense of ownership of and interest in everything that occurs. This is inevitable as universities try hard to make themselves seem relevant and part of a larger community activity.

The fear of being in the spotlight or becoming a political football may reinforce risk aversion at the higher levels of a university. Scandals typically involve something that was done and that the university failed to prevent. Unfortunately there is less outrage about university structures that render an innovation infeasible or make it too slow to be effective.

This risk aversion, although both unfortunate and understandable is truly odd because at a lower level of analysis universities are collectively renowned for being hotbeds of controversial ideas. Professors (and often students) are constantly challenging the status quo and saying things that annoy powerful interest groups. On the whole, university managements are commendably aggressive at protecting this freedom of inquiry and expression. The tenure system at US universities was set up precisely to protect the undertaking of controversial scholarship (Amacher, 2004). So certain risks of controversy are embraced by universities even as others are feared. This needs further examination to truly understand and to consider how we might design structures to move along parts of the risk curve.

Agile software development also deals with risk. A poorly designed project delivered late and over budget seriously damages the reputation of the supplier. Bugs can be not only annoying and frequently expensive in their consequences, but in the case of safety critical systems positively dangerous. The agile approach deals with this risk by many iterations and an almost obsessive focus on testing. For example in some techniques, the automated test suite is built before the software it is going to test, so it immediately initially fails. Agile methods aim to lower the consequences of risks by failing fast in order to discover problems (bugs and changed requirements) early. Clear methods to identify and recover from problems as part of the design process replace all the heavy duty upfront checking and validation processes of less agile methods. This does however create a barrier to adoption - the need to convince all interested parties that you are replacing one kind of oversight with a different kind, and the agile one is actually at least as effective in identifying and fixing problems in order to minimize overall risk. There is much talk in the literature of the challenges of making the case for agile, and processes for incrementally introducing the techniques into an organization. Agile advocates also note the costs and lost productivity of keeping traditional checking methods alongside the new agile methods that should render them obsolete.

TIME AND TEMPORAL SCALING

Universities operate on many different timescales all at once. Together, these may not fit well with the iterative build cycles of software development, and so create certain barriers to flexibility, speed and agility in the colloquial sense. This means
that we will need to think how to adapt agile software development insights to the constraints imposed by timescales. Examples of cycles include: the 50 minute lecture, the weekly teaching cycle, the semester or term, the academic year, and the 3–4 year undergraduate degree. Additionally universities have long term perspectives of several years for a given course or degree option and many years (decades, even centuries) for departments, schools, institutes, centres, etc. Finally, like most organizations, universities have to handle external shocks and opportunities such as changes in government policies affecting them, funding opportunities, the economic cycle and changes in the economy’s demand for certain kinds of skills, professions and accreditations.

A company practising agile software development also operates on multiple temporal scales. Indeed the very short (sometimes 1–2 weeks) build cycles or scrums of certain methods are a distinctive feature of agile. But there is a sense of working through sequences of projects, and within a project, pulling an item off the backlog, working on it, delivering it and moving to the next item. This creates a linear feel, whereas by contrast, much that a university does can look much more cyclical than linear. This is in part just a matter of the level of analysis one chooses - for an individual student we may (hope to) see a linear progression of increasing knowledge, understanding, skills, personal development etc. Whereas for the institution as a whole, each year a new set of 18 year olds arrive and we start all over again. Dealing with the cyclical and linear aspects will be a challenge.

This agile approach can seem rather short-termist to a memory institution such as a university. University leaders have to worry about legacy and the financial sustainability of activities - in particular whether they entail ongoing commitments. Those very legitimate concerns lead to multiple levels of review and the creation of checks and balances. As a result activities such as creating a new research center or a new degree can understandably be rather slow. The challenge that agility raises is to ask whether it has to be as slow as it currently is, and what is possible to change to increase speed and flexibility without re-introducing major problems. One possibility is to have something like a special fast-track (agile-track) for activities with defined time-limits, unable to create ongoing commitments. These are more in the linear than the cyclical category outlined above. Precedents already exist - special topics courses and research projects are treated as one-offs. But we must recognize the tension inherent in a university proclaiming its commitment both to legacy and long-termism and also to innovation. The challenge seems to be about making it easier to discard in order to grow elsewhere:

agile enterprises pursue a series of temporary competitive advantages – capitalizing for a time on the strength of an idea, product, or service then readily discarding it when no longer tenable. (Stacey, 2006)

One may hope that new activities will ensue, but they do not need the careful review that creating say a new department or centre needs. That model might be extended to create other kinds of time-limited (linear) activities.
There is another temporal factor that may be problematic for agility. It could be that the very attributes that the general public, students, alumni and other stakeholders admire about a given university: traditions, heritage, buildings, schools, departments, famous alumni etc. are at the same time inhibitors of certain kinds of innovation. That pride creates interest in what the university does, deliberately encouraged by development offices to increase donations, and political support for spending public money. But that interest can mean greater visibility of both successes and failures. If the perceived cost of failure is greater than the perceived benefits of success, we end up with a risk-averse culture.

An extreme version of agility (not one we espouse) would allow for no sense of history, precedent, tradition or indeed security. One could imagine a university run in a more corporate manner where subunits (departments, institutes, degrees, etc.) are created rapidly because they can be disbanded equally rapidly when no longer essential, or simply when the opportunity cost is too high. This would move the university into a realm of Schumpeterian creative destruction. It may be very reactive, but also rather stressful for employees who may fear losing their jobs. Currently many faculty and university employees invest a lot of time, effort, care and indeed emotion in their units, such that disassembly and reassembly can seem traumatic in a way that would not apply in a factory or a software development company where people were regularly reassigned. For many, this kind of extreme agility is the apothecary of the creeping corporatization of the university. As such it is something to be critiqued (Gillies, 2011) or even actively opposed, chiefly because it leads to the loss of many virtues seen in the traditional liberal university. This raises a problem for us as advocates of some agility (but not this extreme form). Our version of agility might be perceived as a Trojan horse for university corporatization, and so something to be opposed in that light. These concerns need to be understood and aired. We hope they are ill-founded, but they are certainly understandable. We would note that the literature on agile software development has substantial evidence of the way that effective agile teams are necessarily groups of empowered professionals, and display high levels of job satisfaction and a strong sense of autonomy. There is no guarantee that what works for software developers would also work for university faculty, but in the ethos of agile, we believe that it is well worth experimenting to find out.

MOOC DEVELOPMENT AS A CHALLENGE TO A UNIVERSITY’S AGILITY

Over the past year or so, a particular kind of teaching experiment has emerged that has been hailed by many to have the potential to be a radical disruption to the traditional operation and funding model of universities. MOOCs have generated both publicity and criticism (Daniel, 2012), with some worried they may even threaten the success of physical universities.

Although there were earlier MOOCs, the Stanford artificial intelligence class was particularly influential; a description of the interactions around this class illustrates the tension between existing organisational structures and the new challenges of the MOOC:
A few days later the class had 10,000. That’s when the Stanford administration called. Thrun had neglected to tell them about his plan – he’d had a hunch it might not go over well. The university’s chief complaint: You cannot issue an official certificate of any kind. Over the next few weeks, 15 meetings were held on the matter. Thrun talked to the dean’s office, the registrar, and the university’s legal department. Meanwhile, enrollment in CS221 was ballooning: 14,000, 18,000, and – just two weeks later – 58,000. In all those meetings, not one person objected to Thrun’s offering his class online for free. They admired his vision. The administration simply wanted Thrun to drop the assignments and certificate. He refused. Those two components, he argued, were responsible for driving the sign-ups. Someone proposed removing Stanford’s name from the course website altogether. (Leckart, 2012)

The challenge to the organisation was how to react to a new form of course that had not been through familiar procedures. Any kind of novel course design looks very like the waterfall method. Typically a course is carefully planned in advance, with substantial documentation. This course proposal then has to be reviewed by various committees, as a way of achieving quality assurance and in order to check for undesirable interactions with existing activities. Eventually the course makes its way through the approval process and it can now be taught. There is typically far less and much lighter ongoing monitoring of the course, although there may be periodic reviews. If the course is especially innovative and consequently does not fit the patterns of previous courses that have moved through the approval process, the processes themselves may not be able to cope, creating the need for new sub-processes, the creation of exceptions and fears about precedents. In this way a perfectly understandable approval process can be a barrier to innovation.

Redesigning course approval processes to make them more agile would involve looking at the agile manifesto and 12 principles for inspiration. It would involve considering whether the upfront work (the attempt to plan as much as possible in advance) could be changed to a more iterative and responsive monitoring; checking and testing. It will be challenging to design a process that is time-shifted in this way, checks for the things that actually matter, and is at least no more administratively burdensome than the current processes. In turn this means that the design of new (agile) processes should be given the care and status that software design is given. It should not be a matter of a Dean making something up on the fly.

It is interesting to observe that much of the MOOC activity is currently taking place through start-ups (e.g. Coursera and Udacity) that take much of the organisational burden away from Universities themselves. The rapid growth of Coursera is characteristic of the Internet-time approach they have taken, with rapid experimentation and at least one “failure” (Jaschik, 2013). It remains to be seen if this can best be understood as a corporate outsourcing of agility, or as a creation of a safe space for experimentation deliberately excluded from traditional administrative structures.
There is substantial evidence that agile methods improve efficiency in software development. In this article we have made the case that there are some similarities between the development of novel software and university activities. We have also noted the existence of pockets of agility within universities to emphasize that the ideas are not completely alien to this context. So it seems worth experimenting with applying agile methods in a university. Unfortunately we can’t just copy the agile techniques that have been developed because they are aimed at supporting software development. So we will have to adapt techniques and combine them with new ones that we create, inspired by the agile approach. We don’t have a set of techniques ready-made and tested to offer the community. Rather we want to encourage many people to design and test different approaches so that we can discover what works best.

The agile literature has much to offer as inspiration, including various processes, how to manage agile projects, and how agile management is different. Additionally, there are case studies on how software development companies have tried to move agile methods from their software development activities to other parts of their operation and on the challenges of introducing agile methods into an organization and overcoming perfectly understandable skepticism.

On the last point, the unsurprising consensus is to start with a pilot project, treat it as an experiment and collect a lot of data to provide evidence for improvement over time. It may require a number of projects before a team learns how to operate in an agile manner, so early results may not be spectacular. A key point is to have management support. An agile project will need permission to not use existing organizational processes as it deploys its own processes instead. Using both processes will most likely mean it is very difficult to show any improvement. This ‘permission to be different’ can be easiest to grant in a project far outside normal operation or one that is clearly experimental. It will need some demarcation from other normal operations, perhaps by analogy with corporate ‘skunkworks’ or the special economic zones set up in communist China by Deng Xiaoping to explore alternate more capitalist modes of production. We think the latter analogy is rather apposite, but perhaps is not the most expedient one to use in making the case to university administrators.

**CONCLUSION**

Our aim is to provoke reflection on how things are done in universities - mostly because we happen to work in them. Similar challenges apply in many other kinds of organization, both for-profit and non-profit. Software development is a very particular kind of complex collaborative activity requiring peculiar combinations of creativity, analytic rigour and deep understanding of both what people do and what they say that they want to do. This very complexity is why we believe that the
methods developed around agile software development can serve as an inspiration for the development of methods to address the many challenges of an innovative research university. We believe that the first stage of this is for research universities to more explicitly apply their considerable research skills to analyzing, improving - and experimenting with - their own managerial practices.

If we want our universities to be more innovative, responsive and adaptable - to be more colloquially agile, then we need to examine the barriers to agility. It might be nice to simply abolish these barriers, but the processes, documentation, etc. that act as barriers were usually created to address real problems. Therefore we need to design new processes that are more agile. This design activity itself will require innovation and agility. It requires analysis of what is done now and why it is done, and mixtures of creativity and engineering design pragmatics to develop new processes. Those who extol the value of greater innovation rarely include the importance of innovating and experimenting with our administrative and managerial processes. That is precisely what we are advocating. Taking an agile analytic lens allows for the questioning of what we do and why we do it. It encourages us to ask how we could redesign any single process in several different ways to make it more agile, and then how we might try out these ways, compare them and learn from them.

In line with agile thinking, we also caution against hubris. This is not about one big bout of careful analytic research followed by the development and deployment of an ultimate University Administration Process Design Solution. Agile methods are deliberately designed with human frailties in mind. We get things wrong. Our best guesses are wrong. Even if we were right in our diagnosis of the problem, the world changes and we should now be working on solving a different problem. The art is not to get it right, but to fail fast, to be able to test innovations as early in the design process as possible, and be able and willing to re-prioritize and replan as more is learned. Consequently, redesigning processes to enable a university to operate in a more agile manner needs to have these same aspects of seeking early feedback, constantly iterating and developing ways of testing early and often.

This is intrinsically a process of learning and discovery. We need structures to support multiple experiments on the way that we do our work, so that we can measure what works and what does not - and understand why. We also need a way to tolerate failures in our administrative-engineering innovation experiments; otherwise risk aversion will dampen support for the whole endeavour. These are all issues that universities handle extremely well in their research, but less so in their teaching and administration. We believe it is time that they start experimenting there as well.

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**AFFILIATIONS**

*Michael B. Twidale*
*Graduate School of Library and Information Science*
*University of Illinois*
*USA*

*David M. Nichols*
*Department of Computer Science*
*University of Waikato*
*New Zealand*