5 Enabling Innovative Postgraduate Research: Critical Foresight and Strategic Considerations for University Leaders

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Abstract

Innovative postgraduate research is an outcome that requires necessary preconditions to flourish in the higher education system. Neither the system underpinning postgraduate research nor the students themselves can make this happen. Rather, the worldviews and assumptions of leaders as decision-makers, who continually build, amend, and deconstruct higher education systems, are critical precursors to nurturing innovative postgraduate research.

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There is almost universal agreement that universities are vital in shaping global, national, and local futures. The impact of universities is broader than their traditional remit and encompasses a full diversity of ecological, social, and economic outcomes.

Universities have a pivotal role in achieving a shift from traditional sources of wealth to new service models, radical innovation, and small and medium enterprise development.

Disruptions faced by society are also disrupting traditionally "slow to change" university institutions. This challenges university leadership. While many still regard the world as thriving in the information age, it has been suggested that we have already transitioned into a new age, the conceptual age. Universities will need to address this shift to economies dependent on conceptual workers through their education model(s).

A new profile of university leadership is rapidly emerging to enable the emergence of innovative postgraduate studies to meet the need of the conceptual age through initiatives such as embodied in "third-generation postgraduate studies". The necessary paradigms needed by university leaders are outlined for this important aspect of higher education engagement to flourish to the benefit of innovation, the economy, and ultimately societies.

Keywords
Innovation · Postgraduate research · Postnormal · Higher education · Universities · Knowledge · Work · Leadership

Introduction

Innovative postgraduate research is an outcome. It is not a means in itself. It requires necessary preconditions to flourish in the higher education system (if that is to be a goal of the sector). Neither the current system underpinning postgraduate research nor the students themselves can make innovation endemic. Rather, the worldviews and assumptions of leaders as decision-makers, who over time build, amend, and deconstruct higher education systems, are critical precursors to nurturing innovative postgraduate research.

The link between universities and human providence and prosperity is richly evidenced throughout recorded history. There is no lack of agreement that universities are fundamentally important to the overall progress and development of a nation (Savior and Cooper 2015) and indeed are a collective barometer of global human progress as a result of innovation. They are vital in shaping global, national, and local futures. In addition to the traditional attributes of education and research associated with the purpose of universities, the impact of universities is broad and encompasses a full diversity of ecological, social, and economic outcomes (van der Laan and Erwee 2013).

Traditional sources of wealth such as natural resources, heavy manufacturing, and agriculture are faced with increased competition and disruption. As a result, national

priorities in both developed and developing economies have shifted to filling a looming economic vacuum by prioritizing new service models, radical innovation, and small and medium enterprise development. Most governments realize that the "vigor and dynamism of local economies depend ... on innovating successfully" (Lester 2005). It is therefore logical to expect universities to play a pivotal role in achieving this high-priority change.

Universities are linked to innovation. Many would argue that universities are by their very nature producers of innovation and have a strong track record in this regard. While this may be true, the following questions remain:

(a) Given the global emphasis on innovation, is innovative research from universities endemic or ad hoc in meeting this national and global agenda?
(b) What is the predominant source of innovation in universities?
(c) Is postgraduate research delivering on innovation, or is it mostly typified by a focus on incrementally better scholarship?

While these questions require further research, postgraduate research offerings are largely still embedded in traditional paradigms related to quality of scholarship (rather than research impact), and their host institutions have been slow to adjust to change (Lester 2005). Further, innovative research in universities is predominantly emerging out of well-funded research initiatives as opposed to whole-of-university integrated strategies aimed at producing innovation from research. As such, postgraduate research programs have generally been slow to adjust and have not kept up with the priorities typifying the twenty-first century.

Change has changed (Hamel 2009) and times are "postnormal" (Sardar 2015). The disruption being faced by society is also being faced by university institutions, many of which are monolithic and typically "slow to change" (Davis 2006). This presents a challenge to leadership and is likely to demand unprecedented levels of capabilities in leadership in order to make timely adjustments and deliver on national priorities relevant to the higher education sector.

While many still regard the world as thriving in the information age, it has been suggested that humanity has already transitioned into a new age, the conceptual age (European Foundation of Management Development (EFMD) 2012). This suggests that the shortest "age" of humanity which was typified by the emergence of the knowledge worker has been replaced by a time where economies have become more dependent on the conceptual worker. This shift is evidenced by governmental targets for the number of adults qualified at above level 4 tertiary level almost doubling to 40% of the total workforce (Leitch 2006).

The need for universities to structurally and intellectually adjust is also strongly influenced by the needs of the workforce, and the rapidly diversifying national targets focused on higher skills reflect this. While many universities still question whether skills preparation for the workforce is their mission, the workforce itself demands higher-level education focused on developing conceptual abilities. Professionals recognize that the nature of knowledge and work has shifted dramatically (EFMD 2012). They are increasingly called upon to develop the cognitive skills

typically associated with postgraduate education or face irrelevance in their professional practice. This has led to a dramatic increase in demand for "fit-for-future" postgraduate programs that develop higher-order capabilities.

Postgraduate education has always been important to universities for a number of reasons but primarily in the area of research and/or professional development. The emergence of professional doctorates presented universities with a unique challenge: how to translate the advanced practice needs of professionals into postgraduate programs. The result was mostly more advanced theoretical knowledge and case studies with a minor research component. Building on these professional degrees, a "third-generation" postgraduate research approach has emerged focused on critical reflective practice and cognitive development enabled by research conducted in professional practice (Wildy et al. 2015).

A new profile of university leadership is rapidly emerging to enable the emergence of innovative postgraduate studies that meet these changing needs. Leaders must recognize that governmental and workforce demands for higher education collaboration have doubled domestically. Yet governments and industry are increasingly frustrated by the lack of alignment with universities (Bstieler et al. 2015; Kneller et al. 2014). Industry needs and expectations, especially in regard to innovation and developing research with impact, have dramatically increased tensions in what should be productive and mutually beneficial relationships. At the heart of the challenges are university leaders' continued long-held assumptions underpinned by traditional university dogma (Leitch 2006).

The notion of "third-generation postgraduate studies" may address these issues (Wildy et al. 2015). This chapter describes an evidenced form of such programs and defines their underlying principles and rationale. Challenges and tensions arising from adopting such programs are explored. Paradigms are identified that need to be embraced by university leadership. This is critical to allow higher education to avoid becoming redundant in their mission to contribute to the advancement of communities, work, innovation, the economy, and ultimately society.

Purpose

There is a proposed association between university innovation outcomes, postgraduate research offerings, the flux of current times and the challenges facing university leadership. The majority of university innovation outcomes are those that are funded and generally not a product of postgraduate research (Lester 2005). Yet postgraduate research programs could focus their efforts on initiatives to make innovation more endemic in postgraduate offerings rather than its current ad hoc occurrence.

A report from Massachusetts Institute of Technology (MIT) highlights the notion that knowledge is "global but learning is local" (Lester 2005). Within the context of how universities could prosper as "engine rooms of innovation", it is imperative that leadership enables the capability to lead change and facilitate innovation (Krahe and Fitzgerald 2015). Krahe and Fitzgerald's study, *innovation studio 101*, highlights that it is possible to facilitate innovation within existing systems in higher education

by situating the initiative at the intersection of career development and innovation theory (Krahe and Fitzgerald 2015). This is a key indication of how innovation can be stimulated in postgraduate research. The answer may lie in what are being termed "third-generation" postgraduate research programs.

Within the current paradigms of university leadership, the notion of more contemporary forms of innovative postgraduate research is still rare. Progress has been incremental at the most and largely individually inspired rather than systemically endemic. The relationship between postgraduate programs and university innovation within the context of rapid change and dominant paradigms in current university leadership will be explored here with particular emphasis on the notion of "third-generation" postgraduate research programs. Essential leadership characteristics for enabling such programs to deliver endemic innovation as a key feature of their institution's postgraduate offerings are proposed.

Postnormal Times (PNT) and the Emergence of the Conceptual Age

Increasingly, much of the environment around us is typified by unprecedented changes. Nothing seems continuous: technology, politics, the economy, the weather, and communities we live in, all seem to be experiencing dramatic and fast-paced change. Sardar (2010) describes this time as "postnormal" typified as a transitional period characterized by complexity, chaos, and contradictions. Postnormal times (PNT) theory has emerged in the sciences and lately in other disciplines. It is defined as a time where forces of change sustain increased uncertainty and types of ignorance emerge that make decision-making problematic. Indeed Sardar notes that "the spirit of our age is characterized by uncertainty, rapid change, realignment of power, upheaval and chaotic behavior" (Sardar 2010, 435).

The concept of "postnormal" stems from the mathematics of risk and was introduced by Funtowicz and Ravetz (1995). The authors' ongoing studies to date are highly cited and illustrate increasing uncertainty in scientific work. According to their argument, science was no longer behaving in a "normal" way. The theoretical extrapolations and logic of science showed signs of leading to increasing "man-made risks". They note that "the traditional claims to truth and virtue made for science can no longer protect it from the checks and balances that are applied to all other societal institutions. What important area of scientific progress is immune from problems of uncertainty and value-conflict? That is the measure in which all of science has become post-normal" (Ravetz and Funtowicz 1999, 641). Indeed, as noted by Sardar (2015), what has been recognized as "postnormal" in science is now equally applicable in other disciplines and social systems generally.

The critique that "normal" is normative and differs significantly in space, and place has been leveled at PNT theory. It suggests that the notion of our times being typified as "postnormal" is not universally true. Sardar (2015) points out that the opposite of "normal" is "abnormal", not "postnormal". "Postnormal" suggests that a point in time has emerged that exists after frequently encountered ways of being,

doing, and knowing. It does not necessarily suggest a social pathology or an abnormality in the status quo. Rather it suggests that most of our observations can no longer be continuously and linearly extrapolated. In other words, we can no longer depend on patterns of the past repeating into the future. PNT theory suggests that uncertainty, rapid change realignment of power and changed behaviors decrease our confidence to rely on that which we have known to be normal, conventional, and orthodox (Sardar 2015).

Sardar is not alone in his assertions that the world has entered an age typified by uncertainty and a dramatically decreased confidence in decision-making. Indeed, authors across all disciplines confirm that society has entered an age of "post-normality". Hamel (2000, 5) goes further and suggests that "we now stand on the threshold of a new age – the age of revolution . . . we know it is going to be an age of upheaval, of tumult . . .For change has changed. No longer does it move in a straight line – change is discontinuous, abrupt, seditious". Similarly, this transitional "post-normal" age is described as the conceptual era (EFMD 2012), again defined by the rapid rate of change, discontinuity, and inability to maintain control in our times.

Numerous more conventional works affirm that the world has entered a new era of some kind. While its description varies from "revolution" to "conceptual", what is important to note is that (a) change is occurring faster than previously and is discontinuous (time), (b) systemic environments are increasingly virtual (space), and (c) artifacts and items of value are increasingly intangible (matter). The idea is increasingly recognized that in response to this change, new capabilities are required that "conceptualize" rather than "analyze". Not only are organizations less confident due to discontinuity and uncertainty but increasingly dependent on humans with capabilities to conceptualize and "generate" new solutions and ideas. This is the principal impetus underpinning the massive importance being placed on creativity and innovation.

Universities are not immune to this shift and its imperatives due to the postnormal times they operate in. Not only are they (i) subject to the impact of unprecedented change, but, for many, they are also (ii) required to respond adequately in developing the human capabilities and research that promote advancement in innovation and human progress. These two challenges are not independent of each other. The inability of universities to respond to environmental change is linked to their being less likely to respond adequately to develop the capabilities needed to anticipate and create value within an environment in flux.

Innovation and Universities

What is the best response to postnormal times? Unless one adopts a fatalist paradigm, Sardar (2010, 435) suggests, and Hamel (2009) agrees, that "an ethical compass and a broad spectrum of imaginations from the rich diversity of human cultures" is needed to guide humanity toward normalcy. This is not as complex or esoteric as it seems. It perfectly aligns with what the majority of governments, private entities, and not-for-profit organizations are calling for – innovation. This

includes the United Kingdom's Department for Innovation Report Universities and Skills (2008) that highlighted the importance of developing the capacity to innovate in creating and maintaining capabilities to respond to all facets of environmental change.

Change, in its broadest sense, is closely associated with innovation (Baregheh et al. 2009). Innovation discourse spans all disciplines in the form of developing new or repurposed products, processes, services, or models, and in the form of the creative abilities, process and development required to produce innovation. This gives rise to various interpretations of innovation from a multitude of disciplinary perspectives and has led to no single authoritative definition of the term.

Despite the lack of a single, authoritative definition, a number of common attributes are associated with the concept of innovation (Baregheh et al. 2009). Innovation includes the ability and process to develop something new or repurposed that has value. These can be goods, processes, services, or models. Innovation is closely associated with the notion of creating value. It is therefore commonly interpreted from the economic perspective of financial value and enhancing the ability to gain competitive advantage (Baregheh et al. 2009). This association of new ideas with economic value closely resembles the phenomena of commodification (Bakker 2007). According to Appadurai (in Ertman and Williams 2005), commodification is the association of value with any object meant for exchange.

The notion of economic value as an indicator of innovation is strongly supported in the literature as a means to avoid economic uncertainty and is therefore attractive to private entities and governments alike. The prevailing neoliberal model of globalization reinforces this notion. Numerous studies confirm that associating innovation with economic value is a product of globalization and increased global economic competition (Engwall 2015). This suggests that the definition of innovation, as promoted in the literature, is strongly influenced by neoliberalism and places more normative questions like "what constitutes good research" into the background. Indeed the "commodification of academic research is a substantial and significant phenomenon . . .[and] pervasive commodification occurs in the engineering, biological, and medical sciences, and, on a somewhat smaller scale, in the physical sciences" (Radder 2010, 8–9).

Commodification is closely associated with commercialization. In universities, this is the phenomenon whereby universities pursue profit by selling the expertise of their researchers and the results of their enquiries. This dominance of economic criteria often occurs at the expense of more substantive arguments such as those derived from a more philosophical enquiry related to the way research in universities are structured, produced, and disseminated (Radder 2010).

A key premise of this chapter is that the association between innovation and financial measures of value has contaminated the concept of innovation itself. As the review of multidisciplinary literature by Baregheh et al. (2009) illustrates, innovation is increasingly defined in terms of a process aimed at creating new economic value. Attaching economic value and process to the concept of innovation confounds its definition much like what happened to the concept of sustainability (van der Laan 2014).

As the influential syntax around process and economic value increases, it gains in prominence while still ostensibly incorporating a universal ideal. As a result, parallel but distinct discourses have evolved around innovation. This is neatly captured by Baregheh et al. (2009), but the authors fail to apply a critical lens to the implications of associating a neoliberal perspective to what is essentially a less complex concept.

The fundamental question underpinning the increasing phenomenological problem of defining innovation is how "value" is assessed, characterized, changed, and predicted, and how it can be differentiated on the basis of vastly varying needs. The latter is directly associated with the source of confusion as innovation is not value-free and also not defined only in terms of economic value. This distinction is critical in considering how and to what extent universities innovate. It is also critical in determining the value of knowledge as an intrinsic feature of university endeavor. Indeed, it is suggested that redefining innovation to include a knowledge-based approach to innovation (rather than an organizational innovation process approach) will allow universities to capture the value of new knowledge that may not be defined as a product or technology yet still be innovative (Quintane et al. 2011).

While processes that enable innovation are important and often do realize innovative outcomes, innovation is not a process in itself. The innovation as an outcome is not necessarily constrained by process. Rather, *innovation is defined as a new or repurposed process, product, service, or model – indeed any new or repurposed idea that has value, not necessarily economic.* Christensen et al. (2011) agree that innovation can redefine quality and therefore perceived value whether aesthetic, procedural, or economic as does the knowledge-based conceptualization of innovation (Quintane et al. 2011).

The Relevant University

The Purpose of Universities

The debate as to the mission or purpose of the university is ongoing and currently being disrupted due to government policy, technology, and global economic competition (Christensen et al. 2011). Models of higher education range from it being institutions primarily devoted to extending and deepening human understanding to institutions contributing to economic growth. It can often encompass both approaches in a "one-size-fits-all" model. From the origins of the liberal arts whose "goal was the improvement of each and every student (and teacher) in order to make the progress of civilization possible [to] education adequate to the requirements of the job market", there is no resolution to the question as to what the purpose of universities are (Weber 2016, 207).The diversity of opinion is further complicated by "government policy attempting to change the nature of the university as we have it" (Willets 2011, np) in addition to the prickly question of academic freedom and how reconcilable it is with the commercialization of research innovation.

Academic freedom is proposed as being the central purpose of universities, and suggestions made that a fully developed higher education system is dependent on the core values of academic freedom (Altbach 2001). At the heart of conceptualizing academic freedom is the autonomy of teaching and learning. This includes the pursuit and transmission of knowledge as related to research. Traditional threats to academic freedom have been political and subject to governmental interference. These have deprived academics of the absolute freedom of research and expression (Altbach 2001). Often the notion of academic freedom is expressed by universities as innate to their mission and definitive of, or driving, their purpose. Despite its lack of universally accepted definition, it is still seen as a core value of the modern university. Yet there is an apparent eroding of academic freedom in the twenty-first century that is more sinister than political censure or fear of ideological expression. This erosion of academic freedom can logically be proposed as simultaneously eroding the purpose of universities. Manifestations of this can be found from within the academy and university and are due, in part, to the commercialization of research and corporatization of university governance (Altbach 2001). These trends have increasingly impinged on the freedom of academics to act autonomously, influence the direction of the university and determine the direction and implementation of their research. As such, the purpose of universities is facing impediments as a result of the power of administrators and private proprietary interests whose prevailing discourse is primarily economic and short term (Bowen et al. 2014).

In considering the purpose of universities, it is worth revisiting the influential models shaping universities. The Humboldtian model of university has strongly influenced how Western universities have developed and see themselves. This has primarily been in terms of a focus on personal development through the freedom of holistic teaching and learning without interference from governments. In particular the Humboldtian model emphasizes the unity of (i) teachers and learners, (ii) research and teaching, and (iii) all branches of knowledge (Pritchard 2004). Many would argue that despite the attractiveness of the principles underlying the model, the notion that universities today are able to operate free from government or proprietary interests is less likely. That said, the Humboldtian purpose of the creation and transmission of knowledge does promote an entrepreneurial view of university innovation in the form of research outputs. In contrast, the Napoleonic model or "training model" of university articulates its purpose as primarily providing a public higher-level vocational education toward professional formation (Sam and van der Sijde 2014).

The British model on the other hand strongly supports the liberal education approach where a broad educational base is developed to enhance advanced thought and cognitive capabilities to deal flexibly and intelligently with the changes and challenging situations (Sam and van der Sijde 2014). The authors note that the emphasis of the British model is on character formation and is therefore also known as the "personality model". The British model operates within the general guidelines of government, but institutions are self-regulating and more autonomous than in the Humboldtian and Napoleonic models.

These models of university were incorporated to different extents into the Anglo-American model. The Anglo-American model places an emphasis on a mass

delivery system including the liberal arts as well as multidisciplinary professional education at the undergraduate level. Its postgraduate research is strongly aligned with the Humboldtian model. As such, the Anglo-American model is noted as being a "hybrid model" which has in turn influenced much of higher education globally including Europe (Baregheh et al. 2009).

The context of the evolution of higher education models over time provides a helpful framework within which knowledge-based innovation can occur. These culminate in broadly three areas:

(a) Research priorities aimed at commercializing knowledge outputs.
(b) Research priorities aimed at enhanced scholarship and knowledge advancement.
(c) University systems and operations.

Innovativeness

This brings us to universities seeking to be known for their innovativeness. The innovativeness of organizations is defined as the capacity of organizations to produce innovations continuously (Galunic and Rodan 1998). Universities are increasingly being assessed for their innovativeness. This is usually on the basis of economic returns. Within the spectrum of prevailing uncertainty and funding demands, universities are under pressure to promote and produce innovation defined by its economic value. Not only has this led to increasing commodification of research but "has led to a pervasive transformation of academic culture" (Radder 2010, 10). It is clear that a "one-size-fits-all" model of university innovation prevails (Davis 2006), and has strongly influenced university culture and has an emphatic focus on research commercialization.

While commercialization clearly represents an important way for academic research to contribute to economies and societies, there are multiple other ways in which university research can be recognized as innovative and transferrable. Despite knowing this, universities continue to focus on a narrow view of commercialization of products and technologies that does not (a) capture the noneconomic value of innovation in scholarship and non-commercial knowledge creation and (b) is not differentiated enough to fully realize each university's unique strengths or the overarching purpose of universities. This narrow perspective of innovation, principally promoted by industry and government, has constrained and even devalued knowledge-based university innovation (Quintane et al. 2011). Provocatively, it is proposed that university leadership are themselves complicit in defining university innovation only in commercial terms and therefore partly responsible for perceived lower innovativeness of their own institutions.

In the case of (a) above, many universities typically do not significantly promote (through the allocation of financial resources) innovation that does not translate into economic value. Characteristic of this is the low recognition placed on innovation in the arts and numerous social sciences. Programs such as philosophy, political science, visual, and performing arts are consistently innovative, but because they

are rarely linked to direct economic benefits, suffer from being overlooked as important contributors to university innovativeness. Even business disciplines, unless coupled to university enterprise such as executive education, are not recognized for innovation to the same extent as their commercialized cousins. This has resulted in a form of rationalization common among universities where they seek to emulate the behavior of large businesses (Engwall 2015). This rationalization ranges from scrapping programs that have no business value to limiting resourcing of these programs to a subsistence level.

Liberal arts in particular are recognized for being well positioned in leading the development of new approaches to dealing with uncertain futures (Chopp et al. 2015) yet face similar rationalization unless they are accommodated by dedicated liberal arts universities such as in the USA. The discourse around the role of liberal arts, their funding, and the extent to which they are recognized for their innovation has attracted much debate. Increasingly the rationalist view prevails which promotes professional training and vocationalism (Chopp et al. 2015). Yet, the liberal arts are seen as able to develop and promote the distinct form of cognitive capabilities needed in postnormal times, the conceptual era, or twenty-first century workplace. Indeed, this chapter suggests that the liberal arts are increasingly critical in developing the cognitive capabilities needed most in a time typified as transforming people and communities. Innovation in the liberal arts should be recognized as a distinct form of innovation to be valued by universities and society for their role in developing provident futures (Chopp et al. 2015).

In the case of (b), there is a dominance of one model of university. A case in point is the adoption and conception of universities in Australia based on only one model (British, 1800s) which has constrained the development of the sector (Davis 2006). Numerous universities globally have a similar problem in that they have ascribed to a particular historical model of university. Similarly, many university models are shaped by a "one-size-fits-all" university model (Lester 2005) based on the economic development ideology (Engwall 2015) and ranking methodologies (Davis 2006). While the majority of universities prevail under a singular notion of university, the implication on how leaders view innovation is dramatically slanted. In the majority, innovation is seen as a proxy for economic development where research outcomes are translated into economic value through patenting, licensing, investment, and new business formation. What seems to be less important are innovations that develop new business models, university products, expertise, and services that differentiate universities (Christensen and Eyring 2011). In fact, by innovating universities systemically in order to make them more relevant to their mission (which includes engaging the community and teaching), universities can decrease their susceptibility to the whims of industry and government policy (Christensen et al. 2011).

While some insist that the purpose of a university is to provide individuals with the knowledge and skills for the workforce, many universities either openly or subconsciously view skilling for the workforce as noncore business (Davis 2006; Wharton 2016). While this is not generally the case, the impact of funding, policies, regulations, key performance measures, and reputation indicators continues to forge a single model of university that prevails globally and is largely focused on research

outcomes ahead of teaching outcomes. Some, like the University of Phoenix, who clearly differentiate their offering (in this case by dropping research and having no academic tenure), seem to thrive. Measured against traditional assessment of innovativeness, Phoenix would not be regarded as innovative at all. Yet, its leveraging of technology, new business, models and modes of delivery would have it as one of the most innovative universities in the world with a student body of over 295,000 and unashamedly defined as a "university for working adults" (Davis 2006).

Despite these insights, the innovativeness of universities continues to be largely set against a single, highly competitive arena typified by economic outcomes through research and prestigious awards. These are largely identified in terms of monetary outcomes in the form of invention, new technologies, and new discoveries produced by research mostly in science, health and technology disciplines (Lester 2005). While progress in these disciplines remains critically important, much of the university innovation assessment system is based on outcomes in these domains. Rankings, government grants, and public funding allocations strongly reinforce this monolithic view of the university and its mission. This makes it difficult to consider alternative approaches and differentiated offerings (Lester 2005).

University Relevance in the Twenty-First Century

A more differentiated view of the role of the university is needed as it is unlikely that there will be agreement as to the purpose of universities. This disagreement on a global, overarching purpose of universities is irrelevant. Rather, it is more important to consider each university according to its own establishment, funding imperatives, and unique contribution to society. This will help address what is essentially an existential crisis in the sector. By diversifying university identities, promoting nontraditional models, and investing in unique strengths, universities can avoid the highly competitive, ranking-based paradigms dominating the sector. To achieve this, leaders need to "see" the sector differently and imagine their institutions as unique within the higher education system and broader needs of society. Unfortunately, even knowing this for some time now, the degree of differentiation among universities remains very low (Christensen et al. 2011) and is largely due to the "group think" of career academics who now lead the institutions.

There is overwhelming consensus that the time is right to reimagine higher education. Yet, universities are very slow to change with many exhibiting a monolithic group think, defensiveness, and resentfulness to change which limits their ability to redefine the mission of their institutions to optimize their value in times that demand an ability to change (Davis 2006). The challenges are largely regulatory, but Davis urges university leaders not to wait for government action, instead to define their own unique futures according to their strengths and potential. Key research findings have found for some time that universities should recognize that the one-size-fits-all model university model is no longer sustainable and that a more differentiated view of university missions is required (Christensen and Eyring 2011; Lester 2005). The transition from a one-size-fits-all model of university to a differentiated, contemporary, and

purposeful university meeting the needs of a rapidly changing world however is increasingly dependent on what have become highly centralized hierarchical leadership structures that emulate corporation management paradigms (Engwall 2015).

Universities are not corporations yet face pressure to act as such (Engwall 2015). This has numerous implications that challenge the nature and mission of universities and has even been described as leading to coercion and corruption. Coercion and corruption arguments against academic commodification focus on the "structural effects of unequal power relationships, while corruption arguments focus on the impact of commodification on the epistemic, social, and moral values of academic culture" (Radder 2010, 13). This is problematic especially in regard to the conceptualization of the value of university research in particular to the nature of knowledge, academic endeavor, and education. Corporates define their mission mostly in terms of profit. While most universities are required to at least meet budgetary expectations, they are more commonly concerned with building prestige. In many ways this dramatic shift in culture due to commodification has led to a hybridized "for-profit prestige" mission promoted by university leadership (Engwall 2015).

To be relevant many universities have followed the "prestige" model of mostly their American counterparts with a high focus on research strategies which aim to attract commercial value in highly competitive fields of research (Radder 2010). What is not commonly understood is that in striving to be prestigious, the prestige is often equated with "profitable" innovations. Of concern is that due to this narrow view of research innovation (and therefore strategic allocation of resources), universities are becoming more motivated by short-term gains from research often at the expense of a more holistic view of research innovation.

Relevant Postgraduate Research

The idea of an innovative university is widely accepted as being a relevant university, but the notion of what an innovative university is may not always be clearly articulated by the university itself. This is a telling observation as much of the debate about innovative universities has centered on research and not the broader role of the university (Davis 2006). With a focus on research, the notion of innovativeness has been closely associated with the commercial value of research as outlined above.

The literature has largely embraced the notion of equating innovation with direct economic value (Baregheh et al. 2009). The association with direct economic value further narrows down the "space" within which the university is seen to innovate, thus restricting it to a highly competitive arena within the sector. In many respects this approach neglects to recognize universities' innovations that have noneconomic benefits (brand, prestige, lean process, new services, etc.) or secondary economic benefits. Yet, as the authors suggest, the definition of innovation does not have to be that narrow, and the focus on commercialization is not a necessary precondition of university innovativeness.

Much of this "narrowness" of the definition of innovation is due to national economic models and resultant governmental and industry expectations. These are shaping universities to a degree that is arguably shifting the purpose of universities

out of their societal remit and threatening academic freedom (Altbach 2015a). Altbach concludes that "higher education is increasingly seen as a commercial product to be bought and sold like any other commodity … [and this] poses a severe threat to the traditional ideals of the university" (Altbach 2015b, 2). This notion affirms Davis (2006), Lester (2015), Christensen et al.'s (2011) and many others' concerns suggesting that the creation of monolithic institutions means universities are losing their identities. This is largely due to university leadership being unable to assert noneconomic values of the university as priorities or define a relevant research agenda falling outside the "one-size-fits-all" norm of commercialization. University leaders, the literature, government, and industry, all contribute to this loss of identity. Yet, it is the university leaders who are allowing "globalization to run amok" in the sector (Altbach 2015b, 2).

The norm of commercialization associated with universities is not new, neither is it the product of recent rapid change. Rather, the value of university enterprise has been recognized and known by commerce and government for centuries but always at somewhat of an "arm's length". Universities have been adept at retaining an academic freedom, that is, the right of the academy to teach and direct learning and research autonomously. In striving toward innovativeness, especially in postgraduate research, universities should uphold the principles of academic freedom.

Much of university activity has the potential to be innovative. The culture of universities ideally enables an innovative stance. The spectrum of potential value, not necessarily economic, extends significantly beyond the "one-size-fits-all" approach described above. One dimension of this potential is recognizing and supporting innovative postgraduate research beyond the traditional emphasis on scholarship. This includes original contributions to professional practice.

Universities should recognize the enormous potential of research undertaken by professionals that are mid to senior career.

Driven by lifelong learning imperatives, self-directed career development, and a credential-driven employment environment, nonacademic professionals are increasingly turning to higher education for (a) validation of the knowledge gained informally and nonformally (Colardyn and Bjornavold 2004) in their practice and (b) nontraditional academic offerings that contribute to their professional development.

In considering the relevance of postgraduate research offerings, it makes sense to stick to the university innovation agenda but in the broader paradigm of innovation that creates "*new or re-purposes products, services, process or models with value – not necessarily economic*". This aligns closely with the values of academic freedom and avoids undue interference. It also recognizes the broad scope of innovative research and is not constrained by economic measures of value.

Research: From Mode 1 to Mode 2

It is argued that the approach to research and how it is viewed and valued within universities has not changed much since the last century. It is further suggested that many university leaders have group think in the way they administer universities.

These are hotly contested assertions that signal disquiet in viewing how the research functions of universities are executed. Irrespective of the merits of this debate, the work of Gibbons et al. (1994) has changed the way we think and theorize about research.

Gibbons (1998) describes research as "knowledge production". He suggests that this takes place in two "modes" and that there is a transformation from "Mode 1" to "Mode 2". Mode 1 is the traditional approach to disciplinary-based knowledge production that has disciplinary boundaries (Gibbons et al. 1994). These disciplinary boundaries are informed by the cognitive and social norms that govern basic research and academic sciences which are typically unpractical.

Gibbons (1998) notes that Mode 1 research is a form of knowledge production that is focused on assuring the compliance with what is regarded as scientifically sound in research practice and is typically carried out without a context of application.

Mode 2 is a transdisciplinary form of knowledge production that is carried out within a context of application (Gibbons 1998). More pertinently this "new" mode of research is a more complex system of knowledge production that takes multiple perspectives into account. The production of Mode 2 research knowledge is not produced only within university but even beyond the university boundary, moving closer to real-world problems (Gibbons et al. 1994).

The emergence of Mode 2 research paradigms explains Gibbons (1998) supports the argument that teaching and research cannot be conducted in isolation and that research has to be undertaken within the context of its application in order to understand complex systems.

The transition from a Mode 1 to a Mode 2 research paradigm is becoming increasingly compelling and recognizable in the growth institutes of technology and postgraduate business programs. In the Mode 2 paradigm, the university is only one of the actors in the knowledge production system and is required to collaborate more broadly. This mode challenges universities to take the lead in training skilled and creative individuals and is aligned with the needs of a rapidly changing workforce.

Since the concept of Mode 2 has emerged, a university is regarded as only one of the agents of knowledge production for innovation (Laredo 2007). This clearly illustrates that the university is required to be shaped and behave as a collaborative co-creative open system requiring close cooperation and consideration of other actors from individuals to other institutions. To date, this has largely been interpreted through the lens of economic measures of innovation success. The influence of this broadly held paradigm has, in the absence of government regulation, caused dissonance in universities where a lack of economic value from collaboration is largely dismissed.

It is proposed that following close upon the emergence of the Mode 2 research paradigm, the rapidly changing workforce skills demands compel universities to look upon individuals as collaborators of equal standing. At a postgraduate research level, participants will increasingly be currently employed professionals in their mid to senior careers. The nature of university/career professional research collaboration

has been largely overlooked in the literature. Notable exceptions are that represented in the literature associated with work-based learning which is described as a third-generation postgraduate research (Wildy et al. 2015).

Third-Generation Postgraduate Research

So why examine the connection between universities, its leaders, postgraduate research programs, and the changing nature of work? In addition to educating young adults for the careers upon which they are about to embark, universities are increasingly called upon to provide educational and entrepreneurial opportunities for those already functioning in the workforce (Sam and van der Sijde 2014). Much has been written about the critical skills and knowledge required by the workforce for an economy to remain relevant in the twenty-first century. These have shifted from a focus on the rational application of knowledge to the cognitive capacity to generate new applications of knowledge, co-creating new value, and conceptualizing new solutions and "ways of working" (Christensen and Eyring 2011).

If the mission of universities is to educate, conduct research, and engage with their communities, it is increasingly difficult to justify an attitude of detachment between universities and fit-for-work education especially as it relates to cognitive abilities. In a sense, the shift in modes of work as typified by the "conceptual era" described above is highly dependent on university-facilitated cognitive development of individuals. "This idea responds to the current role of university in developing an entrepreneurial spirit in students to be prepared for and cope with the rapidly-changing needs of the labor market" (Sam and van der Sijde 2014, 899).

Typically, mid-career, adult learners are increasingly engaging in university education. While many already have the foundational knowledge required for their professions, most recognize that there is an ever-increasing imperative to continue learning and directing their careers in what is essentially a credential-driven world. This necessarily includes developing the cognitive abilities to perform more complex tasks associated with their more complex professional practice contexts. Rather than a doctorate "licensing research" or acting solely as a "passport to the academy" (Wildy et al. 2015), the professional doctorate serves an educative function of enabling students to address work and professional problems in a rigorous, scholarly manner that contributes to knowledge outcomes (Costley and Lester 2012).

Many in the university sector disagree however that it is "higher education's mission to prepare people for the skills they need in an up-to-date fashion for the 21st century" (Wharton 2016, np.). This constitutes what the Wharton Reimagine Education series describes as "problem number one" in the disconnect between academia and workforce development. It also illustrates the gap between the dominant paradigms of university leaders, their increasing managerialism, and the increasingly complex demands of changing society on universities.

In addition to the complexity and disruption emerging out of technological advancement, the call for more multidisciplinary study in universities is increasing in urgency. Not only is there an emerging convergence of disciplines that mirror

application (Sharp et al. 2011), but there is also a blurring between research and teaching for the same reasons. No longer is university education typified by disciplinary boundaries and a sharp distinction between teaching and research. Re-examination of postgraduate research degree offerings fits into a model of innovation that repurposes products, services, or processes. Research higher degrees are refocused to be "socially useful" and make significant workplace and professional contributions rather than simply as professional accreditation for working within universities (Wildy et al. 2015). Wildy et al. (2015) refer to these third-generation higher degrees as more of "an equal partnership between the academy and the workplace". Third-generation postgraduate degrees also take into account experiential learning with the assumption that knowing who and what oneself is in the world is one of many ways of knowing the world (Armsby 2013).

The university model of the future is mirroring changes in society as it has always done. In these times, typified by rapid change, the changing nature of knowledge(s) and the blurring of traditional university paradigms, a new model of education is emerging to enable education and development of scholarly professionals.

The New Model

If, as we have argued here, the neoliberal mode of universities and postgraduate education that privileges economic outcomes as the dominant value for innovation results in a decrease in academic freedom, what kind of model should institutions be examining for the future?

The future in question is accepted as one that whatever its form, its main attribute will be new models of work, particularly work that is more "working". That is, something that is not focused on place or employer, or even time (Blustein 2013). Leadership competencies for this "postnormal" future will be leaders who can tolerate ambiguity, engage with complexity, ride out change, critically evaluate, and rise above chaos. An agile and resilient education institution will not only embody these characteristics in its own leadership and structures but also be able to facilitate future ready citizens through its education programs.

Postgraduate education that opens the gate to knowledge(s) and alternate ways of looking at the world is essential. If an institution only offers one mode of education, one way of looking at the world, it cannot build these future ready citizens. Knowledge production does not only take place in a university. A partnership between universities' training in rigorous critical thinking and capacity to do structured and systematic thinking and testing of ideas and multidisciplinary work-based learning is one model for the future. Such a model is illustrated by the growth of third-generation professional studies programs. These programs do not supplant traditional postgraduate degrees but instead offer a more flexible, nuanced approach to knowledge and innovation that takes as its starting point that knowledge creation is two-way between universities and workplaces and that multidisciplinary approaches and collaborations have a strong connection to innovation of all kinds, not just economic. Those universities, in addition to their traditional roles, are meant

to play roles in industry and government as part of an interrelated ecosystem managing change (Etzkowitz 2006).

The enabling system for this model is dependent on leadership. Postnormal times demand postnormal leadership and strategy. In a sector and time of extraordinary flux, the need for sound higher education strategies is arguably at its highest. Within a deregulated industry, previously held assumptions related to universities' missions, service, and funding models are being challenged especially in the midst of increasing privatization and online learning trends. The strategic response to these environmental changes may see some universities prosper, and others face irrelevance as effective strategy is empirically associated with organizational success (Finkelstein and Hambrick 1996) and leadership enables effective strategy.

Generally, there is sound capacity in Queensland regional universities, although they are largely still embedded in a paradigm of managerialism and traditional practices (van der Laan and Erwee 2013). Van der Laan and Ronel found that there was a strong disconnect for Australian universities between the awareness of a need to develop adaptable resilient open systems and the existence of strategies for doing so. They conclude that Australian regional universities are in "safe hands but not strategically good hands" (van der Laan and Erwee 2013).

What is needed for university leaders is an ability to step away from old dependencies of established career paths and educational profiles within highly co-dependent government funding dispensations and policies to consider how best to develop the attributes and skills of postgraduates to face the uncertainty, rapid change, realignment of power, upheaval, and chaotic behavior of postnormal times. We live in an in-between period where old orthodoxies are dying, new ones have yet to be born, and very few things seem to make sense. Ours is a transitional age, a time without the confidence that we can return to any past we have known and with no confidence in any path to a desirable, attainable, or sustainable future. One way to face this challenge is for university leaders to take the steps to build these future ready citizens who have the skills to create the knowledge(s) needed for an uncertain future. That, more than anything else, is innovation.

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