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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, Brown¹). 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 Media²

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*.³ 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.”⁴ 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 might 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-imagining 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 & Ilfryn 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

Research (IPPR), UK with Foreword by Lawrence Summers, President Emeritus, Harvard University (http://www.ippr.org/images/media/files/publication/2013/04/avalanche-is-coming_Mar2013_10432.pdf).

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?
3. How does the entire learning ecosystem need to change to support alternative providers and the future of work? (http://www.ippr.org/images/media/files/publication/2013/04/avalanche-is-coming_Mar2013_10432.pdf).

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 ascendancy 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 base 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 of

general unemployment, but with increased graduate unemployment rates now in many countries, especially the EU, the question 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 has 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). (<http://www.economist.com/news/science-and-technology/21577035-open-access-scientific-publishing-gaining-ground-free-all>)

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 Ithaca, 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 a way 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 quire 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*¹⁴ 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 and 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/>). Intellienergia 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 TERN 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 set 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/aef/faculty/>).

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/aef/faculty/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 from 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

- 1 Cornell, <https://www.cornell.edu/reimagining/>; Harvard, Reimagining the City-University Connection: Integrating Research, Policy, and Practice - <http://www.radcliffe.harvard.edu/event/2011city-university#sthash.TjVsvj5R.dpuf>; Reimagining Equity and Diversity: a Framework for Transforming the University of Minnesota, http://www.mcohs.umn.edu/assets/downloads/ReimaginingED_Dec2009.pdf ; New York University, Governance lab, <http://www.thegovlab.org/innovating-the-innovation-process-re-imagining-university-research/>; Brown University, Committee on Reimagining the Brown Campus & Community, <http://brown.edu/about/administration/strategic-planning/re-imagining>
- 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
- 6 See <http://peerconomy.org/text/peer-economy.pdf>
- 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,

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>.

- 8 This concept has many threads and a voluminous literature: see, for instance, Maturana, H. & Varela F. (1980) *Autopoiesis and Cognition: the realization of the living*; Mingers, J. (1994) *Self-Producing Systems: Implications and Applications of Autopoiesis*; Stock, G. (1993) *Metaman: the merging of humans and machines into a global superorganism*; Francis Heylighen, *The Global Superorganism: an evolutionary-cybernetic model of the emerging network society*. See also the argument from sociogenesis and its connection to American classical pragmatism in Jaan Valsiner & Rene Van Der Veer (2000) *The Social Mind: Construction of the Idea*.
- 9 See e.g., <http://globalbraininstitute.org/>
- 10 Kennie, T. & Price, I. (2012) *Disruptive innovation and the higher education ecosystem post-2012*. Leadership Foundation for Higher Education, London, UK. http://www.lfhe.ac.uk/filemanager/root/site_assets/research_resources/research/stimulus_papers/2012-Stimulus%20-%20Kennie%20-%20Disruptive%20Innovation.pdf ;
Gallagher, M. (2012) *Plot loss in Australian Higher education policy? Conference on Institutional Performance in Higher Education*, Melbourne. 16 May 2012.
Christensen, C.M. & H. J. Eyring (2011) *How Disruptive Innovation is Remaking the University*. Harvard Business School. <http://hbswk.hbs.edu/item/6746.html>.)
- 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/>)

- 14 A program created by the High Performance Computing and Communication Act 1991 (known as the Gore Bill), http://en.wikipedia.org/wiki/High_Performance_Computing_and_Communication_Act_of_1991

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