



VISIONS FOR AUSTRALIAN TERTIARY EDUCATION



EDITED BY
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FOREWORD

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The chapters in this volume offer provocative ideas for transforming Australian tertiary education. Each is grounded in current issues or trends but goes beyond present thinking to propose ways in which policy and practice might make major advances.

The Melbourne Centre for the Study of Higher Education (MCSHE) last produced a volume of this kind in 2013, *Tertiary Education Policy in Australia*, under the editorship of Simon Marginson. In his introduction to that volume the absence of an extended vision for tertiary education was lamented. Further, there was no confidence that the upcoming elections would bring substantive change given that the Coalition, tipped to be returned to government, had been light on policy details for tertiary education. How true that has turned out to be three and a half years later. So once again we throw down the gauntlet.

We are very pleased that so many leading higher education researchers and thinkers, centered around the MCSHE and LH Martin Institute of the University of Melbourne, accepted our invitation to contribute. We are also grateful that the contributors so willingly accepted our request to challenge contemporary thinking, policies and practices. As with the previous volume, there is no party line. Some of the chapters propose solutions in one direction. Others suggest do just the opposite. This is reflective of the nature of our field. There are no silver bullets and tertiary education policy by its very nature is contested terrain. This we do not see as problematic. On the contrary, robust debate grounded in conceptual positions and understandings is what has been so sorely missing. Whilst we are policy realists as well as tertiary education scholars, we still hope that some feathers will be ruffled by the various views and options presented throughout this volume.

We offer our thanks and gratitude to all of the contributors and to Sarah French and Paula Kelly for their excellent editorial work.



FUTURES FOR AUSTRALIAN TERTIARY EDUCATION: DEVELOPING AN INTEGRATED, COHERENT POLICY VISION

SARAH FRENCH, PAULA KELLY & RICHARD JAMES



Over the past two decades Australian tertiary institutions have built a high quality, high participation domestic system and established the sector as a strong global competitor and major export industry. A measure of this success is that Australian universities feature prominently in all major international ranking systems. Yet, despite this achievement, tertiary education in Australia is facing a dearth of policy imagination. Caught in a cycle of broad periodic review and interim piecemeal policy-making, the sector is crying out for a new vision for differentiation, sustainability and excellence. Thus, this is an ambitious volume. The contributing authors have responded to a request to help design the future of Australian tertiary education. We have purposefully framed the volume around tertiary education, rather than higher education, since a key decision for policy makers is how best to resolve current funding and regulatory anomalies created by the inefficiencies and complexities of the current system architecture.

Needless to say, the contemporary policy issues are highly complex and there are rarely clear answers. Recent debates reveal deeply contested views on so many issues – these include the increasingly blurred relationship between higher and vocational education, the functions of the state and federal governments for funding and regulation, the role of industry and business in research and education, and the character of the workforces. At a fundamental level, the role of tertiary education is increasingly being questioned, revealing deep uncertainty about its broader purpose and value.

A serious rethinking or reimagining of many of the traditional features of Australia's tertiary education system is probably overdue. In many ways the impetus for this is already present, with concerns for, among other things, the transparency of information for prospective students, student retention and outcomes under the demand-driven policy settings, the lack of research-industry engagement, and the overall value of tertiary education to the economy and society. We hope this volume will contribute new and rigorous thinking. We begin it with a broad-brush overview of the current tertiary sector and the issues it is facing.

A SNAPSHOT OF THE CURRENT SYSTEM

The last comprehensive suite of reforms to higher education followed the Bradley Review in 2009 and included the introduction of the demand driven system of funding, a national regulatory architecture and participation targets for under-represented student groups. Each of these has been implemented with differing degrees of success. The impact of the reforms on participation can be seen in the sheer increase in numbers since 2009 with the total number of student enrolments rising from just over 1 million in 2008, to a total of over 1.4 million in 2015.¹ More than one third of Australians now hold a bachelor-level qualification or higher — in many ways the sector has successfully navigated the transition towards mass participation. But this transition has brought with it hand-wringing about admission standards, student attrition, student debt and the quality of graduates.

There has been modest improvement in student equity, however many groups of Australians remain unacceptably under-represented, including Indigenous Australians, people from rural and remote areas, and people from low socio-economic backgrounds. Rising inequity in postgraduate education is also an issue, as is poorer completion rates for disadvantaged student groups. Recent research on equity advocates a shift from the traditional emphasis on access and participation to a focus on how equity policy can better address educational achievement and outcomes (see Brett & Harvey, this volume).

Australian higher education is highly internationalised, and, as one of the nation's largest exports, it is a globally significant industry. Australia's competitive advantages lie in western-style, high quality education, English as the language of instruction and geographical proximity to large Asian markets for higher education. In 2015, international student enrolments made up 29.7 per cent of Australia's total student population and 34.7 per cent of all higher education enrolments, the highest of any OECD country.² In the context of the rapid development of international university systems and transnational student flows, Australia's future success in the international student recruitment dimension of internationalisation should not be taken for granted. Current challenges facing institutions include more effectively internationalising curricula to better prepare students for careers in a globalised context (see Proctor & Arkoudis, this volume) and internationalising research through deeper collaboration and international partnerships. Further, and not least, work needs to be done to address concerns raised in relation to the integration and safety of international students, the English language standards of institutions and assuring the English language proficiency of graduates.

Changing patterns of student participation and expectations, shifts in student demographics and rapid technological changes are prominent factors in new, more flexible study options and improved forms of recognition of the specific skills that students have acquired. The patterns of delivery and participation in tertiary

¹ Department of Education and Training, *Selected higher education statistics – 2008 Student Data* (Canberra: Department of Education and Training, 2008) <https://www.education.gov.au/selected-higher-education-statistics-2008-student-data>; Department of Education and Training, *Selected higher education statistics – 2015 Student Data* (Canberra: Department of Education and Training, 2015) <https://www.education.gov.au/selected-higher-education-statistics-2015-student-data>.

² Department of Education and Training, *International student data 2014* (Canberra: Department of Education and Training, 2015) <https://internationaleducation.gov.au/research/International-Student-Data/Pages/InternationalStudentData2014.aspx>

education, and the credentialing of knowledge and skills, are quite possibly on the brink of revolutionary change. However, whether Australia's tertiary providers are ready to embrace vastly different forms of educational provision is debatable. Staffing structures and work roles, for example, have changed very little. The casualisation of employment has been the primary response to growth in student numbers and a constrained fiscal environment. Yet providers are still struggling to devise how to manage, support and appropriately reward more explicitly differentiated workforces. A reimagining of the workforce architectures is likely to be central to supporting the quality and sustainability of Australian tertiary education into the future (see Baré & Bexley, this volume).

SOME OF THE MAJOR CHALLENGES FOR AUSTRALIAN TERTIARY EDUCATION

Against this context, our invitations to authors for this volume were framed around issues and trends that we believe to be at the heart of possible future directions. Central to these are the unresolved macro structural issues. System architecture, funding and regulation form a pivotal and interdependent triangle of major policy challenges for Australia.

A key policy issue, though one rarely seriously canvassed, is the overhaul of the tertiary sector structure. Since the Dawkins reforms during the 1980s, both the higher education and VET sectors have undergone some structural changes resulting in a re-shaping of provider type, corporate identity and institutional mission defined primarily by distinctions around research, education and training roles. With over 90 per cent of higher education students now studying at one of the 40 Australian research universities, there are emerging arguments for new policy settings that foster true institutional diversity that can provide different forms of learning, student experience and outcomes (see Goedegebuure, Massaro, Meek & Pettigrew, this volume).

With nearly five thousand registered training organisations (RTOs) offering vocational education and training (VET), many classified as dual sector operators (compared with just over 170 higher education providers), there is the basis for significant diversity in course offerings, size and history. The effect of growth in numbers of private providers in the VET sector, coupled with diminishing State funding and the absence of Commonwealth fee subsidies for sub-Bachelor programs, has placed significant pressure on the sustainability of TAFE Institutes, which are now required to jostle between the VET and higher education sector in a bid for students increasingly seeking subsidised places. The need for reform to the vast VET sector is no better illustrated than by the case of TAFE Institutes in Australia, which historically focussed on technical training aligned to workforce needs (see Goedegebuure & Schubert, this volume).

Like structural reform, funding reform is essential to any serious system renewal. But a viable way to fund the tertiary education system in a manner that provides for both quality and affordability is a source of ongoing and sometimes bitter debate. Reviews of Australia's tertiary education funding system have resulted in changes to the way research funding is designed for universities and a policy agenda flagging some form

of fee de-regulation into the future. As higher education funding models continue to be discussed, recent reports identified in the VET sector have highlighted potential reputational risks associated with the integration of policy settings and regulatory frameworks. The VET Funding Review has now led to reforms introduced in 2016 and designed to mitigate the reports identified with the VET FEE-HELP scandals.

While the government has now introduced measures to combat the practices of a small number of VET providers that sought to take advantage of the VET-FEE HELP scheme, a lack of clarity regarding how funding is allocated and managed between the States and the Commonwealth and across the VET and higher education sectors remains. This incoherence belies broader policy uncertainty regarding the distinction between the roles, identities and structure of the two sectors and has stimulated a blurring of learning outcomes at some qualification levels, especially at the diploma level. Without a coherent, consistent, equitable and regulated funding model for a more integrated tertiary sector, perverse outcomes in relation to student choice and labour dynamics are possible (see Croucher, Chew & Noonan, this volume).

To help usher in the demand driven system by protecting quality and standards, the Bradley Review recommended the establishment of a national legislative framework including a regulator (TEQSA) for all higher education including universities. This measure initially received a cool response from the sector. TEQSA now plays a key role in regulating against explicit industry standards and is a strong presence in the sector. In 2013, the government commissioned the *Review of Higher Education Regulation – Report* which led to a series of legislative reforms to reduce regulatory burden and in 2017 the sector has transitioned to the second iteration of the Higher Education Standards Framework (2015).

As mass participation has placed increasing fiscal pressure on public funds, institutions are seeking new ways to grow revenue and to compete in the marketplace. Increased competition for students has resulted in sophisticated marketing campaigns designed to attract students. The growing costs of tertiary education for students have reinforced student perceptions that they are customers with a right to high quality teaching and services and career outcomes that are commensurate with their financial investment. Such perceptions have contributed to an increased focus on graduate attributes and employment outcomes as both students and employers expect institutions to produce so-called ‘work-ready’ graduates whose disciplinary knowledge and training is matched with a range of broader skills for an evolving and uncertain labour market. But mass participation may also have resulted in an over-abundance of graduates in many high-skilled professions, making it more difficult than ever for university graduates to find jobs that utilise their qualifications and skills (see Norton, this volume).

With increased pressure to demonstrate value for students, industry and the broader community, institutions are looking to develop and strengthen ‘third-stream’ engagement activities. While community engagement has traditionally formed a central part of the mission of universities, a lack of clear definition and purpose of

what ‘third stream’ engagement is and how it is funded, remains unresolved and not yet fully engrained in the academic consciousness. Further, this lack of clarity reveals potential tensions between the relationship of universities to the community and broader commercial considerations. To date, limitations on collaborations and partnerships with private enterprise highlight the need to develop sustainable and realistic models of university-industry collaboration where approaches to institutional research are flexible enough to be harnessed in productive ways. While the strong research record of Australian universities is recognised in international ranking systems, traditional conceptions of university research and research training must be adapted to better contribute to addressing both global and domestic challenges, while balancing core educational functions.

The shifting identity of tertiary institutions is further reflected in significant changes to the ways in which teaching and learning are carried out. Technological advances along with the growing student numbers and changing patterns in participation have prompted institutions to develop more creative and imaginative solutions, including through online provision. However, deeply polarised perspectives remain as to the most effective modes of teaching for high-quality, scalable and cost-effective delivery. Innovative approaches to curriculum design and teaching (see Elliott & Lodge, this volume), and new models for assessment, credit and credentialing (see Milligan & Kennedy, this volume), will be essential to maintain and improve quality while creating flexible and less expensive study options for students.

The growth in student numbers has also raised concerns that more open admission practices might be allowing under-prepared and under-informed students to enter tertiary education and contributing to increased attrition rates. Further, a lack of transparency about admission procedures and decisions has led to increasing anxiety about the protection of academic standards. The need for greater transparency in the information provided to students is being addressed by the introduction of the Quality Indicators for Teaching and Learning (QILT) website. The website was introduced in 2016 as a platform to enhance the information available to prospective students, increase university accountability and improve transparency in the sector by allowing students to compare the satisfaction of current students and recent graduates as well as gain access to information on the employment statistics and earnings of graduates. A growing focus on accountability, transparency and quality assurance is certain to be a central feature of the Australian tertiary education system in the future. However, there is no clear agreement on how to best advance national agendas for the improvement of quality and standards (see Pattison, this volume). Increasing access to big data and developments in learning analytics potentially play an important role in the quality improvement, however institutions face the challenge of ensuring that technology-enabled data is relevant and used in ways that effectively supports teaching and learning (see Kennedy, Corrin & de Barba, this volume).

Finally, and not least, it is a truism that effective institutional leadership is vital to the success of Australia’s future tertiary system regardless of the policy settings. The challenges associated with leading large academic organisations, especially

universities, have long been acknowledged. In Australia, universities have largely operated as autonomous institutions with complex but stable governance structures modelled on traditional Western universities established centuries ago in Europe. Yet, higher education leaders now face very different challenges than their 20th century predecessors (see Sharrock, this volume). The imperative for leaders to make decisions that will ensure their institutions are responsive, agile and innovative for financial viability and relevance into the 21st century is in contrast with often bureaucratic and slow-moving governance arrangements. How universities and other tertiary institutions reconcile increasingly corporate organisational models with the traditional educational roles of leaders to align with the fast-moving and competitive nature of tertiary education may define the market position of institutions into the future.

1

A FRAMEWORK FOR DIFFERENTIATION

**LEO GOEDEGEBUURE, VIN MASSARO,
LYNN MEEK & ALAN PETTIGREW**

ABSTRACT

This chapter is built on the basic premise that if Australia wants a truly differentiated tertiary education system it needs to move from formula-driven policies that provide identical incentives to all institutions to tailored performance contracts that play to the strengths of individual institutions and build strengths in the national interest.

From a political perspective, the most contentious part of this premise is the argument that we need an independent co-ordinating authority. The purpose of the authority would be to develop a national strategy for the system and implement this by monitoring the performance of institutions on the basis of individual institutional performance contracts established with the input of relevant stakeholders. This approach has been advocated by a number of experts in and around the university system since the demise of Commonwealth Tertiary Education Commission (CTEC) in the 1980s and has been consistently rejected by both sides of politics.

This chapter offers a rationale for such a strategy based on an analysis of international trends and issues impacting tertiary education and an assessment of the current strengths and weaknesses of the Australian system. This is followed by a brief inventory of what Australia needs as a minimum from its tertiary education system and a proposed set of policy elements that will lay the foundations for the creation of a truly diverse system with the potential for effectiveness, efficiency and greater value to Australia. This chapter provides a set of interrelated propositions that aims to stimulate debate about the nature of a tertiary education system befitting the country.

GLOBAL FACTORS IMPACTING ON TERTIARY EDUCATION SYSTEMS

All developed tertiary education systems are facing a complex set of forces exerting pressures for change and continuous adaptation. In essence these forces can be reduced to economic globalisation, the transition from industrial to knowledge-based economies, and the very rapid evolution of information and communication technologies. Economic globalisation brings increased levels of competition and this is as true for tertiary education as it is for other sectors of the economy.

Public tertiary education systems around the world have been exposed to the rise of private, for-profit providers operating on-shore, off-shore and in virtual environments. Corporates are also increasingly engaged in more structured forms of educational provision, sometimes in partnership with established universities and colleges, but also as stand-alone entities challenging the traditional ‘monopolies’ of colleges and universities. The transition from industrial to knowledge-based economies has resulted in a dramatic increase in the demand for and participation in tertiary education across the globe. Across the OECD countries 23 million students started tertiary education in 2013 and over the last decade tertiary education attainment rates have increased by 10% (OECD, 2015). This has resulted in significant changes to the student body. It has become far more diverse in terms of socio-economic background, with female enrolments now overtaking male enrolments, and a significant increase in mature age students. This increased diversity of the student body poses challenges to how, where and when education is provided. This is further affected by the very rapid developments in information and communication technologies enabling on-line and blended learning, changing the role of staff in instructional processes, and fundamentally altering research.

This forces institutions and governments alike to reassess the ways they traditionally have gone about their business. For governments the complexity of tertiary education systems has increased significantly, posing challenges for effective co-ordination. One response has been to increase the focus on accountability, quality assurance, standards (outcomes) and transparency. Increased tertiary education participation also creates a basic funding problem as expenditure cannot rise at the same rate given natural limits to budgets and competing political priorities on public resources. Consequently, cost-sharing strategies, increased productivity and cheaper forms of tertiary education provision are being explored. At the institutional level this requires the ability to translate this complexity and increased pace of change into effective strategies to deliver core functions whilst ensuring institutional viability. It also requires enabling staff to deal with constant change by building resilience.

INSTITUTIONAL DIFFERENTIATION IN AUSTRALIAN HIGHER EDUCATION

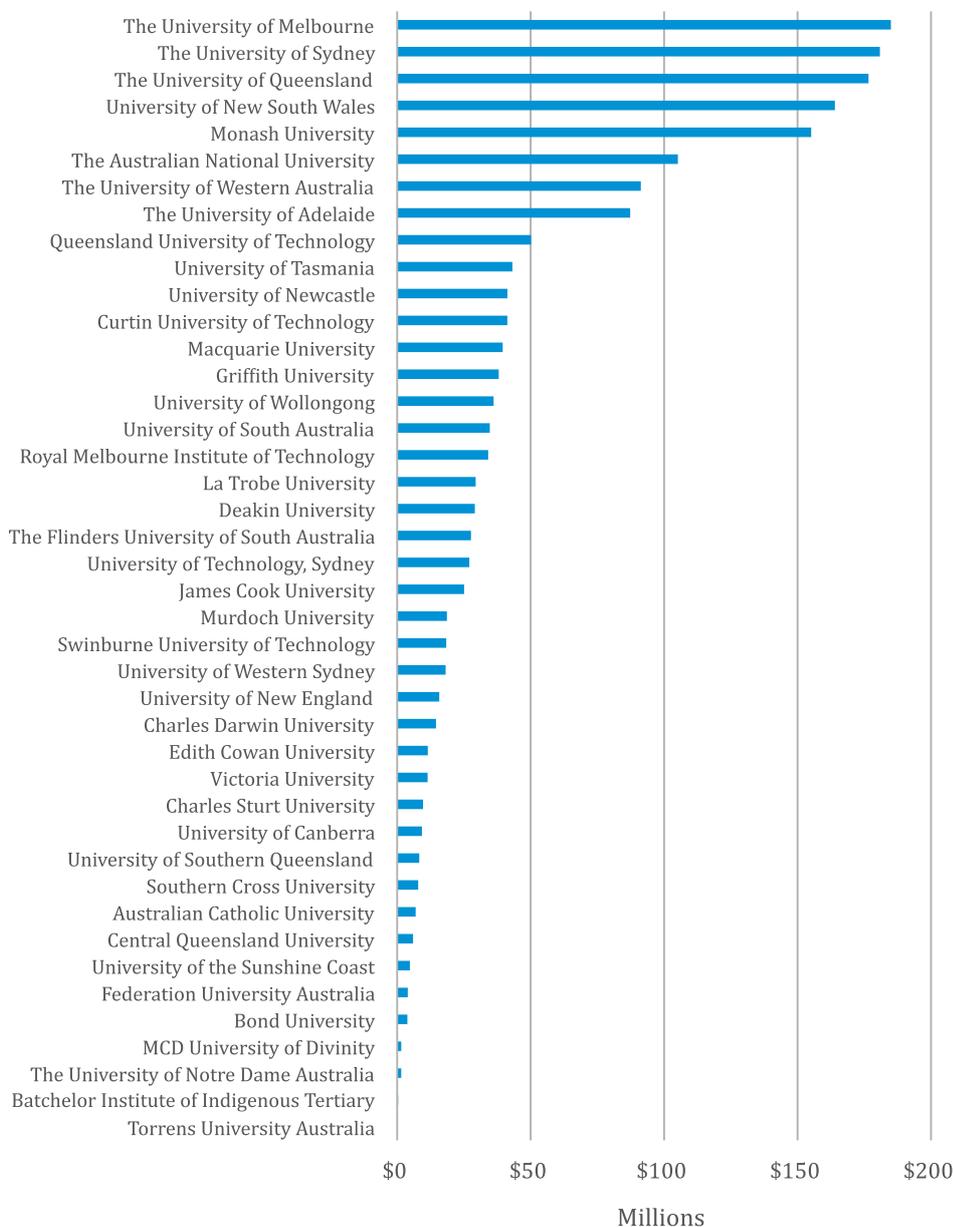
There is general consensus in the higher education literature that institutional differentiation is desirable (Meek et al, 1996; van Vught 2007). More diverse systems tend to perform better because they meet diverse student needs, are better equipped to stimulate social mobility through different access points and progression pathways, are better linked to labour markets that increasingly require different types of graduates, and allow for more cost-effective delivery of both education and research through specialisation.

Concerns about the capacity of the Australian Unified National System to lead to diversity have been raised since it was first established in 1989, with the weight of the argument suggesting that higher education institutions are all variations on a single theme: the comprehensive research university. Underpinning this argument is the fact that the policy environment in Australia contains little incentive for institutions to actively pursue different missions. Funding drivers primarily reward the pursuit of competitive research grants and the very definition of a university in Australia since the establishment of National Protocols (MCEETYA, 2000) requires that the institution be engaged in research. This comparatively recent definition was based

on an argument that there was a nexus between research and teaching, despite the absence of any clear evidence to support it. Combined with the value attached to research as a generator of status, and hence an attractor for the ever-important international student, this results in many institutions pursuing similar objectives. The pre-occupation with rankings is a case in point.

Whilst the policy environment and drivers may point primarily in one direction, this should not obscure the fact that higher education is neither a level nor a uniform playing field. There are significant differences in how universities are positioned. An analysis of the block grants provided to institutions based on research performance shows very significant differences between institutions (Figure 1). The government's proposed changes to block grant funding intended for phased implementation beginning in 2017 is unlikely to disturb the status quo.

Figure 1: Australian universities by Research Block Grant (RBG) allocation



Source: Pettigrew, 2016

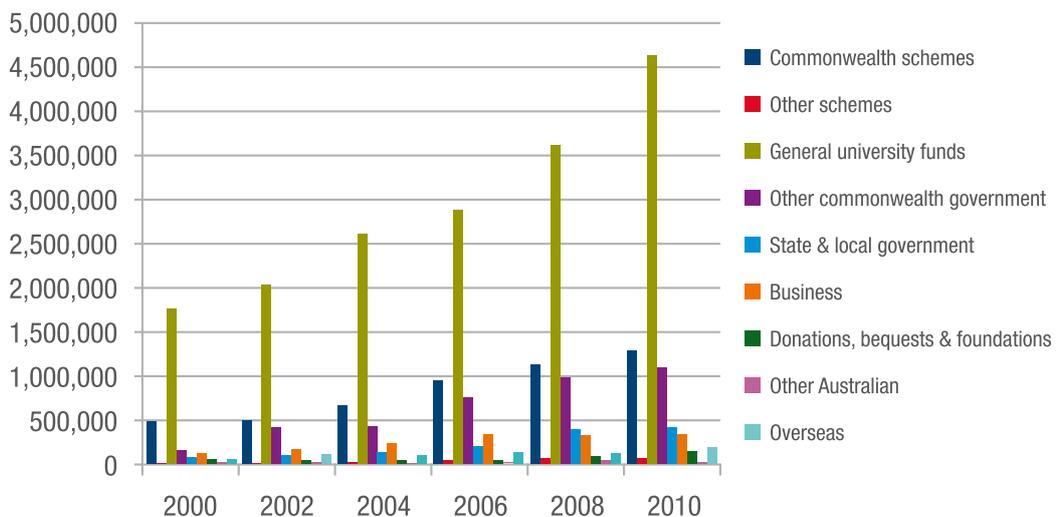
These data clearly show the stratification of research intensity across the system, which is also correlated with institutional age and size. This picture has been relatively stable across most of the post-Dawkins period, although positional changes have taken place in the relative RBG order in the non-Group of Eight (Go8) institutions.

From a comparative system perspective, having around 50% of universities among the top-500 worldwide (ARWU, 2016) is a significant achievement and a tribute to the vibrancy of these institutions. Yet, this good performance across the board, also evidenced by the Excellence in Research for Australia (ERA) outcomes, does not stretch to the top of the international research ladder, where Australian research does not compare well with other developed countries. Reasons for this appear to include:

- the nature of our research system - which is strongly competitive yet based on short-term grants, the success of which is relatively unpredictable;
- a research workforce that to a large extent is employed on short-term contracts, which hampers long-term program planning;
- a long-standing emphasis on volume over excellence in terms of publications, although the introduction of the ERA is claimed to be changing this emphasis; and
- a long-standing absence of an overarching national research strategy, although, again, the recently introduced National Innovation and Science Agenda (NISA) appears to be a step in that direction.

It should also be noted that whilst about half the university system features in the leading international research rankings, the other half does not. Given the significant differences in RBG (Figure 1) this is not surprising, but one cannot ignore the fact that this half of the system also receives significant public funding for staff research time that does not translate directly into outputs. This is generally captured under “General University Funds” (GUF) in the Australian Bureau of Statistics (ABS), based on institutional reporting. Behind this reporting are assumed to be general workload models that would reflect the 40% teaching, 40% research and 20% service allocations of regular academic staff. This is reflected in Figure 2.

Figure 2: Dollar value breakdown of HERD³ 2000-2010



Source: ABS, 2016

³ Research and Experimental Development, Higher Education Organisations, Australia: Higher Education Expenditure on Research & Development (HERD) *Australian Bureau of Statistics, 2016*

This is further compounded by the fact that university-industry engagement is well below levels achieved in other developed countries (OECD, 2015). This is often explained by the argument that Australia is not home to Research & Development (R&D) activities for multinationals, does not have a sufficiently large industry base and, to a large extent, is made up of small and medium size enterprises (SMEs) and services industries. Whilst there is some truth to this, Australia is also characterised by a very large proportion of its research workforce being employed in the public research sector (especially universities), with little exposure to and interaction with industry. Incentive structures in universities in particular stimulate traditional academic outputs and place less value on industry engagement. Furthermore career structures for research-active staff do not reward moving between a university and an industry environment. Indeed, the opposite is true. An exception to this is the long established Cooperative Research Center (CRC) program, but the success and scale of this program is not sufficient to raise industry engagement to levels in comparable developed countries. While the recent government initiative to establish Industry Growth Centres has been designed in part to facilitate greater 'engagement' between industry and research, it is too early to determine its effectiveness. The persistent, predominantly internal, academic focus of the university research enterprise is problematic for a country that in a post-resources era will be highly dependent on a well-established innovation system (see chapter 10).

No co-ordinated approaches have been developed over the last decade formulating what Australia needs from its higher education sector and how individual institutions or groups of institutions can contribute to such a national agenda. Of particular concern are the inherent inefficiencies that result from poorly designed markets and inadequate transparency. If co-ordination of tertiary education provision is left only to the market, there are significant risks that certain areas of national importance may be ignored due to high costs, low demand or a combination of both.

Because of this lack of coordination, the expansion of tertiary education in Australia has been remarkable. Initially driven by the very successful development of the international student market, this growth has been complemented with significant expansion as a result of the introduction of the demand-driven system in 2012. Since the inception of the Unified National System in 1989, student enrolments have tripled from some 400,000 to over 1,373,200 (DET, 2016).

In summary, the strengths of the Australian university system include a significant and increasingly diverse student body, including very significant international student cohorts, quality higher education, and strong performance in research across half of the sector. Its weaknesses include the absence of system-wide coordination of education and research, the relative absence of top research performance seen in comparable developed economies, underdeveloped university-industry engagement in combination with a strong traditional academic focus, and the relative high costs of running the whole system based on an undifferentiated approach to teaching and research.

WHAT AUSTRALIA NEEDS FROM ITS HIGHER EDUCATION SYSTEM

Like any developed economy, Australia needs a higher education system that can train and educate a significant and sufficient proportion of its population at a high level in disciplines that meet the national need. Increasingly, higher skills levels will be demanded by an evolving knowledge economy and professionals will need deep

subject knowledge and skills as well as the ability to work across disciplines, domains and in teams. It follows that Australia needs a higher education system that:

- is open to inputs from the broader society and economy so that changing and evolving needs can be understood and met;
- can cater to an increasingly diverse student population demanding flexible access to education delivered in ways that suit both school leavers and professionals in need of re- and upskilling; and
- delivers these education and training imperatives at a shared cost that is affordable to both government and students irrespective of their social and economic backgrounds.

Australia also needs a higher education system that promotes innovation and growth and sustains an internationally competitive economy. Key to this is an integrated research system that caters for the different types of research from investigator-driven to strategic and applied, and that operates with research agendas formulated in collaboration with key partner organisations. These partners must include government agencies, industries and inter/multi-national agencies, with strong global links. Given that Australia's current economy is primarily driven by the resources and services sectors, stimulating innovation (in its broadest sense) is an essential and urgent obligation for its higher education system. This must be done through a university *system* that encompasses the full spectrum of research and engagement activities, based on dual core functions of education and research.

Given its size and geography Australia needs a higher education system that caters for both metropolitan and regional areas. As their respective needs are significantly different, this will require a differentiated higher education system. Regional higher education provision must be the cornerstone of such a system, which demands an inclusive approach across the country. It will also require institutions to collaborate to cater for regional provision at an affordable price, especially across the VET-Higher Education divide.

Given its socio-economic profile, Australia needs a higher education system that is accessible to minorities and disadvantaged groups. This, again, requires a focus on differentiation, as special needs are best catered for through special provision that subsequently articulates into more mainstream education and development.

Australia also needs institutions that are focused on productivity in order to contain costs. This requires both a thorough understanding and monitoring of core activities, and collaboration and sharing of knowledge and insights. Traditionally, Australian institutions have been driven by competition. Whilst competitive pressures help keep organisations sharp and focussed, co-operation is required to maximise efficiency of the system as a whole. Complementarity thus becomes an important ingredient for the system, in addition to the ability to respond proactively to competitive international forces.

Whilst technology will play an increasing role in higher education, it will also remain a 'people-centric' business. The Australian university system will need to attract and retain a workforce that can deal with innovation, diversity, change and multi- and cross-disciplinarity. Participants will be exposed to and will need to embrace the

continuous emergence of new roles and functions that are a mix of professional and academic activities. This requires a system that is attractive to new generations of students, that allows for flexible career pathways and is increasingly porous in its exchanges with other segments of society, nationally as well as internationally.

Finally, Australia needs a higher education system that can be instrumental in further positioning the country in the region, based on strong institutional linkages with partner organisations abroad, strongly linked into the global economy. In this sense, the networked organisation must transcend national boundaries and facilitate and accommodate the full internationalisation of Australia's higher education system.

POLICY SETTINGS TO PROMOTE AND SUSTAIN PROVIDER DIFFERENTIATION IN AUSTRALIA

The series of reviews and reports on Australia's higher education system that have been produced since the Bradley Review in 2008 have identified, to a large extent, the ingredients required for a shared vision of what a tertiary education system could, and should, deliver for Australia. This, however, has not resulted in a politically accepted shared vision. This ought to be a first priority, developed with independent, evidence-based advice. Assuming this is achievable, then the design of a comprehensive strategy for progress can begin by inviting all parties involved to outline how they see their own organisation delivering one or more of the strongest or highest quality jigsaw pieces to fill the system puzzle.

As has been shown over many decades in many countries, central planning initiatives are rigid, cumbersome and seldom deliver on their promises. This is even more so for tertiary education that best thrives in a decentralised and autonomous environment. Such an environment, however, is not synonymous with an absence of responsibility and accountability. The receipt of public resources must be tied to appropriate performance expectations. And the most effective means of achieving this is through performance agreements based on an agreed institutional profile rather than through command and control mechanisms.

Systems like this operate effectively in several comparable developed and well-respected tertiary education systems, in regions ranging from California to South Korea, Hong Kong, Singapore, the Netherlands and Ireland. They have a number of structural features in common that can be summarised as follows.

First, someone needs to be responsible for the management of the process, the monitoring of progress and adaptation of the strategy as national and international circumstances change. Obviously, this is an iterative and adaptive process, but someone needs to be in charge: the orchestra needs a conductor who is deeply aware of the piece that is being performed.

Second, all actors need to perform different parts of the strategy individually, playing to their strengths. This is the key to creating a truly diverse eco-system. In this context one should not lose sight of the fact that many actors are contributing in parallel, that one needs to be aware of what the others are doing and actively pursue collaboration where possible and desirable. Again, whilst there is a role for the conductor ensuring that the overall performance is greater than the sum of the individual parts, her role

is also about relationship building and facilitating collaboration. This requires a deep understanding of the personalities involved and it requires mutual respect from all.

Third, there must be consequences for underperforming, identified through regular reporting and periodic external evaluation. Co-ordination without teeth does not work, while financial carrots and sticks have proven effective mechanisms in tertiary education. In this sector in particular, relatively small (dis)incentives can have major behavioral effects. A significant part of public resources can be provided for a relatively long period of time – normally the full period of an evaluation cycle – whilst a smaller proportion can be ‘dynamised’ and made conditional on meeting performance standards.

Fourth, the performance agreements should be made public, along with the outcomes of monitoring processes. In an Australian context it would be essential to ensure that such monitoring processes are targeted, unambiguous and achieved through simplified reporting requirements.

SPECIFIC ISSUES AND REFLECTIONS ON POLICY SETTINGS

In addition to the coordination principles associated with performance agreements and institutional profiles, there remain a number of issues that need to be dealt with. The first one is the question of whether or not Australia needs an independent co-ordinating body. The second is how best to accommodate both Commonwealth and State interests in the governance of the system. The third is whether this governance should be limited to higher education or if it should encompass the full tertiary education sector. These three issues are briefly discussed in this final section.

AN INDEPENDENT CO-ORDINATING AGENCY

Australia had an independent co-ordinating agency for several decades. The Commonwealth Tertiary Education Commission (CTEC) was in place as an advisory body in varying forms from 1942. It was abolished in 1988 in favour of a more direct departmental control model. The National Board of Employment, Education and Training (NBEET) which replaced it had a skeleton staff and no capacity to undertake its own policy analysis, relying instead on the Department of Education.

The fundamental problem that emerged from this arrangement, and one that has bedevilled the sector ever since, was that an expert, independent, policy, planning and coordinating agency that provided government with evidence-based policy and advice on the health of the system, and how this system could best meet the government’s objectives, was replaced by a system that was subject to political intervention in both the framing of the problems and the development of solutions. All systemic co-ordination and innovation was transferred to the government of the day or to inquiries that it might establish. Where CTEC could investigate matters on its own initiative, the Department by its very role is constrained by government preferences, so that policy options are inevitably narrower, and solutions not canvassed if they are seen to be inconsistent with prevailing government ideology. This has led to a lack of policy coherence as different reviews and inquiries examined different aspects of a complex system in relative isolation, lacking the development of a balanced strategy and an effective implementation plan.

The effect has been to place the Minister too close to the operational elements of the system, while lacking the protection of senior independent advice or the capacity to have negotiations over details carried out by a group perceived as both senior, independent and yet sufficiently part of the system to be able to negotiate outcomes most likely to be implementable. As a result, the government has lost the capacity to set broad evidence-based policy and leave it to an agency to implement.

If Australia aspires to have a differentiated tertiary education system, it needs an independent co-ordinating body. A differentiated tertiary system can only exist if an institutional policy environment is created that provides different incentives for different institutions and rewards different outcomes. Formula-driven policies by their very nature lead to one-size-fits-all environments. Australia's short three-year political cycle effectively means that there is but one year per cycle of possible concerted policy-making. In contrast, an independent tertiary education authority is able to engage in consistent, continuous mid- to long-term strategy development. Prerequisite to this is the staffing of such an authority as it must have a core comprised of senior staff with a deep knowledge of the sector and an appropriate international orientation to contextualise tertiary education policy in today's globalised environment. It must also have a Board comprised of representatives from key industrial and societal sectors to ensure optimal articulation of 'outside' views crucial to effective development and monitoring of a national tertiary education strategy.

ACCOMMODATING COMMONWEALTH AND STATE INTERESTS

In arguing for a national tertiary education strategy one cannot ignore the complexities of our federal system. While the vast majority of funding is being provided through the Commonwealth, universities are State-based and, with the exception of the ANU, established through State legislation. Whatever the aspirational ambitions of universities to perform at either the national or international level, the fact remains that they have a significant impact on their local communities, whether metropolitan or regional. Any national strategy therefore needs to marry Commonwealth with State interests, including an articulation of State industry and population needs, demands and interests. Whilst these 'localised' interests offer an excellent base for individualised performance agreements, they complicate the negotiation process underpinning them, as demonstrated in other cases where Commonwealth and State interests are at stake. At the same time, this complication is another argument for having an independent authority in charge of the process - it has the potential to take politics out of higher education and higher education out of politics.

A HIGHER EDUCATION VERSUS A TERTIARY EDUCATION SYSTEM

As with the Commonwealth and State relationships, any national strategy must include higher and vocational education. This would cater for the existence of dual sector institutions across Australia as well as promoting the concept of the networked organisation introduced earlier. It is impossible to envision a cost-effective system focused on delivering knowledge and skills to increasing numbers of Australian and international students without considering regional delivery, thin markets and the increased blurring of the higher-vocational education divide. Yet the system must be focused on innovation, entrepreneurship and applied research involving the SME sector. The Bradley Review canvassed the option for an integrated tertiary education system, but the government chose not to pursue it.

CONCLUSION

In discussing a possible governance framework that would enable the existence of a more diversified higher education system, we have argued the case for creating a more diversified policy environment for the system. This would allow institutions to respond to different incentives whilst also being rewarded for making specific strategic choices as to areas of priorities and specialisation. We have advocated a system of performance agreements and institutional profiles as the basis for this approach. The rationale for this has been simple. Profiles need to be negotiated to allow for institutional relevance and articulated interests from both the Commonwealth and the State governments. These profiles need to be formalised in performance agreements with financial consequences to give them the necessary “teeth”. In the absence of this second component, institutional behaviour will not change. In our complex and constantly changing environment we need a diverse system to allow for flexible and tailored responses to these pressures. The current policy settings are not conducive to achieving this.

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2

FUNDING AN EXPANDED TERTIARY SYSTEM: DESIGNING A COHERENT FINANCING ARCHITECTURE

**GWILYM CROUCHER, PETER NOONAN
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ABSTRACT

This chapter sets out the historical and public policy case for a renewed financing architecture, and outlines qualities and features needed to design and effect new arrangements. It emphasises the need for agreed goals for financing, regulation and incentives for providers matched with clarity of arrangements on the funding roles of the States, Territories and Commonwealth. It identifies three key components for reform: agreement through the Council of Australian Governments (COAG); an oversight-financing body to provide advice to all levels of government; and, a new mechanism for investment planning. The chapter closes with a discussion of what is to be avoided in developing a coherent system, arguing it must not itself drive homogeneity in offerings nor encourage the States and Territories to divest.

INTRODUCTION

There is now growing tension between key policy architecture for higher education (HE) and Vocational Education and Training (VET) in Australia. Current policy sits across both State/Territory and Commonwealth responsibility often resulting in tension and in some cases disjuncture between the planning, delivery, regulation and financing of tertiary education. Responsibility for financing is shared between the Commonwealth and States and Territories, although the latter have responsibility for delivery. For higher education the Commonwealth is the chief financier, with the States having a residual state legislative role in the university system. VET is jointly financed while States directly govern TAFE. In recent years, policy incoherence is mirrored at the Commonwealth level, with education and training portfolios separated at ministerial level and within the department. At present there is no integrated oversight of tertiary education financing in Australia, particularly with respect to income contingent loans which is partly the responsibility of the Finance portfolio.

If the system is to be improved and expanded, there is a clear need for a coherent financing architecture able to overcome the deficiencies of historically fragmented financing arrangements between higher education and VET in Australia. A new architecture would provide the foundation on which to develop policy for participation and integration, as well as to support regulation and planning. Chief in developing effective new funding arrangements is recognising the evolution of the relationship between the higher education and VET systems during the twentieth century. Since the 1960s, the dominance of the States in funding tertiary education has reduced as the Commonwealth has increasingly played a greater role. This chapter argues that the success or otherwise of a new financing architecture will likely rest on clarity of roles, capacity for effective system-wide planning and an ability to leverage inbuilt supply side flexibility of mature public and private provision.

THE ROLE OF THE STATES AND COMMONWEALTH IN TERTIARY FINANCING

In recent decades, funding and financing policies for higher education and VET in Australia have grown increasingly sector specific. If the system is to expand, a renewed tertiary financing architecture is needed regardless as to whether present arrangements continue or there is a radical change in responsibility for delivery. Irrespective of the final form of an expanded tertiary system, seeking coherence in financing is a principal foundation to support other policy objectives. These include the strategies for growing participation, decisions on further integration, as well as regulation and planning.

There are a number of historical reasons as to why seeking a greater degree of coherence in the financing is a central step for future reform.⁴ Major reviews since the 1950s have all taken a different view of the best form of relationship between the various components of tertiary education. The 1957 Murray Report, which provided the stimulus to expand university education, through Commonwealth intervention saw little link between professional and higher technical training and higher education. Seven years later, the Martin Report (1964) argued for investment in tertiary education and greater system integration between the components but failed to look at trade and technical education.⁵ A decade later in 1974 the Kangan Report argued for a renewed focus on Commonwealth funding and governance and led to the creation of a separate Technical and Further Education (TAFE) system.⁶

The prospect of greater policy alignment for tertiary education came through the creation of the Commonwealth Tertiary Education Commission (CTEC) in 1974, which absorbed the formerly separate university, College of Advanced Education (CAE) and Technical and Adult Further Education (TAFE) Commissions but maintained their separate identities. While the dissolution of CTEC and creation of National Board of Education Employment and Training had much to do with the politics of higher education reform during the late 1980s, the goal of a fully coherent system, even in so far as advice on resourcing, was never fully realised.⁷ During the 1990s, VET policy

⁴ P. Noonan, *Building a sustainable funding model for higher education in Australia - a way forward* (Mitchell Institute discussion paper, 2015).

⁵ *Report of the Committee on Australian Universities*, Committee on Australian Universities (Canberra, 1957); *Tertiary education in Australia*, Vol. 1, Committee on the Future of Tertiary Education in Australia (Canberra, 1964).

⁶ M. Kangan and Australian Committee on Technical and Further Education, *TAFE in Australia: Report on needs in technical and further education* (Canberra: Australian Government Publishing Service, 1974).

⁷ G. Croucher, S. Marginson, A. Norton, and J. Wells, eds., *The Dawkins revolution: 25 years on*. (Carlton: Melbourne University Publishing, 2013).

was decisively separated from the new higher education system through the creation of the national VET system and a shared funding model between the Commonwealth and the states by COAG agreement in 1992.

The Bradley Review (2008) argued the need for closer links between VET and higher education, with equal value given to both as part of the broader tertiary sector, with different roles for each sector in terms of skills and knowledge development.⁸ This was to involve a shared and coordinated information base, efficient regulatory and accountability frameworks, and clear pathways between the sectors in both directions. To achieve such a system Commonwealth steering and a more coherent national architecture was required. The Review warned of the dangers of a growing funding gap between higher education and VET unless a national tertiary funding framework was adopted. However the tertiary funding recommendations in the report were not implemented by government, although national regulators for each sector were established.

The policy discussion around whether or not a more integrated system is the best way to support quality VET and higher education provision has not been unique to Australia. In the UK, the Wolf Review (2011) of further education argued for a more differentiated system, where ‘government should focus on its key roles of monitoring and ensuring quality, and providing objective information, and withdraw from micro-management... and that the funding and oversight regime for 14-19 year olds helps institutions to be flexible, efficient, and directly responsive to labour market changes.’⁹

The UK has sought to separate the system in the Post-16 plan and Sainsbury Report (2016) which means that all young people over the age of 16 would have ‘two choices: the academic or the technical option’ and the ‘current crowded landscape of overlapping qualifications’ is simplified.¹⁰ The other European systems seem to have fared well over recent decades using separated VET and higher education systems, with Germany’s distinct vocational education system still the envy of many around the world. The New Zealand Productivity Commission has also been conducting a major review into New Models of Tertiary Education spanning the higher education and VET sectors.¹¹

Ongoing debate in Australia around whether supporting high quality VET is best achieved through greater integration or separation from higher education has fostered a complex set of relationships that affect any proposed transition to a renewed system. The last several decades of incremental policy change in Australia for the VET and higher education space have meant the logic underpinning the current role of the States and Commonwealth is increasingly unclear, even if the path to current arrangements shows a rational policy response to changing government priorities and emerging policy challenges. The complexity is acute for financing of tertiary education.

Figure 1 shows revenue sources for higher education in 2014 and VET in 2015. The Commonwealth now has a major funding role in both higher education and VET, subsidising both students and providers, yet the States only have a role for funding

⁸ D. Bradley et al. *Review of Australian higher education: final report* (Canberra: Department of Education, Employment and Workplace Relations, 2008), 179.

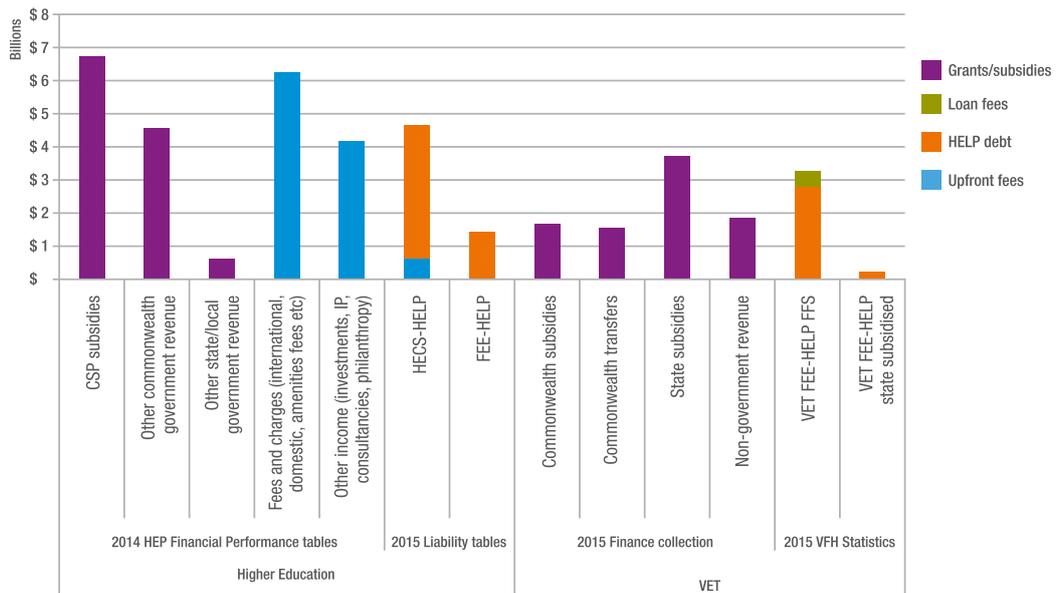
⁹ Wolf, A. *Review of vocational education: the Wolf report* (UK: Department for Education and Department for Business, Innovation & Skills, 2011), 10.

¹⁰ *Report of the Independent Panel on Technical Education*, (2016), 8. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/536046/Report_of_the_Independent_Panel_on_Technical_Education.pdf

¹¹ New Zealand Productivity Commission. (2016). *New models of tertiary education: Draft Report*, www.productivity.govt.nz/inquiry-content/tertiary-education, 2016.

VET. As the major funder for higher education, the Commonwealth provides direct subsidies for teaching (primarily through the Commonwealth Grants Scheme) and research (Australian Competitive Grants and the Research Block Grants) and also uses an increasing amount of public funds to finance the various income contingent Higher Education Loan Programmes (HELPS). For VET, the Commonwealth provides funding through national partnerships in conjunction with the states, and growing direct funding for students, through the VET FEE-HELP scheme, now called VET Student Loans.¹²

Figure 1: Funding for higher education and vocational education and training in Australia, 2014/2015



Source: Department of Education and Training, Finance Statistics, 2016

These funding arrangements have meant a growing disjuncture between investment in higher education and VET, especially following the introduction of the demand driven system for the former and reduced outlays by the States for the latter.

Alongside historical reasons, there are significant policy rationales for seeking greater coherence in financing architecture. At present each sector has a diverse set of educational offerings that meet different needs and provide for changing student preferences. However, incoherence across the system means potential distortion of choice and opportunities from the perspective of many students, with strong incentives in place to undertake bachelor education when it is compared to VET offerings in some localities. For example, all undergraduate students at Australian public universities have access to relatively stable Commonwealth subsidies and HECS HELP, but VET students undertaking advanced diplomas may or may not have access to either an often variable state subsidy or VET student loans going forward. VET students in Certificate level courses also face upfront fees and cannot access VET FEE HELP.

¹² VET FEE-HELP Reforms (Canberra: Department of Education and Training, 2016), <https://www.education.gov.au/vet-fee-help-reforms>

How the system is funded shapes incentives for students and institutions according to the types of courses chosen and offered. The introduction of demand driven funding for higher education has shown that students and institutions will quickly respond to financial incentives to deliver places where funds are available with a high degree of certainty and stability. Recent experience stemming from unscrupulous providers rorting the VET-FEE HELP system has demonstrated that poorly designed government incentives can facilitate a ‘proliferation of unethical actions by a small number of providers.’¹³ Moreover, financial incentives have an effect on broader issues of tertiary education policy, such as efforts for national planning to meet labour market changes. This is particularly important given long term trends in the composition of labour markets in Australia, with a move toward a service and knowledge based employment, likely to require ongoing training and skills upgrades for much of the workforce.¹⁴ Australia’s demographic changes in the coming decades will also create challenges in terms of provision, particularly with the emergence of thin markets in regional Australia.

The Mitchell Institute summarises a number of anomalies in the financing of tertiary education noting a differential treatment of students; inconsistency in eligibility for subsidies and fees; inconsistent access to income contingent loans and student income support; widening investment gap between higher education and VET; a growing gap in per student funding levels; and potential distortion of student choice.¹⁵ It is impractical in the immediate term to disentangle tertiary education financing arrangements between the Commonwealth and the States/Territories without addressing other issues related to the Australian Federation and the vertical fiscal imbalance inherent in the Federated model. These broader issues include the basis on which the Goods and Services Tax (GST) is distributed to the States and Territories; the use of tied grants to the states, as well as the role of the Commonwealth across all levels of education.¹⁶ For all these reasons it is useful to differentiate between arguments for a coherent funding system, from the case for a more fully integrated tertiary system in Australia. While any future funding design for higher education and VET may be distinct, the two systems need to be integrated to advance long term policy objectives, such as Australia’s future labour market and social needs.

THE QUALITIES OF A COHERENT FINANCING ARCHITECTURE

Designing a coherent architecture for tertiary education financing requires several elements. Chief among these is establishing a process for facilitating agreement on the goals for the tertiary system between different levels of government, and to renegotiate the exact role of the States and Territories and Commonwealth. While COAG would seem the most efficient vehicle to develop an overall understanding on direction for the VET and higher education systems, a broader review is also needed to develop long-term policy options. Through such a process, broad agreement would need to be reached on the policy aims for financing, regulation and incentives for providers. The Commonwealth needs a central role in the coordination of the financing system as it will continue to guide national tertiary education policy for the foreseeable

¹³ *Redesigning VET FEE-HELP Discussion Paper* (Canberra: Department of Education and Training, 2016), <https://www.education.gov.au/news/discussion-paper-released-inform-redesign-vet-fee-help-scheme>

¹⁴ CEDA, Australia’s future workforce, *The New Work Order* (The Foundation for Young Australians, 2015)

¹⁵ Noonan, *Building a sustainable funding model*.

¹⁶ *Reform of the Federation: discussion paper 2015* (Department of the Prime Minister and Cabinet (Australia), 2015), <http://apo.org.au/node/55457>

future. Once policy goals are agreed upon, a next step is to develop clarity for around more consistent financing arrangements.

The government's changes to VET funding – with the heavily revised VET Student Loan scheme to come into effect from 1 January 2017 – reflect the recognition of the risks faced by the Commonwealth through FEE-HELP and the need for a decisive short-term response to the recent crisis in confidence resulting from abuses of the scheme. These proposed new measures appropriately tighten the loan system so that providers can be more easily suspended, with the capacity for government to freeze payments to providers in the event of 'poor performance, non-compliance or suspected non-compliance.'¹⁷

However, this short term response is symptomatic of the lack of a coherent financing architecture and in many ways further exacerbates the disjuncture between the State and Commonwealth role in funding tertiary education. Rather than better aligning the incentives for providers between the VET and higher education loans programs, the proposed changes would make accessing the higher education loans much more attractive. Similarly, the changes introduce key differences between the availability of loans in VET and higher education, particularly with the introduction of an approved course list governing eligibility under the VET Student Loans scheme. Resolving ongoing and emerging inconsistencies will require agreements through COAG on the roles of the States, Territories and Commonwealth in the financing space, which more explicitly acknowledge the interrelation between VET and higher education. They will need to offer neutrality to providers when faced with a decision on which sector to operate in so they can deliver the best outcomes and not follow the best funding. Moreover, they must ensure neutrality in student choice such that prospective students pick the course that will deliver the best lifetime and labour market outcomes. Overall any new architecture needs to have at its core a principle of clear accountability.

Agreement on the appropriate roles for all levels of government should be supported with structured capacity to effectively plan for implementation, taking a system-wide view. Coordination to ensure that planning across the sectors adopts a national and international assessment builds resilience and flexibility, so the whole system can quickly respond to emerging problems, such as the VET FEE-HELP rorts, as well ensure that incentives in systems are aligned with labour market planning. Building in flexibility will also be important for a new architecture. Seeking the greatest level of alignment and coherence where it is most appropriate to mitigate risk, such as for student loans, needs to be balanced against areas where the system needs to allow greater flexibility, such as the regionally contingent nature of much VET delivery. Such flexibility means providers and government can prioritise minimising distortions in choice that come from discontinuities in the availability and terms of financing, allowing providers to meet local as well as national needs.

THE GOVERNANCE AND ADMINISTRATION OF NEW FINANCING SYSTEM

Within the context of a COAG level agreement, there would be a need for administrative and governance arrangements to implement and deliver the new system, as well as to ensure it continues to be effective as circumstances evolve. This could be achieved

¹⁷ VET FEE-HELP Reforms

through the establishment of an expert advisory body which would provide advice at arm's length to all levels of government on financing the tertiary system.

While a number of viable configurations for such a body are foreseeable depending on its specific set of agreed responsibilities, at its core would be a remit to advise on resourcing to meet changing demand, maintaining neutrality of provider and student choice between higher education and VET, and monitoring the delivery profile against changing demographics and labour market needs. This would be closely linked with the body's role in providing transparent advice to government on the required resourcing to meet changing demand. In addition, the body could ensure consistent and appropriate methodologies and approaches to pricing, forecasting, reporting and prioritisation were achieved. This is not to argue that the body would prescribe a single formula, but financing decisions and mechanism across VET and higher education should share a common logic and approach where appropriate.

In conjunction with these core advisory functions, the body could also have a role in market oversight and the ongoing monitoring of the system's financial sustainability across all sources of funding and investment, as well as a role in advising on price regulation, subsidy setting and setting the parameters of loan schemes for all qualification levels.

Irrespective of the exact remit, the body would need to advise on the breadth of linked and overlapping qualifications including diplomas, advanced diplomas, associate degrees, degrees and post-graduate qualifications for higher education, and all post-school VET qualifications, including vocational diplomas and advanced diplomas.

The body would need to work closely with the States and Territories, which would retain ultimate responsibility for VET provider funding and financial oversight. The exact mechanism for overall investment planning could be undertaken through the agreed COAG mechanism in the first instance to lead to the creation of an advisory body, and through it a route to consistency. The Commonwealth would continue to drive and control key direct investment in the system, and in particular through the various income contingent loans schemes.

WHAT NEEDS TO BE AVOIDED IN DEVELOPING A COHERENT SYSTEM

In settling between the aims and features of a coherent financing structure and recognising the key role for the Commonwealth, aided by an expert advisory body, there are a number of adverse outcomes which need to be avoided to allow the system operate effectively over the longer term.

Careful consideration needs to be given to avoiding funding structures or incentives that would ultimately encourage homogeneity in course offerings across tertiary education. This implies more than seeking system flexibility; it means ensuring that the structure of loans and subsidies, and the rules around each, do not provide incentives to offer a limited number of undifferentiated courses to maximise income. Given there is usually asymmetrical information between students and providers on the type and quality of offerings, tertiary education markets can be driven as much by supply as by demand – even under deregulated and competitive policy settings.

Equally, a new financing system should not incentivise 'sector drift', where some providers wish to move out of either VET or higher courses due to the financing or funding conditions. With the significant constraints being placed on access to VET Student Loans, for some smaller providers, moving to the higher education space with more generously financed sub-bachelor degrees may be an attractive strategy. A system that allows cherry picking by providers builds in instability and increases the risk of perverse outcomes, including a mismatch between enrolment patterns, student aspirations, and long-term labour market needs.

The corollary point here is that system design must avoid assumptions that the VET and higher education sectors are the same but for differing levels of education. VET and higher education are distinct sectors – in terms of market structure, culture, and pedagogy – and so assumptions about one do not always hold for the other. Again, the VET FEE-HELP mess shows that assumptions about how the loan system works for higher education did not hold for a deregulated VET market.

The shape of any future system should not inadvertently encourage the States and Territories to divest from VET where they still hold ultimate responsibility. The design and implementation of a coherent architecture should not become embroiled in issues related to funding levels per se. The features of a coherent financing system and associated governance arrangements should be put in place irrespective of future funding trajectories, and in fact the former would be greatly valued in informing the latter. While total coherence will not come overnight, with the right setting in place the system can move towards a point where greater alignment helps supports expending tertiary education.

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3

ORGANISING, LEADING AND MANAGING 21ST CENTURY UNIVERSITIES

GEOFF SHARROCK

ABSTRACT

For Australian universities more rapid and more disruptive change is in prospect. As knowledge becomes more digitised, learning becomes more globalised. Massive growth in student access, new knowledge production and new transmission channels signify success for the Western university's traditional 'enlightenment' mission. Yet such trends also threaten traditional university business models, ways of organising, and staff identities. For university leaders, external engagement and partnership have become more critical to institutional capacity and mission attainment. These shifts imply new work roles and work processes within institutions. The quasi-monastic idea of the university as a 'community of scholars' is being recast as a multi-professional community of experts, more connected than ever before to other social sectors and enterprises.

FUTURE OUTLOOKS FOR AUSTRALIAN UNIVERSITIES

Almost everywhere higher education faces growing enrolments, new external demands and inner transformation. In a more diversified, digitised and globalised economy of higher learning, elite scale morphs into mass scale, and campus based communities reach for the cloud. As national sectors expand, their channels and connections multiply and the spread of higher learning accelerates. As the digital era makes knowledge hyper-abundant and hyper-accessible, societies benefit hugely.

Attuned to global markets and reputational rankings, Australian universities routinely cross borders to tap ever wider pools of students, staff, clients and partners. But this learning boom has boomerang effects. To date the digital era has been great for the mission and grand for the brand; but it may yet be grim for the business model.

The clearest disruptive challenge is the rise of massive open online course (MOOC) platforms. Student learning can tap globally available offerings without firm attachment to any particular institution. In prospect are new channels, new providers and new micro-credentials at lower net cost to students or funding agencies or both. MOOC platforms offer scope to streamline and scale up delivery of the suite of bachelor and

master degrees on which most campus-centric business models rely. Their potential to support personalised yet mass scale online study, anywhere and anytime, must loom large in strategic plans for those with high infrastructure and staffing costs to support.¹⁸

Recent attempts to map the future of Australian universities suggest that change will arise from a mix of more open access to study, more digital learning channels, extensive industry integration, the rise of global scale providers, more mobile talent, and more highly contestable student and employer markets. For example, a 2012 Ernst and Young report by Justin Bokor identified the mix of “change drivers” for Australian higher education, outlined at Figure 1. These imply national policy and domestic market shifts, meshed with global trends such as the rise of online learning and of new entrants in a more open, fluid and competitive sector. This is a potent combination. It has potential to transform the Australian public university sector as new types of provider with more diverse business models emerge. The report envisages three broad types of provider: a “streamlined status quo” that is still broad based but much more efficient; “niche dominators” specialising in targeted areas of need; and “transformers” bridging the higher education and other sectors such as media.¹⁹

Figure 1

DRIVERS OF CHANGE	
DEMOCRATISATION OF KNOWLEDGE AND ACCESS	Ubiquitous content Broadening of access to higher education Increased participation in emerging markets
DIGITAL TECHNOLOGIES	Bringing the university to the device - MOOCs and the rise of online learning Bringing the device to the university - use of digital technologies in campus-based learning Blended learning
INTEGRATION WITH INDUSTRY	Scale and depth of industry-based learning Research partnerships and commercialisation Industry as competitors in the certification and delivery of content
GLOBAL MOBILITY	Emerging markets becoming global - scale competitors in the international student market Academic talent increasingly sourced from emerging markets Emergence of elite, truly global brands
CONTESTABILITY OF MARKETS AND FUNDING	Fiercely competitive domestic and international student markets Challenges to government funding Competing for new sources of funds

(Source: Ernst and Young, 2012)

Source: author, with content from Ernst and Young (2012) p.6

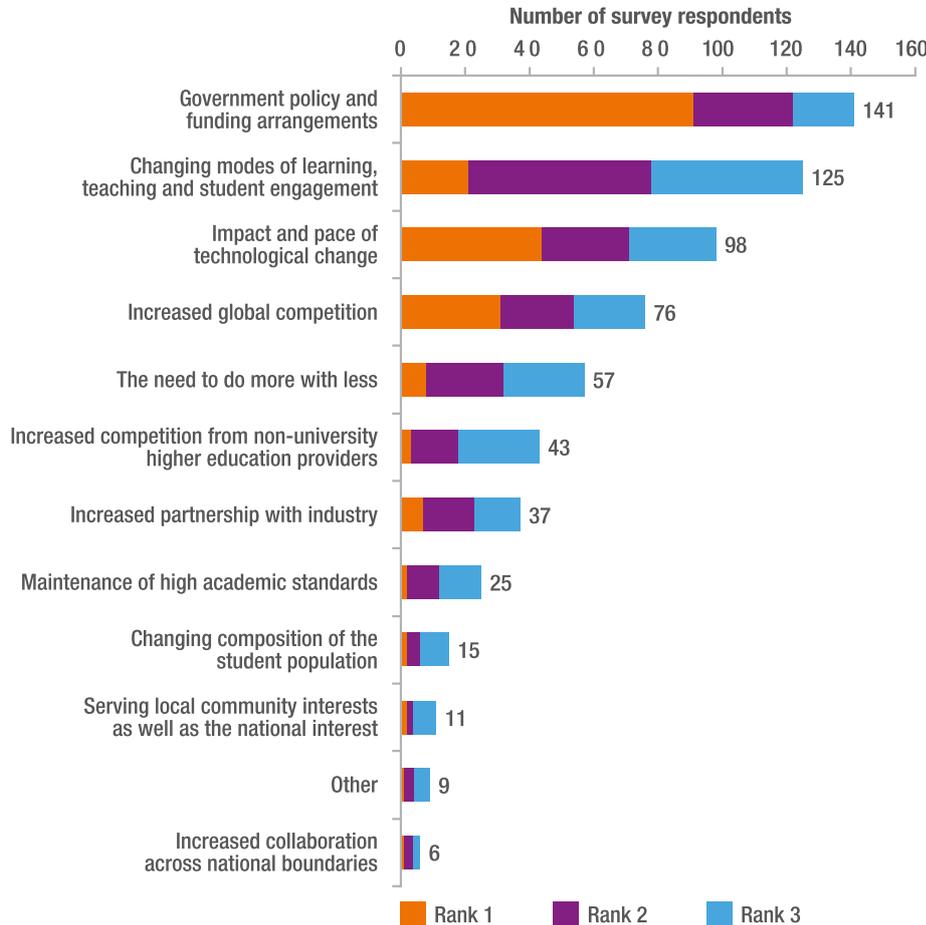
¹⁸ G. Sharrock, “Making Sense of the MOOCs Debate,” *Journal of Higher Education Policy and Management* 37: 5 (2015): 597-609.

¹⁹ J. Bokor. *The University of the Future* (Ernst and Young, 2012): 4-5.

²⁰ PriceWaterhouseCoopers and Australian Higher Education Industry Association, *Australian Higher Education Workforce of the Future* (2016)

A more recent study²⁰ by PriceWaterhouseCoopers for the Australian Higher Education Industry Association conducted a series of consultations with Australian university leaders, students and other stakeholders. The results of their survey of the relative importance ascribed to various factors are shown at Figure 2.

Figure 2



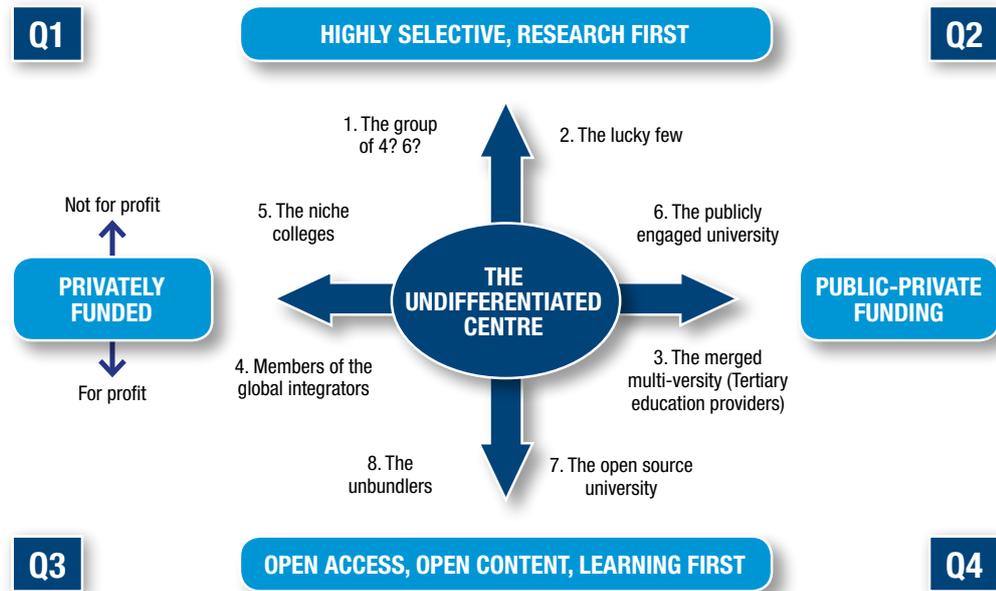
Source: PWC and AHEIA, *Australian Higher Education Workforce of the Future*, 2016, p. 26

The PWC/AHEIA report maps anticipated changes and their implications for the future higher education workforce in Australia. Like the Ernst and Young report, this study highlights the prospect of significant change to the sector and to how universities then may have to operate, in the near future. These changes are expected to be driven by a combination of “technology, competition, funding and policy, student expectations and employer expectations.”²¹ In these future scenarios lower operating costs, greater flexibility and greater external engagement are seen as essential responses by existing institutions. The crucial unknowns here are: the extent of coming changes to models and methods and how rapidly these will unfold; and in turn, what degree of disruption will follow for existing models and methods? A plausible prospect is the more diversified “ecosystem” proposed in 2012 for UK higher education²² by Tom Kennie and Ilfryn Price. Figure 3 outlines the scenario they envisage of a reshaped UK sector.

²¹ PWC and AHEIA, *Workforce of the Future*, 5

²² T. Kennie and I. Price, *Disruptive Innovation and the Higher Education Ecosystem Post-2012*, Leadership Foundation for Higher Education Stimulus Paper (2012): 5

Figure 3



Source: Kennie and Price, 2012

It is not hard to imagine such a future in the Australian context. But this implies potentially quite disruptive degrees of change to an Australian higher education landscape currently dominated by the public university sector. Around 40 universities all perform teaching, research and engagement functions, with degree program teaching heavily campus-based for most. All enrol domestic undergraduates financed under a uniform approach to teaching grants and student loans. This oligopolistic position reflects historical advantages: autonomous degree creation and degree awarding power; decades of relatively stable public financing (albeit with growing reliance on HELP loans versus direct grants); notable entrepreneurial success in privately financed international education; and in recent years, privileged access to grants and HELP loans to support unlimited domestic enrolments in bachelor degrees. Since 2012 this 'demand-driven' policy has enabled rapid, publicly financed growth of the public university sector in tandem with strong international enrolment growth. A recent Mitchell Institute report²³ estimates that higher education expenditure rose by 45 per cent in real terms over the decade to 2015. For new private sector entrants, establishing viable higher education institutions in Australia has been difficult. Along with significant setup costs they face a competitive disadvantage due to lack of eligibility for direct teaching subsidies and HELP loans for their programs.

In view of current government fiscal policy constraints, few see the long term continuance of open-ended domestic enrolment growth on this basis. Government proposals since 2014 have led to concern within the sector that funding per domestic student will fall below levels that reflect existing or planned course delivery costs, or the wider cost base of institutions where teaching revenue is relied on to subsidise research effort. Meanwhile, to cope with higher volumes and to differentiate course offerings, campus-heavy operating models have added new physical and IT facilities

²³ M. O'Connell and K. Torii, *Expenditure on education and training in Australia: Update and analysis* Melbourne: Mitchell Institute policy paper No. 4. (2016): 4

selected phrases from the same standards framework into four general domains of institutional responsibility for Australian university leaders and managers, as previously defined²⁶ by Sharrock (2012).

Figure 5



Four domains, adapted from Sharrock (2012).

In the Q1 and Q2 domains the main leadership task is to support front line professionals and programs as they work to fulfil institutional purposes, directly or indirectly. Most of this work occurs at a local department or program level where scholars and other professionals pursue or support the *enlightenment agenda* of higher learning.²⁷ In the Q3 and Q4 domains, leaders are concerned primarily with the institution’s corporate and administrative functions. Here the focus of their work is on strategy and capacity building in the ‘enterprise’ domain; and governance, quality assurance and reporting in the ‘integrity’ domain. Thus *enterprise capability* agendas loom large for leaders, to secure resources, optimise processes and manage risk.

The model emphasises what practitioners know from experience: that organising, leading and managing are complicated balancing acts. No domain may be safely neglected for long. Disparate agendas and priorities in each domain, legitimate yet often divergent, are never settled once and for all. For leaders and managers, complex trade-offs and provisional solutions are the norm. Figure 6 proposes four mindsets and styles of leading needed to sustain these disparate responsibilities. To work effectively in any single domain, leaders have to consider and reconcile (where feasible) multiple perspectives. Whenever change is in prospect, this multi-focal view

²⁶ G. Sharrock, “Four Management Agendas for Australian Universities.” *Journal of Higher Education Policy and Management* 34: 3 (2012): 323-337

²⁷ G. Sharrock, “Two Hippocratic Oaths for Higher Education.” *Journal of Higher Education Policy and Management* 32: 4 (2010): 365-377

of institutional plans and prospects becomes essential to inform any kind of decision or communicative²⁸ act: from long term, high stakes strategy to short term, small scale projects. Any big change in strategy, structure or systems will entail remixing the mix of mixes that represents the status quo. Being firm on aims and values, but flexible on methods and assumptions, is the key to reframing issues and (re)designing solutions. Inevitably, solution design will entail engaging the workforce in a good deal of adaptive work, to reset the normative order that represents ‘the way we do things around here.’

Figure 6



Adapted from Sharrock (2012)²⁹

ORGANISATIONAL AGILITY AND COLLABORATIVE LEADERSHIP

As noted, future scenarios for Australian higher education suggest that universities should seek lower operating costs, greater flexibility (to adapt to market shifts or policy changes), and greater external engagement (to promote innovation, widen impact and amplify public support). The underlying theme is a need for greater organisational agility. But universities are not known for their agility. Legacy systems and processes, and a cultural aversion to risk and change, often conspire to thwart institutional efforts to adapt or innovate rapidly enough, or at sufficient scale. As one Australian vice-chancellor put it recently:

‘we need to move quickly and take on a degree of risk. How to manage and minimise risks is what dynamic businesses do daily, but Australia’s universities are not by nature risk-takers, nor do they usually move quickly. They’re complex organisations with large bureaucracies.’³⁰

Much of the aversion to management-led change in universities, particularly change projects aimed at lowering operating costs, arises from the Q1 and Q2 domains. The risk is that any major attempt to cut costs will lead to job losses or team dispersal in

²⁸ G. Sharrock, “Communicating Spending Cuts: Lessons for Australian University Leaders.” *Journal of Higher Education Policy and Management* 36: 3 (2014): 338-353

²⁹ Sharrock, *Four Management Agendas*, 331

³⁰ I. Jacobs, “Universities need to cash in on China’s innovation drive.” *Australian Financial Review* (16 August 2016)

the ‘professional community’ domain which (quite properly) puts people first; or poor service, project failure or program closure in the ‘creative engagement’ domain which (again, quite properly) puts mission attainment first.

However, few will dispute that wherever system complexity, procedural ambiguity and decision blockages in the Q3 ‘system integrity’ domain can be sensibly reduced, everyone wins. With some business-as-usual approval processes (such as research ethics) institutions may filter every case through complex documentation, review and committee approval, even when in most cases the risks are low and the compliance and scrutiny costs high. This suggests a need for policy rationalisation, greater delegation and business process streamlining. Any systemic ambiguity in policy definition, consultation protocols or decision making rights creates a familiar set of problems. These include under-resourced projects, over-loaded staff, failed attempts at worthwhile ventures with industry partners, and ineffectual change efforts. Such symptoms suggest a need to streamline governance and simplify procedures, supported by robust policies and information systems.

Those likely to win most from successful streamlining are the people engaged in front line professional work with students, research projects or third stream work in the Q2 domain. Here, local flexibility to act, adjust approaches and negotiate expectations with partners or clients is highly valued for its potential to improve services, renew programs and secure external resources. In turn, success in any such effort serves to sustain morale in the Q1 domain. Streamlining Q3 business processes offers the twin benefits of freeing up time and effort to get routine work done, and scope to reinvest these resources in higher priority projects that add value.

For such reasons there have been moves at Australian universities to adopt ‘lean management’ principles. These seek to reduce overhead costs, free staff from delays and double handling, and lift service responsiveness to user needs. However, streamlining and cost-cutting alone cannot suffice. Many Australian university leaders recognise that attempts to do too much in-house, often in the name of institutional autonomy or professional independence, ultimately limits any single institution’s capacity to pursue its public mission. Partnering becomes more critical to supplement the resource base and achieve the scale and reach required to generate (and demonstrate) public value. That is, not just for Q4 ‘enterprise sustainability’ or *corporate* reasons, but for Q2 ‘creative engagement’ or *enlightenment* reasons. From a comparative perspective our higher education sector is strong on internal collaboration (research publications), but not on external (industry) collaboration.³¹

On this view, 21st century universities in the Australian context of fiscal constraint and digital era competition may succeed at least as much by engaging with external partners as by attempting to perpetuate the internal status quo. Partnering, outsourcing, peer-testing and co-production are common features of the emerging digital era. These trends imply adjustments to the stance of university leadership, beyond representing the community of scholars. In 2001 Rosabeth Moss Kanter identified the emergence of more outwardly focused leadership styles in business enterprises. These arose in recognition of a new reliance on co-opetition and network power to create value, in a more connected world. These “collabronauts” must be:

³¹ Office of the Chief Economist, *Australian Innovation System Report* Canberra (2016)

'good at making connections, both human and intellectual. They are constantly on the look-out for new ways to benefit from combining forces with partners. They venture into unfamiliar territory, make deals, and return with knowledge that transforms their home base. They bring organisations closer together, introduce people and build relationships among groups that can initially seem like aliens to one another.'³²

Despite differences in history, mission and culture, for Australian universities the need to tap network power *beyond* our own sector is much the same as for business enterprises. Professional networking within the sector has always been strong, due to global flows of ideas in every field. But there is less networking beyond the sector in Australia, where industry-university links are fewer than in many other OECD nations. Yet such links seem essential if universities are to play a major role in innovation systems, nation-building and global problem solving. As one Australian Vice-Chancellor says of new plans for joint ventures between universities, government and industry:

'Those are examples where the institution is changing and they are all about becoming more outward looking and learning from partners. They require a different form of leadership than a more traditional internal management running an institution. They are about universities becoming hubs in a network and part of an ecosystem.'³³

For institutions that see themselves as "part of an ecosystem" beyond the higher education sector, questions arise about how they organise to optimise their internal systems and workforces to play a focal role.

DESIGNING THE SMARTPHONE UNIVERSITY

In their discussion of organisational agility³⁴ in large scale business enterprises, Wouter Aghina and his McKinsey colleagues describe three types of decision in any system of governance:

- **Type 1** - high stakes decisions
- **Type 2** - decisions that require cross-unit dialogue and collaboration
- **Type 3** - day to day front line decisions.

They note that in large complex enterprises, Type 2 decisions are the most likely to hinder organisational agility. Such decisions tend to proliferate in universities. Widely supported in principle as a form of 'collegiality', in practice they may also induce cultures of complaint or veto wherever 'consultation' fails to produce any clear 'consensus'. Consultation and consent regarding decisions that affect people are important Q1 practices, and Type 2 decision making processes often reflect a collaborative ethos. But they also arise from incompatible IT systems, overly complex consultative procedures, under-delegation, unclear decision rights, risk aversion and internal politics when resources are at stake. While Type 1 strategic decisions often

³² R. M. Kanter, *Evolve! Succeeding in the Digital Culture of Tomorrow* Boston (2001): 137

³³ G. Davis, interview with *AFR Boss Magazine* (2016) n.p.

³⁴ W. Aghina, A. De Smet and K. Weerda, "Agility: It Rhymes With Stability." *McKinsey Quarterly* (December 2015): 1-12

meet resistance where Type 2 engagement seems insufficient, such factors also complicate or block Type 3 decisions, hampering the scope for making judgements in what should be routine professional work.

In this 'Type 2 as the way we do things around here' scenario, the prospect of greater external collaboration with partners becomes harder to contemplate, and harder to achieve. It adds a new set of relationships to maintain, and new aims and motives to reconcile. It also comes with the attendant risk that project leaders will be unable to get deals done due to lack of decisiveness, risk appetite and authorisation from internal institutional stakeholders.

Similar challenges abound among business enterprises. Creating products or services via partners rather than in-house inevitably means giving up more control and taking on more risk. There is also in universities scope to frame any such interdependence as a loss of the historically hard won moral and intellectual freedom considered essential to a Western university's academic mission. But earlier forms of independence often reflect institutional norms from more aloof, 'monastic' traditions³⁵ of scholarly communities, characterised by small scale co-creation in sectors free to focus mainly on the concerns of their own intellectual fields.

Universities are not alone in their need to become more streamlined, creative and innovative. Aghina et al. examine common challenges to achieving agility in large, complex business enterprises. They argue that there is often a false trade-off between the need to be fast and flexible, and the need for scale and stability. Using a smartphone analogy, they suggest that the main organisational design challenge is to create a highly functional core operating system: clear, simple, transparent and reliable for all parties. In turn this must support a dynamic application layer that offers high flexibility to add, modify, scale up or shut down diverse products, services and projects. Aghina et al. explain that:

'In our experience, truly agile organisations, paradoxically, learn to be both stable (resilient, reliable, and efficient) and dynamic (fast, nimble, and adaptive). To master this paradox, companies must design structures, governance arrangements, and processes with a relatively unchanging set of core elements—a fixed backbone. At the same time, they must also create looser, more dynamic elements that can be adapted quickly to new challenges and opportunities.'³⁶

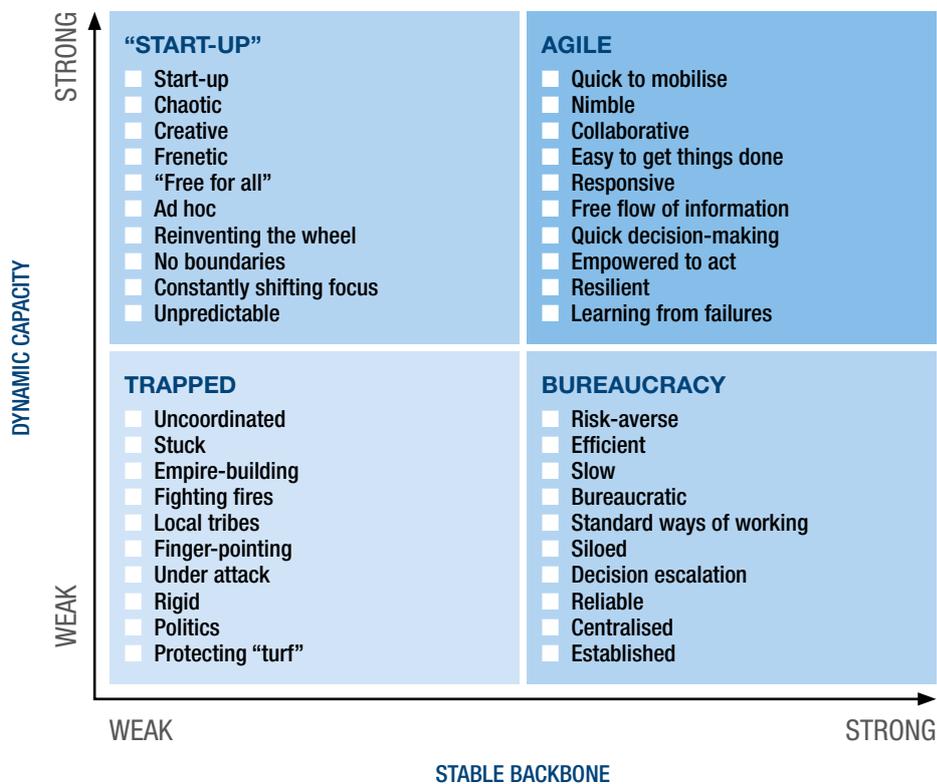
As with smartphones, much of the value generated by academic enterprises resides in their diverse, expanding and renewable ecosystem of programs. These connect *enlightenment* projects in the academic domain to a spectrum of partners, clients and other stakeholders. This 'apps layer' comprises the institution's portfolio of course subjects, degree programs, research programs and engagement projects in the Q2 'creative engagement' domain in Figure 6. Thus many worthwhile projects compete for scarce staff time, management attention and budget support.

³⁵ G. Davis, "Facing the Zeitgeist." *Griffith Review* 52 (2016) n.p.

³⁶ Aghina et al, *Agility*, 1

The ongoing design challenge is to simplify core systems and institutional policy settings while avoiding ‘one size fits all’ service solutions and ‘one best way’ decision processes. Aghina et al. suggest that achieving the right blend of stable backbone and dynamic capability allows large established institutions to benefit from their existing resource base, scale and profile; but also, crucially, to innovate rapidly to create new products, services and start-ups. Figure 7 presents their self-diagnostic model for assessing how staff groups experience workplace culture and institutional processes. Do these reflect a “start-up” or a “bureaucracy”? Are people and projects “trapped” and unconnected? Or is this an “agile” setting where plans evolve quickly, things get done, information flows freely, systems are responsive and people can collaborate and learn as they go?

Figure 7



Source: Aghina et al. Agility (2015) p.3

The smartphone analogy suggests that a 21st century university’s core systems and policies in the Q3 domain must establish clear, reliable and transparent controls at the governance and strategy level to create the “stable backbone”. Most of the agile “apps” layer work sits in the Q2 domain. Here agility may be constrained if too many “start-up” projects compete for too few resources, or too little management bandwidth. As Figure 7 suggests, a “trapped” work culture leads to tribalism and turf wars between old and new programs.

For scholars the smartphone analogy may recall what Burton Clark identified in the 1990s as the “strengthened steering core” and “enhanced development periphery” of the then newly emergent “entrepreneurial university.”³⁷ The main task of the “administrative backbone” was to “fuse new managerial values with traditional academic ones.” Clark’s analysis of the way this type of university was evolving noted that the expansion of its “development periphery” was essential to meet the institution’s inherent “demand-response” imbalance. These “outreach” units and centres offered ways to connect university departments built around academic disciplines to external worlds which were not. These connections enabled what Clark called “reciprocal knowledge transfer”. Affording flexibility to deal with external partners, these non-core units help match academic capabilities with those of partners, while mediating dual agendas and mitigating other risks of joint venture. To update Clark’s prescription, many Australian universities now see a need for clearer, simpler and smarter core systems and processes in the Q3 domain, replacing large and multi-layered central administration operations with leaner approaches. A key aim is to lower operating costs overall, and in doing so to free up scarce resources for academic work. This includes building ‘outreach’ capacity to embed the institution in wider social and economic ecosystems.

FUTURE UNIVERSITY WORKFORCE IMPLICATIONS

Australian universities will need to compete and contribute in a wider and more dynamic ecosystem of higher education providers, industry partners, MOOC-type study platforms and micro-credentials. A ‘50 shades of blended learning’ future implies a workforce of ‘blended multi-professionals’ with wider networks and greater mobility within and beyond their host institutions.³⁸

For example, in student learning a wider range of courses and support tasks will reflect ever more co-produced, blended, scaled-up, out-sourced, automated and personalised modes of delivery. This prospect of ‘unbundling’ the design, delivery, assessment and credentialing pathways of courses of study implies a rewrite of traditional scholarly work roles built around the campus-based research-teaching nexus. The recent expansion of ‘para-academic’ roles³⁹ for academic staff reflects this, and is mirrored by that of ‘third space’ roles⁴⁰ for administrative staff. Increasingly, there are overlaps in the wide spectrum of tasks that these two groups perform.

Once a university workforce is reframed as a Q1 multi-professional “community of experts,” it makes sense to simplify pay structures and adopt equivalent work value definitions to reflect this more blended workforce. In the UK, for example, a union-agreed ‘single spine’ pay structure for the sector already exists for academic and administrative staff groups.⁴¹ The next logical step, Carroll Graham has argued, is to ‘equalise’ work value.⁴² A more blended Australian higher education workforce

³⁷ B. Clark, “The Entrepreneurial University: Demand and Response.” *Tertiary Education and Management*, 4: 1 (1998): 5-16

³⁸ The PWC/AHEIA report (2016) supports more two-way staff flows between academia and industry

³⁹ B. Macfarlane, “The Morphing of Academic Practice: The Rise of the Para-Academic.” *Higher Education Quarterly* 65: 1 (2011): 59-73

⁴⁰ C. Whitchurch, “Shifting identities and blurring boundaries: the emergence of third space professionals in UK higher education.” *Higher Education Quarterly*, 62 (4) (2008): 377-396.

⁴¹ C. Graham, “Another Matrix Revolution: The Overlap of University Work.” *Australian Universities Review* 56: 1 (2014): 57-59

⁴² Graham, *Another Matrix Revolution*, 68

offers scope for better deployment of talent and wider career progression options for individuals. With common work classifications and pay points, staff could move more readily across the two historically distinct domains. In this scenario, institutional skills profiles become simpler to plan, and individuals have more prospect of mobility as portfolio knowledge workers.

With a sector-wide single spine pay structure, in-house payroll functions in Australian universities could be outsourced to a shared services provider, perhaps offering a suite of such services to several institutions at lower cost to each. Such a provider could do this for all of the public universities located in (say) the city of Adelaide, to the benefit of all. In turn, a standard set of higher education roles and pay points may make it simpler to arrange secondments between institutions within the sector and industry partners beyond it, to support joint ventures and collaborative projects. On this view a more 'agile' university need not rely on an ever more contingent workforce with a growing divide between secure 'insiders' and precarious 'casuals.' Rather, higher education leaders need to adopt more innovative and flexible approaches, where mobility within and beyond the institution, and also beyond the university sector, is normalised in a wider knowledge ecosystem.

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4

TO WHAT DEGREE? ALTERNATIVE MICRO-CREDENTIALING IN A DIGITAL AGE

SANDRA MILLIGAN & GREGOR KENNEDY

ABSTRACT

Graduates, employers and the community are accustomed to regarding a degree as a reliable signal that a graduate has attained valued cultural or vocationally-oriented knowledge and skills. University degrees and transcripts confer social status, and they provide a common, near-universal currency for negotiation in the professional and skilled labour market. However, an ecosystem of micro-credentials is emerging as an alternative or supplement to the degree, perhaps in tune with employers who have dispensed with degrees as prerequisites for employment on the grounds that degree transcripts are not particularly useful, and that university records are not good predictors of employment success. In this chapter we examine digital micro-credential ecosystems, together with their associated assessment methodologies and technologies. Digital micro-credentials may or may not become an enduring feature of the tertiary education landscape, and are certainly not based on educationally novel practices. But they raise fundamental questions for the higher education sector about the university's ongoing role in warranting and crediting in an era dominated by digitisation.

INTRODUCTION: THE DEGREE AS A TRUSTED CREDENTIAL

At the heart of the business of universities is trust in the quality and utility of the credentials they award. Graduates, employers and the community are accustomed to regarding a degree as a reliable signal that a graduate has attained valued cultural or vocationally-oriented knowledge and skills, to a high standard. University credentials and transcripts confer social status, and they provide a common, near-universal currency for negotiation in the professional and skilled labour market.

The principal form of this currency – the degree – has evolved over the last century into its current configuration. In the main, candidates for degree courses are carefully selected and pre-qualified for entry, and the higher the selection bar, the higher the

status of the degree. During a degree course, close guidance is given to students, often over many years, from teachers qualified in the domain, who teach students and assess their work, instilling in students the codified, mainly theoretical, bases of disciplines or professions. Inviolated and moderated assessments are used to assure standards. When qualifications lead to admission to professional practice, course designers liaise with professional associations and large employers to ensure that classroom-based theory is relevant, and that vocationally oriented skills are developed, at least to a basic level. This pattern of credentialing is buttressed in countries around the world by assurance and regulation frameworks within which universities work,⁴³ administered by national regulatory bodies such as the Australian Tertiary Education Quality and Standards Agency (TEQSA). Degree accreditation is further supported by national and international professional associations or industry bodies keen to protect the quality of entrants to their professions, and to assure standards. These frameworks guide universities as they design degree courses, and establish teaching, assessment and certification practices. Benchmark standards establish criteria about the quality of teaching staff, the quality of facilities, how students are to be treated, the volume of learning required at various standards (usually expressed in terms of years), and so on.

Despite these rigorous assurance frameworks, and the weight of tradition backing the current conception of the degree, there are signs that trust is eroding in the utility of the degree, and the transcripts that underpin it, and that regulation might require rethinking.⁴⁴ A degree has traditionally been regarded as a proxy for knowledge and skills in a particular discipline or professional area. Increasingly, however, graduates are *not* assumed by employers to have the knowledge, skills and aptitudes required in modern workplaces. Recent commentary⁴⁵ highlights a range of global employers who have dispensed with degrees as prerequisites for employment on the grounds that degree transcripts are not particularly useful, and that university records are not good predictors of employment success. For example, the proportion of individuals with no college education employed by Google (a reported 14 per cent of some work teams) has increased. Other employers including Ernst and Young, PriceWaterhouseCoopers, and Penguin Random House have decided to drop the degree as a requirement for job applications. The chief executive of the Australian Chamber of Industry and Commerce (ACCI) recently said: '[A] number of our members are consistently telling us they're seeing students come out of university or training programs and they might have the academic or theoretical skills but no skills to work at all. It makes them really hard to employ.'⁴⁶ Digital-era employers are asking for mastery of a new and different set of know-how and skills by their employees to complement the theoretical discipline or professional knowledge valued in universities.

Perhaps in response to this, alternatives, variants and supplements to the degree are proliferating. Alternative certificates can be earned for learning undertaken in a myriad of ways – anything, anywhere, anytime. Work-based professional education programs now credential learners, as do web-based providers offering courses such as Massive

⁴³ J. Black et al., *The Regulation of Higher Education: Discussion Paper No. 77*. (London: Centre for the Analysis of Risk and Regulation, 2015).

⁴⁴ A. Finkel, 'Red Tape or Gift Wrap: Regulation for Exceptional Tertiary Institutions,' in *Tertiary Education Quality and Standards Agency 2016 Conference: Sharing Excellence, Assuring Quality* (Melbourne: Australia, TEQSA, 2016).

⁴⁵ A. Bryant, 'In Headhunting, Big Data May Not Be Such a Big Deal,' *The New York Times*, June 19, 2013.

⁴⁶ L. Burke, 'University Degrees 'Irrelevant' to Big Employers,' *new.com.au*, 2016, <http://www.news.com.au/finance/work/careers/university-degrees-irrelevant-to-big-employers/news-story/8a0340dd2b8e70e35b8ce3302c8d0cc5>

Open Online Courses (MOOC), or industry-sponsored training, very common in the IT industry. In recent years, university programs outside formal regulatory frameworks, which offer unaccredited certificates that do not count towards an award course, have proliferated. While these alternative certificates are not new, digital technologies and global networks are changing what constitutes evidence, how people can demonstrate what they know and can do, and how trust is developed about the skills and knowledge a learner has attained.

This paper explores the emergence of an approach to credentialing that provides one such alternative or supplement to the university degree. Micro-credentialing and its associated assessment practices and methods offer a distinctive conception of how credentialing of higher learning might evolve. The approach is by no means easy to implement, and may or may not gain universal purchase in the industry. But it does provide an interesting case study of an alternative approach to credentialing a broader range of knowledge and skills to support and warrant learning of the kind demanded in the globalised, digital world.

THE RISE OF MICRO-CREDENTIALS

Micro-credentials go by various names including ‘nano-degrees,’ ‘micro-masters credentials,’ ‘certificates,’ ‘badges,’ ‘ratings,’ ‘licenses,’ ‘endorsements,’ or ‘memberships.’ As their name implies, micro-credentials focus on modules of learning much smaller than those covered in conventional academic awards, often allowing learners to complete requisite work in a matter of weeks. In their most developed form, micro-credentials represent more than mere recognition of smaller modules of learning. They create a digital credentialing *ecosystem*, made possible by digital communications technologies establishing networks of interest through which people can share information about what a learner knows and can do. This has led to an evolution in how credentials are used and what they are used for. Many organisations now provide platforms or support services to assist education providers build and use micro-credential ecosystems, including LMS systems such as Canvas or Blackboard, and professional development tracking systems used by professional accreditation bodies. A plethora of commercial organisations provide supporting proprietary platforms or services.⁴⁷

Arguably the most recognised and functional form of a micro-credential is the Mozilla Open Badges Infrastructure (OBI), an open sourced platform that manages a network of entities and objects associated with a credential called a badge.⁴⁸ Their badge ecosystem comprises a set of essential features including:

- **A badge issuer:** an education provider or an employer who creates a badge and defines competencies to be developed by a candidate with sufficient granularity to predict future performance in particular skills, sets standards for attainment of the competencies, assesses candidate performance, and provides an interpretation of what the individual has learned or can do.

⁴⁷ See for example the web site of Acclaim, owned by Pearson, at <https://www.youracclaim.com/>, or Credly, at <https://credly.com/>.

⁴⁸ Alliance for Excellent Education, *Expanding Education and Workforce Opportunities through Digital Badges* (California: Mozilla Foundation, 2013).

- **Badge earner:** the individual who earns the badge, by meeting the standards set by the issuer, and providing the evidentiary base used to assess the level of attainment of standards.
- **The badge itself:** typically a simple graphical image plus a range of digital metadata, containing information provided by the issuer, such as the criteria, standards, and assessment required for credentialing, expiry dates, where and when the badge was earned, and the identity of the assessor. Linked to a badge is digital information supplied by an earner to amplify or illustrate attainments, which may include portfolios, videos, essays, and so on. This information can be made available through a user's digital 'backpack' containing the badges and links to the evidentiary base. Social media organisations such as LinkedIn, Twitter, Facebook, and employment sites enable an earner to publicise and disseminate their badges to stakeholder groups.⁴⁹
- **Stakeholders:** include individuals or organisations such as employers or professional or industry associations to whom a badge earner wishes to demonstrate their competence.
- **Badge provider:** an organisation such as OBI that provides technology infrastructure, templates, and professional support to an issuer. Thus a badge or a series of badges becomes embedded in a network of interest, devised with a particular category of learner and consumer in mind.

Implementation of badging and other forms of micro-credentialing is neither simple⁵⁰ nor straightforward.⁵¹ Difficulties for providers are well documented, and relate to time, cost, privacy issues, questions of micro-credential ownership, verification and integrity issues, student concerns about credibility, and faculty and student acceptance. Nor is there universal acceptance of the desirability of micro-credentials, with a range of counter-arguments emerging:⁵² that the systematisation and structuring of learning by micro-credentials risks devaluing the emergent, unstructured learning in employment-related learning; that micro-credentials imply more credentials, which might further marginalise the non-credentialed; that other models and approaches might achieve the same ends; and that gamification sometimes associated with micro-credentials might undermine intrinsic motivation for learning.

While micro-credentialing systems may be expensive and difficult to implement and are currently not recognised by key regulating authorities, in recent times there has been substantial growth in the range and number of providers.⁵³ These include tertiary education providers,⁵⁴ as well as organisations such as MOOC providers, new commercial education providers such as Udacity, corporate giants such Google,

⁴⁹ A. Smith, *Searching for Work in the Digital Era* (Washington DC: Pew Research Centre, 2015).

⁵⁰ See for example advice to higher education providers from the Badge Alliance: 'Campus Policy Framework for Open Badges, last modified January 23, 2015, <https://docs.google.com/document/d/1Lv002M3AjjJ2D2CBtHdpAnUqKB-DUY3Q9C2DWkQbZAw/edit#heading=h.xlo013e1ldch>.

⁵¹ K. Freund and E. Rutherford, 'Badging Trouble, Piloting Open Badges at the Anu,' conference paper presented at the *ASCILITE Conference Rhetoric and Reality: Critical Perspectives on Educational Technology*, Dunedin, New Zealand, (2014).

⁵² 'How to Earn Your Skeptics Badge,' H. Jenkins, *Aca_Fan*, March 5, 2012, http://henryjenkins.org/2012/03/how_to_earn_your_skeptic_badge.html.

⁵³ Mozilla provides a list of providers offering badges: 'Badges/Issuers,' *Mozilla Wiki*, accessed January, 2016, <https://wiki.mozilla.org/Badges/Issuers>.

⁵⁴ B. Oliver, *Better C21 Credentials: Evaluating the Promise, Perils and Disruptive Potential of Digital Credentials*, (Melbourne, Victoria: Deakin University, 2016).

IBM and Microsoft, and a range of cultural and commercial organisations. What unites these providers is that they are seeking an alternative mechanism to warrant attainment of learning they value.⁵⁵

The emergence of micro-credentials has not gone unnoticed by regulators in the tertiary education sectors. The European Transfer and Accumulation System (ECTS) and the European Credit System for Vocational Education and Training (ECVET), are actively pursuing the use of credit transfer systems to promote the portability of micro-credentials and the development of individually customised learning paths. These agencies are currently reviewing the regulation of continuing and professional credentialing, arguing that attainment must be measurable, verifiable and certified by a recognised authority. In addition, newer kinds of credential frameworks and agencies are also emerging. For instance, the Lumina Foundation has proposed a credential registry and taxonomical framework,⁵⁶ and the IMS Global Consortium Digital Credentialing initiative⁵⁷ is developing standards for metadata to support analytics and the interoperability in definition of badges.

THE UTILITY OF MICRO-CREDENTIALS

While at a base level micro-credentials certify the attainment of small, discrete modules of learning, they are being used in the tertiary education landscape for a number of other purposes. Four examples of uses of micro-credentials are outlined below. These uses are neither mutually exclusive nor exhaustive, but they provide some insight into the emerging utility of micro-credentials beyond that of degrees and transcripts.

SPECIFIC, STACKABLE CREDIT

One characteristic of micro-credentials is that they can be grouped, aggregated or 'stacked', so learners have flexibility in sourcing learning, and can build their micro-credentials into a larger, aggregated award. Numbers of universities are experimenting with new educational structures that effectively allow students to stack specific micro-credentials on offer from that institution, or others, in order to create a credit pathway into traditional award programs. For example, Global Freshman Academy in the US allows learners to aggregate MOOC certificates for freshman credits, and the Modern States Alliance, a collaboration between a range of high status institutions, including Harvard, provides a free freshman year via MOOCs. The Massachusetts Institute of Technology Micro-Masters in Supply Chain Management is one of a range of awards provided by institutions in partnership with a MOOC provider via a micro-masters credential, itself an aggregation of MOOC certificates, leading to substantial credit towards admission to the standard Masters degree. Other institutions waive application fees or supply scholarships for micro-credentialed students (e.g. Wharton Business school with its MOOC Specialisations). Agreements to jointly recognise micro-credentials are emerging between providers seeking a competitive advantage in catering for a globally oriented, mobile clientele.⁵⁸

⁵⁵ M. R. Weise and C. M. Christensen, *Hire Education: Mastery, Modularization, and the Workforce Revolution* (Lexington, Massachusetts: Clayton Christensen Institute for Disruptive Innovation, 2014).

⁵⁶ D. Everhart et al., *Quality Dimensions for Connected Credentials* (Washington DC: American Council on Education, 2016).

⁵⁷ See 'IMS Global Announces Initiative to Establish Digital Badges as Common Currency for K-20 and Corporate Education, press release, IMS Global Learning Consortium, April 21, 2015, <https://www.imsglobal.org/sites/default/files/pressreleases/IMSPR20150421.pdf>.

⁵⁸ See for example the PLuS Alliance between Arizona State University, Kings College London, and UNSW, accessed in January 2016, <http://www.plusalliance.org/>

GENERAL RECOGNITION OF PRIOR LEARNING

Recognition of prior learning (RPL, also referred to as ‘the assessment of current competencies’, or ‘the recognition of current competence’) has long been available, in various forms, in higher education. Even the most selective institutions provide opportunities, typically on a case-by-case basis, for a candidate to gain credit for a unit or part of a course for which they have credentialed evidence from a comparable institution. Now, however, micro-credentialing is emerging as a mechanism for more general application of RPL, increasingly being seen by both individuals and tertiary education providers as a legitimate means of evidencing not only learning or competence credited by other institutions, but also that attained in the workplace or in other forms of informal learning. Further, institutions are using RPL not just to allow credit for part of a degree, but to accumulate the majority, or in some cases, all of an award, and as a routine service provided to large numbers, rather than on a case-by-case basis. Indeed, organisations are being set up with the express purpose of recognising and credentialing attainment of competency by learners, uncoupled from formal teaching, thus recognising learning attained outside the academy and reducing costs to learners of attaining credentials.⁵⁹ US institutions such as The Learning Store, Modern States Alliance and the Western Governors University are examples, encouraging students to sit assessments to earn credit for units, untied to teaching seat-time.

The logical extension of this approach is that instruction or teaching, becomes optional, purchased only to the extent required, an approach particularly suited to learners already in the workforce. In this context, micro-credentialing effectively constitutes a mechanism for loosening the nexus between higher education teaching (on the one hand) and assessment and credentialing (on the other). In the future, particularly as the costs of education are likely to remain high, micro-credentialing may be seen by some as a viable and relatively inexpensive alternative pathway to employment. For example, Udacity is so confident in the industry recognition of its nano-degrees that it provides credential-holders with a money-back guarantee of employment within six months of graduation.⁶⁰

EVIDENCE OF GRADUATE ATTRIBUTES

Because micro-credentials focus on small, discreet components of learning, they are particularly useful in providing the evidentiary base for graduate attributes typically not referenced in degree transcripts. These attributes include so-called soft skills, specific specialist professional skills and competencies, and metacognitive skills. That is, micro-credentials are being used to attest to specific learning outcomes that might be lost in a degree⁶¹ or degree transcript, and to provide specificity about what a credential holder knows, and can do.

⁵⁹ For example, see the College Affordability Guide web site: ‘Find the most affordable colleges and degrees’ *College Affordability Guide*, accessed January 2017, <http://www.collegeaffordabilityguide.org/>.

⁶⁰ ‘Nanodegree Plus’, *Udacity*, accessed January, 2017, www.udacity.com/nanodegree/plus

⁶¹ L. Martin, *Using Assessment of Student Learning Outcomes to Measure University Performance: Towards a Viable Model* (University of Melbourne, Australia, 2016).

⁶² P. Griffin, B. McGaw, and E. Care, *Assessment and Teaching of 21st Century Skills*, Vol. 1 (Dordrecht: Springer, 2012).

⁶³ Boston Consulting Group, *New Visions for Education: Unlocking the Potential of Technology* (Geneva Switzerland: World Economic Forum and Boston Consulting Group, 2015).

⁶⁴ A. Schleicher, ‘The Case for 21st Century Skills,’ *OECD, Education Directorate*, accessed January, 2017, <http://www.oecd.org/general/thecasefor21st-centurylearning.htm>.

In practice this means that learning outcomes are often described in terms of competencies that go beyond mastery of the staples of higher education such as discipline-based knowledge and academic skills. For example, micro-credentials are used, as an effective way of warranting competencies in what are now commonly described as 21st century skills.⁶² These skills are now prominently promoted by organisations such as the World Economic Forum,⁶³ the OECD,⁶⁴ and Universities alike,⁶⁵ and include highly desired workplace qualities and skills including literacy and communication skills, numeracy, scientific literacy, financial literacy, cultural civic literacy, critical thinking, creativity, leadership, collaborative problem solving and learning skills.

WARRANTING PROFESSIONAL AND CONTINUING EDUCATION

Micro-credentialing is perhaps making its fastest incursion in areas of professional learning and in continuing professional education. Many professions have established standards,⁶⁶ such as those common in the health⁶⁷ and teaching professions,⁶⁸ which set the range of competencies required for professional registration or licensing. Such standards typically describe the full scope of attributes required, including generic skills, values, beliefs, and professional or occupational skills, as well as domain knowledge and understanding.

The professions and employers are also increasingly specific about the need for professionals to keep learning, and to keep professional skills up to date, as required in a rapidly changing world.⁶⁹ Micro-credentialing appears to have particular utility in warranting learning required to maintain currency of registration or licensing during a professional career, or maintaining currency of skills in knowledge-based industries. By contrast, a degree can take years, demands substantial time and cost, and degree transcripts do not usually go into detail about specific competencies attained. Nor does a formal teaching program necessarily capitalise on the reality that the workplace can be a principal site of learning. Expression of competence as a series of progressive micro-credentials can thus provide signals for the learner, their employer, or other stakeholders of where a learner is up to in their professional learning.

The four uses of micro-credentialing described above are not separate or discrete functions, but tend to be mutually reinforcing. The DeakinDigital Masters of Professional Practice (IT),⁷⁰ for example, is an innovative macro-credential aspiring to reflect each of these uses. The program is built from a suite of micro-credentials, which stack to an accredited degree, and in which assessment is competency-based, attesting to development of a wide-range of soft, or generic skills, valued by industry, as well as domain specific competencies, and for which learners are expected to provide evidence of attainment, whether attained in the classroom, or elsewhere.

⁶⁵ See for example 'The Melbourne Graduate,' *University of Melbourne*, accessed December, 2016, <http://provost.unimelb.edu.au/teaching-learning/the-melbourne-graduate>.

⁶⁶ See 'What Is a Professional Standards Scheme?,' *Professional Standards Council*, Government of Australia, accessed January, 2017, <http://www.psc.gov.au/consumer-information/what-is-a-scheme>.

⁶⁷ See 'PSA Professional Practice Standards Version 4,' *Pharmaceutical Society of Australia*, accessed October, 2016, <https://www.psa.org.au/practice-support-and-tools/psa-professional-practice-standards>.

⁶⁸ See 'Australian Professional Standards for Teachers,' *Victorian Institute of Teaching*, accessed January, 2017, <http://www.vit.vic.edu.au/media/documents/imported-files/spl/APST-2015-final-A3.pdf>.

⁶⁹ J. Schostaka et al., *Effectiveness of Continuing Professional Development* (London: Federation of Royal Colleges of Physicians, Manchester Metropolitan University, and the College of Emergency Medicine, 2012).

⁷⁰ 'Masters of Professional Practice', *DeakinDigital*, accessed January, 2017, <https://www.deakindigital.com/>

WARRANTING COMPETENCE

Despite their increasing prevalence, significant questions and difficulties remain with instituting micro-credentialing systems. Among the more important issues are ensuring that assessment of what a learner knows and can do is sufficiently robust to warrant trust in a credential, and that high standards of academic integrity apply.

ASSESSMENT METHODOLOGY

A credential is only as trustworthy as the assessment on which it is based. There are well-documented difficulties⁷¹ in conducting valid and reliable assessments of precisely those competencies at which micro-credentials are often targeted – graduate attributes, specific professional competencies, or meta-cognitive skills, of the sort discussed above.

Assessment of competence in these areas requires an approach to assessment than is different from that typically deployed on campuses to assess knowledge and understanding in the cognitive domain. The gold standard for assessment practice in this context requires assessors to devise behavioural criteria for judging performance at each stage of competence for each competency being warranted, preferably reflecting professional or industry standards.⁷² This form of assessment is best thought of as the compilation of evidence required to make an on-balance judgment about where, on a continuum of competence or skill, a person can be placed at a particular point in time. This approach to assessment requires use of a wider range of evidence than is typically used in higher education classrooms.⁷³ While exams and tests can be used, assessments are also usefully based on portfolios of work, peer, industry and self-assessments, assessments generated through simulations, automated assessments, or expert reviews. Assessment tasks should be authentic, so that performance on them enables learners to demonstrate what they know and can do, in realistic contexts. If a course is vocationally oriented, the context might be contemporary practice in firms, industry, or professions. Ideally multiple attempts on assessments would be supported.

This gold standard for assessment – using a range of authentic tasks to generate evidence sufficient to support an on-balance judgment of the degree of competency of a learner at a particular time – has hitherto been impractical, except perhaps in small, face-to face or studio-style classes. Designing and executing such assessments against a range of competencies can place near impossible demands on teachers in large higher education classes, and particularly in distributed digital learning environments. However, new assessment technologies and methods are rapidly emerging, which at least in theory are capable of generating and compiling high-quality evidence about the performance standards of a learner, and supporting on-balance judgment by learners and other stakeholders about competence. Key trends here include:

⁷¹ D. Boud and E. Molloy, 'Rethinking Models of Feedback for Learning: The Challenge of Design,' *Assessment and Evaluation in Higher Education* 38: 6 (2013): 698-712.

⁷² G. Masters, 'Reforming Educational Assessment: Imperatives, Principles and Challenges,' in *Australian Education Review* No. 57 (Melbourne, Australia: Australian Council of Education Research, 2013).

P. Griffin and P. Robertson, 'Judgement-Based Assessment, in *Assessment for Teaching*, Patrick Griffin (ed.) (Port Melbourne: Cambridge University Press, 2014).

⁷³ 'Designing Assessment Tools for Quality Outcomes in VET,' (Perth, Western Australia: Department of Education and Training, 2008).

- Development of digital tools that support assessment and reporting of on-balance judgment about a learner and the degree to which they have attained relevant competence (rather than reporting grades reflective only of academic attainment).
- Development and deployment of applications to support the management of learners' portfolios, mapped to competencies, which allow showcasing of competence.
- Development of better ways to scaffold peer, employer and self-assessment and evaluation. These methods improve reliability of assessment, support peer learning, and develop peer and self-evaluation as core professional competences.⁷⁴
- Deployment of an increasingly diverse range of automated, intelligent digital assessment and feedback tools, targeting advanced skills. The humble multiple-choice quiz, the progenitor of these techniques, is being supplemented by sophisticated tools founded on a range of analytics-based and machine learning techniques, applied to essay writing, programming, computation, physical skill, problem solving, and simulations, to name but a few. A much-discussed test of such tools was the use of a chatbot teaching assistant in a Georgia Institute of Technology Masters of Computer Science course, whose development was underpinned by the machine learning of IBM Watson.⁷⁵ Students in the course were unable to distinguish between the machine-generated responses of the chatbot and those provided by human tutors.
- More generally, data being generated by an assortment of digital tools – surveys, clickstream records from learning platforms, eye-tracking, facial recognition – are being paired with sophisticated measurement analytics to assess complex professional skills, as well as generic skills such as collaboration,⁷⁶ creativity,⁷⁷ and metacognitive skills such as capacity to learn.⁷⁸

It is evident that credentialing of a wider range of competencies requires much more than specifying learning outcomes in smaller chunks. Micro-credentialing that can be trusted to warrant the competence of learners can only proceed in concert with an increasingly sophisticated array of tools and methodologies supporting assessment, feedback, recording, reporting and display of results.

ACADEMIC INTEGRITY

Any credential system risks having trust in it undermined by cheating,⁷⁹ and a challenge for digital micro-credentialing is to manage response to learners who cheat or intentionally manipulate assessments. A US study found that 48 per cent of all graduate students in education, and 45 per cent of graduate students in law admitted

⁷⁴ T. Staubitz et al., 'Improving the Peer Assessment Experience on MOOC Platforms,' in *Proceedings of the Third Annual Learning @ Scale Conference* (Edinburgh, Scotland: ACM, 2016).

⁷⁵ M. Korn, 'Imagine Discovering That Your Teaching Assistant Really Is a Robot. *The Wall Street Journal*, May 16, 2016.

⁷⁶ P. Griffin and E. Care, *Assessment and Teaching of 21st Century Skills: Methods and Approaches*, Vol. 2, Educational Assessment in an Information Age (Dordrecht: Springer, 2015).

⁷⁷ V. Shute and M. Ventura, 'Stelth Assessment: Measuring and Supporting Learning in Video Games,' in *The John D. and Catherine T. MacArthur Foundation Reports on Digital Media and Learning* (Cambridge: MIT, 2013).

⁷⁸ S. K. Milligan and P. Griffin, 'Understanding Learning and Learning Design In moocs: A Measurement-Based Interpretation,' *Journal of Learning Analytics Special Section on Learning Analytics for 21st Century Competencies*, 3:2 (2016).

⁷⁹ TEQSA. *Report on Student Academic Integrity and Allegations of Contract Cheating by University Students* (Canberra, Australian Government, 2015).

to cheating.⁸⁰ Further, the difficulties of preventing cheating and misrepresentation, and verifying what a person knows or can do are arguably more acute in educational environments that rely on digital assessments. In online environments it is harder for providers to detect cheating among students they do not know. Moreover, previous research suggests that the more online tools students are allowed to use to complete an assignment, the more likely they are to copy the work of others.⁸¹

Anti-cheating products and services for digital assessments are now widely marketed. Course organisers can select from a range of remote proctoring services, which monitor students using cameras and microphones, lock down machines, and/or use remote human proctors to observe proceedings. Analytics-based identity verification systems are available which use keystroke pattern recognition software or natural language processing to identify writing signatures or facial or other physical identifiers to confirm the identity of a candidate.

However technology alone is unlikely to provide an entire solution,⁸² and may indeed result in an integrity arms race in which hackers revel in breaking warranting systems. The issue is further complicated by the reality that there are often different integrity requirements for different kinds of work. Collaboration between students can be deemed cheating in some contexts but not in others. For instance, students who share code, or who jointly explored the same themes in a text, are regarded by some teachers as cheats, and by others as skilled collaborators. The types of assessments that can be supported by technological aids to limit cheating – typically timed examinations or structured activities conducted online – are weak forms of assessment for competencies of the kind expected in higher education. One recent study⁸³ identified an unbreachable rift between the goal of authentic assessment (which often entails unsupervised, collaborative, iterative work) and the need for summative assessment of individual effort of the kind easily invigilated and moderated.

The best protections against cheating appear to involve building a culture of integrity, an understanding of acceptable norms of behavior, and a perception by students that their peers are of high integrity. The likelihood of being reported is a disincentive. Cheating is more likely if grading is competitive, and less likely if it is standards-based. It is possible to design open assessment tasks where some forms of cheating (such as looking up reference materials) are irrelevant. While there appears to be great awareness of these issues in this new digital era, few convincing solutions seem to be on offer.

⁸⁰ D. I. McCabe, K. Butterfield, and L. Trevino, 'Academic Dishonesty in Graduate Business Programs: Prevalence, Causes, and Proposed Action,' *The Pennsylvania State University Academy of Management Learning & Education* 5:3 (2006): 294-305

⁸¹ J. A. Roberts and D. M. Wasieleski, 'Moral Reasoning in Computer-Based Task Environments: Exploring the Interplay between Cognitive and Technological Factors on Individuals Propensity to Break Rules,' *Journal of Business Ethics* 110:3 (2012): 355-76.

⁸² P. Dawson, 'Five Ways to Hack and Cheat with Bring-Your-Own-Device Electronic Examinations,' *British Journal of Educational Technology* 47:4 (2016): 592-600.

⁸³ The University of Newcastle Simon, 'Plagiarism and Related Issues in Assessments Not Involving Text: Final Report.,' (Sydney, Australia: Office for Learning and Teaching, Department of Education and Training, 2015).

SUMMARY AND CONCLUSION

Micro-credentials are emerging as a means of certifying attainment of smaller elements of learning than are attested to by a degree. In this chapter, we argue that micro-credentials, combined with modern technological capability, have a utility that degrees and transcripts do not. They provide more detailed, specific and easily communicated information about precisely what learners know and can do. Micro-credentials are being put to a number of uses that are forcing tertiary educational institutions to think carefully about the value of the assessment and credentialing practice and, indeed, how they are enacting this practice.

Stacked micro-credentials are now being used by learners to build a more recognisable award. They are also being used to support new models of acknowledging credit, through recognising prior learning. They can be effectively used by individuals and institutions alike to report on a range of detailed, specific skills or abilities that employers and the community are demanding, and are increasingly seen as required of graduates. Higher education institutions have long-recognised this need but have hitherto found these skills difficult to assess and warrant. Finally, micro-credentials can be applied to standards-based competencies associated with professional practice, supporting a growing world-wide interest in warranting continuing professional development and education.

When aligned with approaches to assessment that allow judgment of competence, as distinct from assessment of knowledge and understanding, digital micro-credentials can be used as valid and reliable assessments of complex competencies, skills and capabilities. The use of new technologies is crucial to support the automation and scaling of assessment with micro-credentials. And while the most robust defense to cheating is to build a culture of integrity, and to base assessments on a range of standards-based evidence, technology is also likely to play a role in the maintenance of academic integrity.

The chapter does not suggest that micro-credentialing portends the future of tertiary credentialing. Nor does it suggest that the ideas and approaches to assessment, reporting, or recognition covered in the chapter are unprecedented or without roots in the familiar practice of tertiary education. What is of interest here is not novelty, but the fact that taken together these ideas represent a coherent strategy for credentialing learning, that responds directly to extant community needs, and emergent challenges to the utility of and trust in the degree. Micro-credentials may stimulate a constellation of changes to university policies and practices, designed to build trust about what students know and can do. The trust derives from re-orienting what is learned, how the learning outcomes are described, how learning is assessed and evidenced and how moderation of standards and academic integrity is assured. It is possible that the time-honoured coupling of teaching and assessment may also be more explicitly being called into question.

While different universities will no doubt embrace micro-credentialing in different ways – and some will spurn it – only a brave tertiary institution will ignore the significance of the debate. University of Melbourne Vice-Chancellor Glyn Davis recently drew⁸⁴ on the case of the organisational disruption of the English monasteries of the 16th Century to point out that the ‘spirit of an age’ can rapidly change what is valued and how things are done. He canvassed the possibility that the spirit of the current age, shaped by digitisation and globalisation, is likely to create new ways of doing things that universities currently do, and that they may be discontinuous with the past and have greater perceived utility and/or lower cost in solving the social, economic and political problems of the day. The present review suggests that methods of assessment and credentialing of learning may represent a case in his larger point.

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⁸⁴ G. Davis ‘Facing the Zeitgeist.’ *Griffith Review*, 52 (2016): 247-258.

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5

ENGAGING UNIVERSITY TEACHERS IN DESIGN THINKING

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ABSTRACT

This chapter explores the concept of design thinking as a means of generating novel educational approaches that respond to the challenges of a rapidly changing higher education environment. We argue that for university teachers the development of design thinking is a matter of enhancing and systemising processes with which they already implicitly engage. We draw on evidence from the scant studies published in this area, together with case studies from the literature to demonstrate how design thinking can provide significant advantage to teachers in dealing with the increasing pressures on contemporary university teaching, particularly in relation to technology. The chapter concludes by considering the current impact of design thinking on teaching practice, the key challenges to its widespread adoption across higher education, and potential solutions to further encourage university teachers to engage in design thinking.

INTRODUCTION

In recent years there have been increasing calls for teachers in higher education to engage in design thinking and processes for teaching.⁸⁵ The growing interest in teaching as design reflects general concerns that traditional teaching practices are unsustainable in a rapidly changing higher education landscape.⁸⁶ For example: as higher education moves from elite to universal, student cohorts have become larger, more diverse, and with differing expectations and needs; declining funding and competing time demands have intensified pressure on teaching staff; criticism from industry has led to higher expectations of graduate quality; and rapid technological changes have added risk and uncertainty to practice.⁸⁷ These changes create

⁸⁵ P. Goodyear, "Teaching as Design," *HERDSA Review of Higher Education 2* (2015): 1–24; S. Bennett, S. Agostinho, and L. Lockyer, "The Process of Designing for Learning: Understanding University Teachers' Design Work," *Educational Technology Research and Development* (2016): 1–21.

⁸⁶ Goodyear, "Teaching," 1–24.

⁸⁷ *Ibid.*

pedagogical and logistical challenges for university teachers that are wicked in nature, as there are no immediate or simple solutions to maintaining quality.⁸⁸

University teachers often rely on tacit knowledge to create learning experiences for their students, rather than attempt to design using a more formalised, systematic approach.⁸⁹ This suggests it is unlikely that evidence from educational research – what we know about how people learn – is guiding their decisions about the type of activities, resources or assessments they implement for students. The argument made by Goodyear is that teachers need ‘evidence-informed, creative, design-based strategies’ in order to create the innovative educational approaches necessary to respond to continual change in higher education.⁹⁰ By making design thinking more explicit to teachers in higher education and equipping them with design skills and knowledge, teachers will be better prepared to systematically develop educational solutions that meet the changing needs of students.

WHAT IS DESIGN THINKING?

Design is a natural human endeavour - an analytic and creative process that has been described as iterative, exploratory and sometimes chaotic.⁹¹ It is the central activity of professions such as architecture and engineering. However, many more professionals are likely to engage in design thinking in their daily work without being aware of it, particularly, doctors and lawyers⁹² and scientists.⁹³ General design can be viewed as a cyclic process composed of a number of steps.⁹⁴ Braha and Reich⁹⁵ describe the design process as beginning with a *problem* to be solved, *analysing* the context of the problem and arriving at a clear definition. The next phase of the process involves *further research*, gathering additional information, including limitations or constraints that need to be taken into consideration. *Brainstorming* or coming up with possible solutions to the problem is the next step in the process. This is usually followed by selection and *development* of a preferred solution (often referred to as a prototype). The prototype is then tested and *evaluated*. Based on feedback gathered during evaluation, *improvements* or adjustments are often made to the prototype. The evaluation and improvement phases of the process are ongoing during development, highlighting the iterative nature of design.

Instructional designers, or professionals who translate learning theory and research into practical applications for the classroom, also use design processes to support their work. For many years the ADDIE model - Analysis, Design, Development, Implementation, and Evaluation - was used by instructional designers to develop multimedia programs.⁹⁶ Although the five phases share a similarity with those described above for the general design process, the model has been criticised

⁸⁸ K. Krause, “Addressing the wicked problem of quality in higher education: Theoretical approaches and implications,” *Higher Education Research & Development* 31, no. 3 (2012): 285-297.

⁸⁹ Bennett, Agostinho and Lockyer, “Designing for Learning,” 1-21.

⁹⁰ Goodyear, “Teaching,” 1-24.

⁹¹ R. Razzouk and V. Shute, “What is design thinking and why is it important?” *Review of Educational Research*, 82, no. 3 (2012): 330-348.

⁹² P. A. Kirschner, “Do we need teachers as designers of technology enhanced learning?” *Instructional Science* 43, no.2 (2015): 309-322

⁹³ Razzouk and Shute, “Design Thinking,” 330-348

⁹⁴ J. Garrett, *Design and Technology* (Cambridge University Press, 1991): 1-320.

⁹⁵ D. Braha and Y. Reich, “Topological structures for modelling engineering design processes,” *Research in Engineering Design* 14 (2003): 185-199.

⁹⁶ R. M. Branch, *Instructional Design: The ADDIE Approach* (New York, NY: Springer Science and Business Media, 2009): 1-203.

because of its linear, non-iterative nature.⁹⁷ Furthermore, there is some debate as to its origins and use as a prescriptive model of what instructional designers should do.⁹⁸ More comprehensive design models have been developed, which detail the steps involved in developing educational programs for the acquisition of complex cognitive skills (see Kirschner and Van Merriënboer⁹⁹). The Ten Steps to Complex Learning¹⁰⁰ is a well-known prescriptive model of what instructional designers should do in developing educational programs for the acquisition of complex cognitive skills. In this model, the ten steps (indicated below in brackets) are aligned with four elements of the educational experience. Part-tasks allow learners to practice reoccurring parts of the whole learning task:

- Learning tasks (1. Design learning tasks, 2. Sequence tasks, 3. Set performance objectives);
- Supportive information (4. Design supportive information, 5. Analyse cognitive strategies, 6. Analyse mental models);
- Procedural information (7. Design procedural information, 8. Analyse cognitive rules, 9. Analyse prerequisite knowledge); and
- Part-task practice (10. Design part-task practice).

Although these types of models are representative of the complex design work performed by instructional designers, evidence suggests that, while related, teachers' design work is different from that of instructional designers.¹⁰¹ Moreover, teachers do not consciously think of their work as design.¹⁰²

The notion that the processes associated with developing and delivering educational experiences can be viewed in relation to design thinking, is a relatively new idea. However, there is a compelling argument that teaching is by its very nature, a design activity. Laurillard¹⁰³ argues that teaching is inherently design work. The goal is to systematically develop instruction towards a specific pedagogical purpose, taking all the elements of the environment into account. The key here is that the process is deliberate and methodical. Goodyear¹⁰⁴ argues that the problem space comprises all the pedagogical elements including the philosophical assumptions that a teacher brings to the setting. Resource and organisational limitations are similarly viewed as elements of the problem space requiring inclusion within a systematic design approach. Design thinking is fundamentally a systematic way of addressing problems and coming up with solutions. Therefore, it is reasonable to consider that the development of design thinking enhances and systematises processes with which university teachers already implicitly engage.

⁹⁷ D. Merrill, *First Principles of Instruction: Identifying and Designing Effective, Efficient and Engaging Instruction* (Hoboken, NJ: Pfeiffer/John Wiley & Sons, 2013): 1-528.

⁹⁸ M. Molenda, "In search of the elusive ADDIE model," *Performance Improvement* 42, no.5 (2003): 34-37.

⁹⁹ P.A. Kirschner and J. Van Merriënboer, "Ten steps to complex learning: a new approach to instruction and instructional design," in *21st century education: a reference handbook*, ed. Thomas Good (Thousand Oaks, CA: Sage, 2008): 244-253.

¹⁰⁰ J. Van Merriënboer and P. A. Kirschner, *Ten Steps to Complex Learning: A Systematic Approach to Four-Component Instructional Design* (Mahwah, NJ: Erlbaum, 2007); Kirschner and Van Merriënboer, "Principles of Instruction," 244-253.

¹⁰¹ A. Hoogveld et al., "Exploring Teachers' Instructional Design Practices from a Systems Design Perspective," *Instructional Science* 30, no. 4 (2002): 291-305.

¹⁰² Bennett, Agostinho and Lockyer, "Designing for Learning," 1-21.

¹⁰³ D. Laurillard, *Teaching as a design science: Building pedagogical patterns for learning and technology* (Abingdon, UK: Routledge, 2012): 1-272.

¹⁰⁴ P. Goodyear, "Educational Design and Networked Learning: Patterns, Pattern Languages and Design Practice," *Australasian Journal of Educational Technology* 21, no.1 (2005): 82-101.

WHY IS DESIGN THINKING IMPORTANT FOR EDUCATIONAL TECHNOLOGIES?

Approaching teaching in higher education using design thinking is particularly important as technology increasingly impacts higher education. The issues associated with the constant evolution of technologies have been well documented. For example, students are increasingly bringing mobile, networked devices onto campus and increasingly using multimedia such as video as part of their learning. Furthermore, the ease of access of information provided by the Internet and the world wide web has generated fundamental questions about university education such as: what is the role of a content expert when content is universally available? And: why would students attend campus when content is available via networked devices at home? These questions are perhaps most poignantly demonstrated in the wake of the worldwide massive open online course (MOOC) phenomenon of the early 2010s. Although in reality they reflect underlying design issues that have been evident for some time.¹⁰⁵ Similar questions are likely to arise as affective and personalised computing and artificial intelligence are poised to impact formal and informal learning.¹⁰⁶

Approaching teaching as a design concept allows for these technologies to be considered and implemented systematically within what is already understood about effective instructional design and pedagogy. This alleviates concerns that technology-enhanced learning could be viewed as a special category compared with other forms of learning.¹⁰⁷ Design thinking therefore serves as a protection against the hype that is often generated as new technologies are introduced and evolve. This protective safeguard is even more effective when design approaches form the foundation of the evaluation of technologies in practice. Educational design research¹⁰⁸ is one example of a systematic implementation and evaluation framework for the incorporation of technologies into teaching practice. The use of these design frameworks enable 'best practice' implementation of new technologies informed by the growing body of evidence on effective educational approaches. If technologies are to be maximally beneficial to students, an evolution of what is already known about quality higher education is required. Design thinking will be particularly important to ensure this evolution.

WHAT DOES RESEARCH TELL US ABOUT THE DESIGN THINKING OF UNIVERSITY TEACHERS?

Few studies have specifically investigated the processes that university teachers go through to design learning experiences for their students. We do know, however, that university teachers have a good deal of freedom in deciding what and how to teach¹⁰⁹, that they utilise both student/learning and teacher/content approaches in planning¹¹⁰,

¹⁰⁵ T. Bates, "MOOCs: getting to know you better," *Distance Education* 35, no.2 (2014): 145–148.

¹⁰⁶ J. M. Lodge and J. C. Horvath, "Science of learning and digital learning environments," in *From the laboratory to the classroom: Translating learning sciences for teachers*, eds. Jared Cooney Horvath, Jason M. Lodge, & John Hattie (New York: Routledge, 2017): 122–135.

¹⁰⁷ P. Kirschner, "Do We Need Teachers as Designers of Technology Enhanced Learning?" *Instructional Science* 42 (2015): 309–322.

¹⁰⁸ S. McKenney, S and T. C. Reeves, "Educational design research," in *Handbook of Research on Educational Communications & Technology*, eds. M. Spector, D. Merrill, J. Elen and M.J. Bishop (London: Springer, 2014): 131–140.

¹⁰⁹ S. Bennett et al., "Understanding the Design Context for Australian University Teachers: Implications for the Future of Learning Design," *Learning, Media and Technology* 36, no.2 (2011): 151–167.

¹¹⁰ L. Postareff and S. Lindblom-Ylänne, "Variation in teachers' descriptions of teaching: broadening the understanding of teaching in higher education", *Learning and Instruction* 8, no.2 (2008): 109–120.

that they may be influenced by disciplinary, institutional or student cohort factors¹¹¹, and that they often rely on their colleagues for support and inspiration.¹¹²

A recent study of 30 teachers from a range of Australian universities found that when designing a new unit, or re-designing an existing unit, participants used a non-systematic cyclic design process that often began with broad considerations derived from either a learning-outcomes or a content-scope perspective.¹¹³ Once the broad framework is in place, teachers then turn their attention to specific details, such as developing learning activities, selecting readings, creating resources, and determining the timing and requirements of assessment. The teachers in the study reported that they worked iteratively to achieve alignment between specific elements of the design (i.e. learning outcomes, content, activities, assessment) and that this process could occur before, during and after implementation of a unit. However, the study did not identify clear disciplinary differences amongst the design activities of study participants, nor did participants report using systematic representations or models to guide their design activities.¹¹⁴

To further demonstrate how some university teachers have applied explicit design thinking to enhance various aspects of their teaching practice, three case studies are presented below that draw on published accounts from the literature.

CASE A: DIGITAL INK TOOL IN A LECTURE

An example of how explicit design thinking has been used to enhance a lecture is provided by Venema, Drew and Lodge.¹¹⁵ In this instance, peer review of teaching was used to address a specific pedagogical problem experienced by a university teacher in the context of a large first year lecture in computer science. The issue was concerned with the difficulty in incorporating and capturing handwritten elements of a lecture session. The room in which the lecture was being conducted had large whiteboards installed within it. The room also had an overhead projector allowing for handwritten content to be projected. Neither of these options was deemed optimal for the following reasons. The content being presented (e.g. how to convert base ten numbers to binary) required extensive working for students to make sense of it. Writing on the whiteboard meant that the lecture was less engaging as the lecturer spent a substantial proportion of the session with his back to the students and talking into the whiteboard. Although the overhead projector alleviated this to a degree, the handwritten aspects were difficult to capture using this method and students could therefore not review or revise the material at a later time.

The lecture was reviewed using a common approach to peer review developed by Drew and Klopper.¹¹⁶ In this model, both a content expert and 'learning and teaching' expert are called upon to engage in a developmental review of a particular element of the reviewee's practice (in this case, the lecture). As part of this review, the issue

¹¹¹ J. Stark, "Planning Introductory College Courses: Content, Context and Form," *Instructional Science* 28, no.5 (2000): 413-438.

¹¹² Bennett et al., "Understanding Design Context," 151-167; Postareff and Lindblom-Ylänne, "Teachers' descriptions of teaching," 109-120; Stark, "Planning college courses," 413-438.

¹¹³ Bennett, Agostinho and Lockyer, "Designing for Learning," 1-21.

¹¹⁴ Bennett, Agostinho and Lockyer, "Designing for Learning," 1-21.

¹¹⁵ S. Venema, S. Drew and J M. Lodge, "Peer observation as a collaborative vehicle for innovation in incorporating educational technology into teaching: A case study," in *Teaching for learning and learning for teaching: cases in context of peer review of teaching in Higher Education*, eds. Christopher Klopper and Steve Drew (Rotterdam: Sense Publishers, 2015), 209-226.

¹¹⁶ S. Drew and C. Klopper, "PRO-Teaching – Sharing Ideas to Develop Capabilities," *World Academy of Science, Engineering and Technology* 78 (2013): 1739-1747.

of the handwritten elements of the session were identified and discussed. The issue was treated as a specific design problem and analysed systematically through a design lens. As a result of this analysis, several possible solutions were developed and trialled through an educational design research approach. A 'digital ink' tool was implemented in the lecture allowing the lecturer to draw handwritten material directly into a slideware (i.e. Microsoft PowerPoint) presentation while continuing to face the class. The handwritten material was also captured by the lecture capture software to allow students to revise the material in their own time.¹¹⁷ What is evident in this example is that, through a collaborative design approach, a solution was developed that may otherwise not have been considered had the situation not been analysed through the lens of design thinking.

CASE B: ONLINE LEARNING RESOURCE TO PREPARE FOR AN INTERACTIVE SESSION

Another example in which explicit design thinking was used was in the development and implementation of active learning strategies for students in a flipped classroom model. The strategies were designed for students during individual out-of-class preparation and for in-class application of knowledge of newly gained knowledge.¹¹⁸ In this case, the content expert responsible for teaching the biomedical subject wished to move away from a traditional didactic style of delivery to one that was more engaging for students and could potentially improve their performance (see Freeman et al.¹¹⁹; Jensen, Kummer and Goday¹²⁰). After reviewing a number of potential options to support students' individual preparation, including the use of lecture recordings and video, the authors decided to develop a bespoke online resource that began with a quiz. They hypothesised that the quiz would serve a dual purpose; firstly, the questions might trigger student interest to search for and find answers as they progressed through the resource, and secondly, the student cohort's performance on the quiz could be used to inform the design of subsequent in-class activities.

In this case, design consideration was also given to the teacher-facilitated session. Again, a number of potential options to support students' in-class application of newly gained knowledge were reviewed (e.g. discussions, debates, role-play, student presentations, audience response to clicker questions – see DeLozier and Rhodes¹²¹). Since the biomedical subject being taught had clinical relevance, it was decided that a Q&A format centred on discussions of real-life clinical scenarios offered the best solution to demonstrate the clinical relevance (and case-based nature) of the topic. Following implementation, both the online resource and subsequent interactive session with the content expert were evaluated. Feedback was sought from students on the usefulness of the online resource for preparation and on the usefulness of the interactive session for learning about clinical application, which will be used as a basis for further improvements and refinements.¹²²

¹¹⁷ S. Venema and J. M. Lodge, "Capturing Dynamic Presentation: Using Technology to Enhance the Chalk and the Talk," *Australasian Journal of Educational Technology* 29, no.1 (2013): 20-31.

¹¹⁸ K. Elliott, and K. Winkel, "Learning gains in a flipped classroom to teach the principles of envenomation," in *Show me the learning*, eds. S. Barker, S. Dawson, A. Pardo & C. Colvin (Adelaide: Proceedings ASCILITE 2016, 2016), 215-224.

¹¹⁹ S. Freeman et al., "Active learning increases student performance in science, engineering, and mathematics," *Proceedings of the National Academy of Sciences* 111, no.23 (2014): 8410-8415.

¹²⁰ J. L. Jensen, T. A. Kummer and P. D. D. M. Godoy, "Improvements from a Flipped Classroom May Simply be the Fruits of Active Learning," *CBE – Life Sciences Education* 14, no.1 (2015): 1-12.

¹²¹ S. J. DeLozier and M. G. Rhodes, "Flipped classrooms: a review of key ideas and recommendations for practice," *Educational Psychology Review* (2016): 1-11, (Online ahead of print).

¹²² Elliott and Winkel, "Learning gains in a flipped classroom," 215-224.

CASE C: ONLINE INQUIRY PROJECTS IN AN INTEGRATED CURRICULUM

The third example of explicit design thinking shows its application in the development and implementation of online inquiry projects to enhance bioscience students' understanding and appreciation of scientific inquiry.¹²³ This case set out to address the problem that students have in grasping the concept of scientific inquiry as a process that advances scientific knowledge.¹²⁴ Without this understanding, students often struggle to recognise how to develop scientific questions, and design and perform investigations that will provide data from which they can draw conclusions about their research questions. Instead, they rely heavily on direction from teachers or recipe-style laboratory manuals to guide investigations.

In this case, the authors purposefully examined learning theories to identify those that were more likely to achieve the aforementioned objectives, when applied in practice. They were particularly interested in approaches that modeled the construction of meaning in such a way that knowledge acquisition proceeds from a declarative to a procedural form.¹²⁵ That is, as performance reaches the level of an expert, component skills become automatic. Problem Based Learning (PBL) was identified as one such approach where repeated practice of a well-defined process (e.g. the problem solving process) improves learners' ability to perform the skill.¹²⁶ The authors of this case, proposed that by formalising the scientific inquiry process, making explicit the different stages of the process, and with repeated practice, students would develop a better understanding of the process, and be better equipped to conduct scientific inquiry.

Inquiry-based learning (IBL) was another pedagogy that was taken into account when designing the online projects in this case. Inquiry learning has been described as an approach that imitates real world inquiry.¹²⁷ By allowing students to participate in processes of scientific inquiry it is thought that they will come to understand the skills, values and attitudes of scientists during scientific endeavor. While different forms of IBL have been described in the literature they all share the common element of being question- or problem-driven.¹²⁸ In this case, IBL and PBL informed the design of real-life projects with students taking on the role of professional scientist (e.g. hospital pathologist, forensic scientist, viticulturist). In these roles, students were guided through a series of investigations in order to resolve authentic problems related to biochemistry.¹²⁹ In this way, students repeatedly see a model of how experts plan, organise and conduct an investigation – albeit a simplified version.

¹²³ K. A. Elliott, K. Sweeney and H.R. Irving, "A Learning Design to Teach Scientific Inquiry," in *Handbook of Research on Learning Design and Learning Objects: Issues, Applications and Technologies*, eds. L. Lockyer, S. Bennett, S. Agostinho and B. Harper (Hershey, Pennsylvania: Idea Group Inc, 2009): 652-675.

¹²⁴ N. G. Lederman, J. S. Lederman and A. Antink, "Nature of Science and Scientific Inquiry as Contexts for the Learning of Science and Achievement of Scientific Literacy," *International Journal of Education in Mathematics, Science and Technology* 1, no.3 (2013): 138-147.

¹²⁵ J. Anderson, ed., *Rules of the Mind* (Hillsdale, NJ: Lawrence, 1993): 1-320.

¹²⁶ W. Hung, W. D.H. Jonassen and R. Liu, "Problem-based learning," in *Handbook of research on educational communications and technology*, eds. M. Spector, J. Van Merriënboer, D. Merrill and M. P. Driscoll (Mahwah, NJ: Erlbaum, 2008): 485-506; H. Schmidt, "A review of the evidence: effects of problem-based learning on students and graduates of Maastricht Medical school," in *Lessons from Problem-Based Learning*, eds. H. van Berkel, A. Scherpbier, H. Hillen, & C. van der Vleuten (Oxford, UK: Oxford University Press, 2010): 227-241.

¹²⁷ T. De Jong, "Technological advances in inquiry learning," *Science* 312 (2006): 532-533.

¹²⁸ A. Aditomo et al., "Inquiry-Based Learning in Higher Education: Principal Forms, Educational Objectives, and Disciplinary Variations," *Studies in Higher Education* 38, no.9 (2013): 1239-1258.

¹²⁹ Elliott, Sweeney and Irving, "Learning Design," 652-675.

Another design consideration in this case was the learning environment for the inquiry projects. The laboratory has been the traditional setting for the teaching of scientific inquiry. However, strong evidence suggests that laboratory work may be more beneficial for the learning of technical skills (e.g. manipulation of equipment and materials) and practical capabilities (e.g. report writing) rather than for conceptual understanding of the scientific inquiry process.¹³⁰ On the other hand, there is a long history of the use of digital environments to engage students in scientific inquiry activities. The benefits of using digital environments for scientific inquiry activities include the fact that investigations can be simplified or ‘scaled down’ to a level that is manageable for novices, support tools can be integrated into the environment to help students gather, organise, visualise and interpret data, and scaffolding can be provided to support students through the inquiry process.¹³¹ This evidence prompted the authors of this case to create the inquiry projects in an online environment.

This case of design thinking clearly illustrates each stage of the design process. Firstly, there was a clear problem that the authors were trying to address – students’ difficulty in conceptualising scientific inquiry as a process that advances scientific knowledge, despite regular sessions in the laboratory. Next, the authors entered an intense phase of information gathering about potential pedagogical approaches, tasks, resources, supports, and learning environments that could be utilised to help students achieve the objective of developing an understanding and appreciation of the processes of scientific inquiry. This information was analysed and synthesised into a proposed learning design, which detailed the pedagogical approaches to be used, the tasks that students were to perform, the resources to help students complete tasks, and the expected learning outcomes. The resulting learning design was then used as a template to develop five online inquiry projects that were integrated into the curriculum. Further adaptations and refinement of the inquiry projects were made using an iterative design process, informed by feedback from content experts, educational designers and students.¹³²

HOW DO UNIVERSITY TEACHERS APPLY DESIGN THINKING?

Each case described above demonstrates how university teachers have applied design thinking at different levels of practice, and with varying degrees of complexity. The first case, shows the application of design thinking to a single learning event – a lecture. The implementation of a ‘digital ink’ tool within the lecture resolved the problem of incorporating and capturing handwritten elements, while allowing the lecturer to maintain face-to-face interaction with the class. The second case also shows design thinking being applied to a single learning event – a face-to face session. However, it is more complex than the first because in addition to the in-class activities it also considers the design of out-of-class resources and activities that students will use to prepare for the interactive, face-to face session.

¹³⁰ A. Hofstein and R. Mamlok-Naaman, “The Laboratory in Science Education: the State of Art,” *Chemistry Education Research and Practice* 8, no.2 (2007): 105-107.

¹³¹ De Jong, “Inquiry learning,” 532-533.

¹³² Elliott, Sweeney and Irving, “Learning Design,” 652-675.

The third case is the most complex, showing the application of design thinking across multiple levels of practice. Firstly, design thinking informed the development of five online inquiry projects, including: the type of tasks that students were expected to perform within the inquiry projects; the resources that would be available to help students complete tasks; and the supports (e.g. expert hints, feedback) that would be provided to students at different stages of the inquiry process. Design thinking was also applied at the level of the unit curriculum, enabling multiple inquiry projects to be integrated with other curriculum components during the semester long unit. This meant that when a particular topic was being covered in lectures or laboratory sessions, a dedicated computer session was scheduled for students to complete the relevant inquiry project.

IS DESIGN THINKING WIDESPREAD IN HIGHER EDUCATION?

Despite the growing chorus of theorists and researchers extolling the virtues of a design approach to teaching in higher education, there is yet to be a widespread impact on practice. Fraser and Bosanquet highlight that there are broad issues of related to engaging academics across disciplinary areas in thinking deeply about curriculum.¹³³ This observation is supported by research showing that even though university teachers have the flexibility in their practice to engage in deliberate design,¹³⁴ they tend to rely on intuitive notions of good practice over any real expertise in pedagogy or design for learning.¹³⁵ Examining these findings using Kreber's notions of excellent, expert and scholarly practice, it would seem that although there are undoubtedly many excellent teachers in universities, there are few relying explicitly on expertise in design and less who are engaged in scholarly design.¹³⁶

Design thinking and design approaches to teaching provide significant advantages in dealing with the complexity of a changing higher education environment. However, it is not straightforward to embed design as a foundational approach to curriculum development. For university teachers outside the design-based disciplines like architecture and engineering, design thinking requires a fundamental shift that moves them beyond their own disciplinary way of being. If the benefits of teaching as design are to be realised in higher education, a rethink is required of the ways in which curricula are developed. It may be that a collaborative approach to designing units, assessment items and learning activities, is a more viable option than individual or small team-work. The rise of 'third space' professionals such as instructional designers and curriculum consultants suggest that some inroads have already been made towards a collaborative approach. However, the impact of this infiltration is still the topic of debate.¹³⁷

¹³³ S. P. Fraser and A. M. Bosanquet, "The Curriculum? That's Just a Unit Outline, Isn't It?" *Studies in Higher Education* 31, no.3 (2006): 269–284.

¹³⁴ Bennett et al., "Understanding Design Context," 151-167.

¹³⁵ Bennett, Agostinho and Lockyer, "Designing for Learning," 1-21.

¹³⁶ C. Kreber, "Teaching Excellence, Teaching Expertise, and the Scholarship of Teaching," *Innovative Higher Education* 27, no.1 (2002): 5–23.

¹³⁷ C. Whitchurch, *Reconstructing Identities in Higher Education: The Rise of 'Third Space' Professionals* (Abingdon, UK: Routledge, 2012): 1-184.

CONCLUSION

This chapter has demonstrated that design thinking and design approaches to teaching can provide significant advantages in dealing with the complexity of a changing higher education environment. The case studies illustrate that there are benefits to be reaped if academics are prepared to invest time in the knowledge acquisition and skill building required to teach by design. While it is not straightforward to embed design as a foundational approach to curriculum development, engaging professionals such as instructional designers and curriculum consultants in the design process may provide university teachers with a collaborative solution to the challenge of design thinking for teaching.

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6

ANALYTICS OF WHAT? NEGOTIATING THE SEDUCTION OF BIG DATA AND LEARNING ANALYTICS

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ABSTRACT

In this chapter we focus specifically on the development and impact of the emerging field of learning analytics – the analysis of student-based data to improve learning and learning environments – and discuss how it, and big data, can be used to address educational problems. We consider the current state of play in learning analytics research and development and examine why big data and learning analytics are seductive. This is followed by a consideration of some of the main challenges facing institutions in harnessing big data and implementing learning analytics and the recommendation that the key focus needs to be on *learning*. We conclude by suggesting that while big data and analytics have come a fair distance in a short period of time, they still have a way to go. Refocussing research, development and policy on how big data and learning analytics can be used to genuinely support productive student learning processes is one way of negotiating the path ahead.

INTRODUCTION

The increasing use of educational technology in tertiary education has resulted in the generation of large amounts of data about students' activities and interactions with learning resources. The administrative and learning systems now routinely employed by tertiary education providers, such as student administration systems, library systems and learning management systems generate prodigious amounts of data. The mere existence of the data has prompted both educators and university leaders to actively consider how such data can be used to inform a range of activities including monitoring infrastructure usage, provision of more individualised student support, and enhancing students' learning experiences.

However, the seduction of access to such large data sets can distract educators from the realities and complexities of creating meaning and actionable understanding from these data sets. While the potential of "big data" is well recognised, fundamental challenges for institutions remain in finding ways in which data can be captured,

analysed and reported so they can usefully inform educational practice. A persistent, gnawing question remains for the areas of big data and analytics in tertiary education: if big data is the answer, what is the question?

THE RISE OF LEARNING ANALYTICS

Learning analytics is defined by the Society for Research in Learning Analytics (SoLAR) as “the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimising learning and the environments in which it occurs.”¹³⁸ An early focus of research and development in this area was student retention, with a particular emphasis on predicting when students were likely to drop out or fail based on metrics including student demographic, engagement and performance. Systems such as Purdue University’s Course Signals¹³⁹, the University of New England’s Automated Wellness Engine,¹⁴⁰ and the Marist College-led Open Academic Analytics Initiative¹⁴¹ are examples of predictive analytics systems aimed at early identification of students who are “at risk” in order to target appropriate interventions. These systems are generally based on metrics seen as important to particular institutions and their cohorts, which can mean that the metrics adopted vary between institutions. While initial evaluation of these types of systems have reported successful outcomes, greater evaluation of the indicators that inform retention systems and their impact over time are needed.¹⁴²

Alongside the development of predictive retention systems emerged learning analytics systems that visualise metrics of access and time spent on online learning resources. Commonly presented in the form of a dashboard, these systems are mostly designed for use by teachers and faculty administrators to monitor the use of particular resources and/or infrastructure to inform decision-making about resource allocation and development. Learning management system (LMS) vendors have also begun to offer analytics dashboards as part of their products (e.g. Blackboard Analytics, D2L Brightspace Insights) allowing teachers and administrators to view visualisations of key access and performance data for individual subjects or across degree programs.

In addition to these two primary uses, an often touted yet somewhat unrealised role for learning analytics in higher education is to enable the provision of better feedback to students on their learning. In recent years there has been a slight shift away from the provision of teacher-focussed dashboards and reports, towards the development of ways to represent data that is aimed directly at students, providing them with feedback on their learning progress. An example of this is the Learning Analytics Dashboard (LAD) which is designed to visualise students’ patterns of behaviour in a virtual learning environment.¹⁴³ Similarly, the Student Activity Meter (SAM) was developed to visualise the time spent on tasks in the LMS.¹⁴⁴ Carnegie

¹³⁸ “About SoLAR,” *Society for Research in Learning Analytics*, <http://www.solaresearch.org/mission/about>.

¹³⁹ K. E. Arnold and M. D. Pistilli, “Course signals at Purdue: using learning analytics to increase student success,” In *Proceedings of the 2nd international conference on learning analytics and knowledge*, (ACM, 2012): 267-270.

¹⁴⁰ A. Atif et al., “A Panorama of Learning Analytics Featuring the Technologies for the Learning and Teaching Domain,” In *Proceedings of the 30th Australasian Society for Computers in Learning in Tertiary Education Conference*, (2013): 68-72.

¹⁴¹ S. M. Jayaprakash et al., “Early Alert of Academically At-Risk Students: An Open Source Analytics Initiative,” *Journal of Learning Analytics* 1 (2014): 6-47.

¹⁴² D. Gašević, S. Dawson, and G. Siemens, “Let’s not forget: Learning analytics are about learning,” *TechTrends* 59:1 (2015): 69.

¹⁴³ Y. Park and I. Jo, “Development of the Learning Analytics Dashboard to Support Students’ Learning Performance,” *J. UCS* 21:1 (2015): 110-133.

¹⁴⁴ S. Govaerts et al., “The student activity meter for awareness and self-reflection,” In *CHI’12 Extended Abstracts on Human Factors in Computing Systems*, (ACM, 2012): 869-884.

Mellon University developed the Open Learning Initiative (OLI) dashboard that allows students to measure progress towards course goals and assessments¹⁴⁵. While many have considered the potential benefits to student learning of feedback dashboards and reports,¹⁴⁶ this has also been countered by concerns over the ability of students to adequately interpret this feedback in ways that allow them to improve their approaches to study.¹⁴⁷

More recently these types of initiatives, namely, predictive retention analytics, dashboards on learning resource access, and student feedback analytics on learning progress, have been combined by institutions to provide whole-of-institution approaches to learning analytics. A number of institutions have implemented a broad suite of analytics solutions in the hope of creating a strong culture of evidence-based decision-making. For example, the Open University in the UK has developed the *Analytics4Action Evaluation Framework*,¹⁴⁸ which outlines six key steps to guide the learning analytics intervention process: (i) review key learning analytic metrics; (ii) implement response actions; (iii) determine protocols; (iv) analyse and evaluate outcomes; (v) share evidence; and (vi) build strategic insight. This framework sits alongside the university's learning analytics system *OU Analyse*¹⁴⁹ and other related learning design systems. The six specific steps associated with *Analytics4Action Evaluation Framework* are illuminating as they, in many ways, succinctly characterise the deep sense of promise that combining big data and meaningful analytics holds for education providers.

Finally, in addition to the development and implementation of broader, institution-wide analytics solutions, smaller boutique applications have emerged that focus on a particular learning activity, skill or tool. For example, the Collaborative Lecture Annotation System (CLAS) enables students to interact and collaborate with peers on the annotation of video lectures to identify key information.¹⁵⁰ The analytics in this system assist teachers to evaluate how well they have communicated important concepts in their lectures. Similarly, the nStudy system collects analytics about students' interactions with learning resources such as highlighting, notes and tagging, with the view to understanding and supporting metacognition.¹⁵¹ These tools enable both teachers and researchers to examine student learning at a finer level of detail to inform educational interventions and learning activity design.

THE SEDUCTION OF 'BIG DATA'

The increased interest in learning analytics over the last five years has been to a great extent predicated on the existence and idea of "big data." While in one sense big data refers to the sheer volume of data collected or stored by digital systems on

¹⁴⁵ A. Dollár and P. S. Steif, "Web-based statics course with learning dashboard for instructors," In *Proceedings of computers and advanced technology in education*. (2012): doi: 10.2316/P.2012.774-025.

¹⁴⁶ K. Verbert et al., "Dataset-Driven Research to Support Learning and Knowledge Analytics," *Educational Technology & Society* 15:3 (2012): 133-148.

¹⁴⁷ L. Corrin and P. de Barba, "Exploring students' interpretation of feedback delivered through learning analytics dashboards," In *Rhetoric and Reality: Critical perspectives on educational technology. Proceedings ascilite Dunedin 2014*, (2014): 629-633.

¹⁴⁸ B. Rienties et al., "Analytics4Action Evaluation Framework: A Review of Evidence-Based Learning Analytics Interventions at the Open University UK," *Journal of Interactive Media in Education*, no. 1 (2016): doi: http://doi.org/10.5334/jime.394.

¹⁴⁹ J. Kuzilek et al., "OU Analyse: analysing at-risk students at The Open University," *Learning Analytics Review* (2015): 1-16.

¹⁵⁰ E. F. Risko et al., "The collaborative lecture annotation system (CLAS): A new TOOL for distributed learning," *IEEE Transactions on Learning Technologies* 6:1 (2013): 4-13.

¹⁵¹ Z. Marzouk, M. Rakovic and P. Winne, "Generating Learning Analytics to Improve Learners' Metacognitive Skills Using nStudy Trace Data and the ICAP Framework," *LAL@ LAK* (2016): 11-16.

users' interactions,¹⁵² Daniel points out that big data also refers to an "emergent suite of technologies that can process mass volumes of data of various types at faster speeds than ever before."¹⁵³ Following other industries (notably business, banking, e-commerce, and marketing) the education sector and individual institutions soon recognised that the digital systems they employed as part of their infrastructure for administration and management on the one hand, and teaching, learning and assessment on the other, routinely collected significant amounts of data on the interactions of their community of users. University leaders, administrators, educators and researchers all recognised they were sitting on something of an unexplored goldmine. And like any good gold rush, big data was terribly seductive. All universities had to do was harvest and mine data *that was already there in the system!* The landscape was vast and there were many places to start digging, yet that was part of the attraction. By carefully selecting the right site and the right tools and technologies, universities would surely soon see some value from such comprehensive data sets.

Aside from fact that the data was already automatically being collected (meaning few if any additional resources were required), two further elements contributed to the seduction of big data. First was the perceived ability of big data to reveal new, otherwise indecipherable, insights about educational institutions, their operation, education and student learning. Big data, if diligently and appropriately harnessed, had the ability to reveal emergent properties of complex institutions, providing new insights and ultimately a competitive advantage. An OECD report from 2013 suggested that big data could provide the leverage for higher education to reinvent itself and promote more successful educational outcomes.¹⁵⁴

Second was the belief that big data represented an objective measure of what was happening in educational institutions. The clickstreams of student interactions with administrative and learning systems did not lie. Big data was seen, in many ways, as the resolution of what had plagued educational research and evaluation for years: subjective measurement. With these new data sets administrators and researchers could get "true" insight into students' interactions with educational institutions. The measures associated with big data were unobtrusive and they were not burdened by difficulties of response bias or social desirability, perennial criticisms of the traditional tools of educational research and evaluation (e.g. surveys and interviews). The fact that the data sets were enormous by most educational standards only provided the added advantage of validity and generalisability.

Yet, care must be taken to ensure that an obsession with big data doesn't obscure the true value of data in higher education. As Boyd and Crawford observe, the 'mythology' around the belief that big data can "offer a higher form of intelligence and knowledge that can generate insights that were previously impossible" is overly optimistic.¹⁵⁵ If only it were that simple. Instead, acknowledgement of the social and educational assumptions inherent in the data, the methods of collection and the

¹⁵² J. Manyika et al., "Big data: The next frontier for innovation, competition, and productivity." (McKinsey Global Institute, 2016), http://www.mckinsey.com/Insights/MGI/Research/Technology_and_Innovation/Big_data_The_next_frontier_for_innovation

¹⁵³ B. Daniel, "Big Data and analytics in higher education: Opportunities and challenges," *British Journal of Educational Technology* 46:5 (2015): 908.

¹⁵⁴ OECD, *The State of Higher Education 2013*. (OECD, 2013), <http://www.oecd.org/edu/imhe/thestateofhighereducation2013.htm>

¹⁵⁵ D. Boyd and K. Crawford, "Critical questions for big data: Provocations for a cultural, technological, and scholarly phenomenon," *Information, Communication & Society* 15:5 (2012): 663.

techniques applied in analysis must be made in order for big data to be meaningful and useful.¹⁵⁶ Although deeply seductive, the big data and learning analytics movement faces significant challenges.

THE CHALLENGES OF BIG DATA AND LEARNING ANALYTICS

The first of these challenges is volume. These data are usually stored in a complex format, not allowing easy access and interpretation by educators and researchers.¹⁵⁷ Big data is difficult to handle. While the sheer amount of data is clearly a boon in one respect, when managing, parsing, selecting, cleaning, linking, analysing, visualising and reporting data – that is, learning analytics – the volume of data at the disposal of institutions presents difficulties. These data are recorded in a variety of formats across and within systems that are often incompatible due to different data structures. Also, there is an expectation that big data is available in real time across different systems. Douglas¹⁵⁸ referred to these dimensions as the three V's of big data: volume, variety and velocity. So while there is no doubt that the fact the data exist or are “just there” poised for analysis is certainly attractive, the notion that this analysis will be straightforward or easy is misplaced. Big data on its own can easily fall short on delivering useful information to researchers and educators if not curated appropriately.¹⁵⁹

A second and related challenge is that, with so much data, institutions may find it difficult to determine priorities. In their foundational paper on learning and academic analytics, Long and Siemens¹⁶⁰ outline a range of ways big data could be utilised by educational institutions. Again, while this diverse utility is on the surface a clear positive, it can create difficulties when determining institutional priorities and associated resource allocation. Ultimately institutional choices should be determined by what questions are being asked of the data (“*If big data is the answer, what is the question?*”). As with any complex institution, these are not uncontested decisions and unless resources are committed to a whole-of-institution approach, the outcomes of the decision have significant implications. Some institutions may prioritise using learning analytics to determine students who are at risk of dropping out. Others may focus on providing students with supporting evidence for their subject selections and course pathways. Others may seek to provide feedback to students on their approaches to learning. Others still may seek evidence from analytics about resource usage and return on investment. These decisions set the “analytics tone” of the institution and determine what data from the goldmine is of value and where and how deep to dig.

In addition to these two more procedural concerns, a fundamental challenge faced by learning analytics and big data fields is meaning making. That is, how the clicks and downloads, the pauses and fast forwards, the page-views and access counts, can be reasonably interpreted and given meaning. Much of the big data that is the stuff

¹⁵⁶ N. Selwyn, “Data entry: Towards the critical study of digital data and education.” *Learning, Media and Technology* 40:1 (2015): 64-82.

¹⁵⁷ Verbert et al., “Dataset-Driven Research to Support Learning and Knowledge Analytics,” 133-148.

¹⁵⁸ L. Douglas, “3d data management: Controlling data volume, velocity and variety,” Gartner, (2001): <https://blogs.gartner.com/doug-laney/files/2012/01/ad949-3D-Data-Management-Controlling-Data-Volume-Velocity-and-Variety.pdf>

¹⁵⁹ D. C. Gibson and D. Ifenthaler, “Preparing the Next Generation of Education Researchers for Big Data in Higher Education,” In *Big Data and Learning Analytics in Higher Education*, ed. B. K. Daniel (Springer International Publishing, 2017): 29-42.

¹⁶⁰ P. Long and G. Siemens, “Penetrating the Fog: Analytics in Learning and Education,” *EDUCAUSE Review* 46:5 (2011): 30.

of learning analytics captures users' – typically students – *behavioural* interactions with administrative and learning systems. While these data can sometimes be an indication of students' thinking or their learning or cognitive processes – e.g. text-based comments on a discussion board – typically these data are devoid of this cognitive element. And this is where the difficulty of data interpretation lies, as Kennedy and Judd suggested:

“Students' movements within programs, their access to its sections, the sequence of their behaviour and the time they spend completing tasks are all devoid of an intrinsically cognitive component. It is this type of audit trail data that researchers and evaluators have particular trouble interpreting, primarily because a single behaviour or action or sequence of behaviours or actions may be indicative of an array of different intentions, processes and outcomes.”¹⁶¹

Given this, there is a significant interpretation “overhead” whereby administrators and researchers need to divine the cognitive element: the intent, motivation and thinking behind the students' action and interaction. This exercise of “sense-making” is difficult and cannot be underestimated. Unequivocal interpretations are hard to come by.

A further difficulty is that learning systems such as enterprise teaching and learning systems (e.g. Blackboard, Moodle, Echo360, Turnitin) can be configured in different ways which creates difficulty with data interpretation (see Corrin and colleagues¹⁶²). For example, staff may reasonably choose different ways to provide students with the same resources (such as lecture recordings or discussion forums) within an LMS. This variation may mean that, depending on the individual lecturers' configuration of their LMS subject or unit, different data about students' interactions within the system will be returned. From a learning analytics perspective this creates significant validity issues with large data sets unless the potential for this idiosyncratic variation is accounted for.

A persistent challenge of learning analytics in its brief history is avoiding a technocentric view of the world. There is a tendency in some of the commentary and conversations about big data and learning analytics to give the impression that if we get the technology settings right – the data, the tools and the analytics – then we will solve the teaching, learning and assessment problems we face, or at least come to understand them significantly better. This of course can be the case – we *can* use big data and analytics to shed light on the issues we face in tertiary education. However, we must also continually remind ourselves that many of the learning interactions between staff and students and much of our students' learning experiences exist *outside* the administrative and learning systems of universities, which are the foundation of big data and learning analytics.¹⁶³

Finally, an often mentioned, but largely unresolved challenge of the use of big data and learning analytics is in the area of privacy and ethics. The use of big data and learning analytics in higher education raises new issues related to data ownership

¹⁶¹ G. E. Kennedy and T. S. Judd, “Making Sense of Audit Trail Data,” *Australasian Journal of Educational Technology* 20:1 (2004): 19

¹⁶² L. Corrin et al., “Completing the Loop: Returning Meaningful Learning Analytics Data to Teachers,” (Sydney: Australian Office for Learning and Teaching, 2016).

¹⁶³ G. Veletsianos, J. Reich and L. A. Pasquini, “The Life Between Big Data Log Events: Learners' Strategies to Overcome Challenges in MOOCs,” *AERA Open* 2: 3 (2016): 1-10.

and ethical use of data.¹⁶⁴ A system-wide adoption of learning analytics should consider students' awareness and consent¹⁶⁵ as well as the ethical implications of how we design analytics algorithms¹⁶⁶ and when and how we intervene.¹⁶⁷ One example of good practice is giving students the option to self-manage their data, by either opting in or out.¹⁶⁸ Approaches to addressing ethical issues need deep and thorough examination to avoid Slade and Prinsloo's prediction that the use of learning analytics in higher education will inevitably "reflect and perpetuate current biases and prejudices."¹⁶⁹ These issues represent an ongoing conversation within the higher education community, and are expected to rapidly mature over the next few years.

ANALYTICS OF WHAT?

As the role of big data and learning analytics in higher education becomes more extensive, the focus must return to the consideration of what questions we ask of the data and the contextual factors that influence data interpretation. When it comes to genuine considerations of student learning using learning analytics, meaning making is easier when the analytics work is framed with strong educational or learning theory. Only through understanding the learning theory and pedagogical intent behind learning activities can comparisons of expectations of student performance and behaviour with actual practice be made. To do this it is necessary to consider the intersection of learning design, learning analytics and the learning process. As Gasevic, Dawson and Siemens¹⁷⁰ suggest, there needs to be fundamental learning theories behind learning analytics so that the focus while managing the data can be on how to better support learning.

In the higher education landscape, despite all the models, approaches, frameworks, systems, taxonomies and protocols, there is still a sense that learning and academic analytics, while filled with great potential, has not yet had widespread or deep impact. Examples of good practice in individual and institutional learning analytics are emerging, but there is a long way to go. In the Australian context, recent national projects commissioned by the Australian Office for Learning and Teaching found that the systematic use of learning analytics in Australian universities is impoverished and limited.^{171,172} Currently institutional analytics initiatives tend to focus predominantly on students at risk and other administrative concerns; there is a limited focus on student learning.

¹⁶⁴ H. Drachsler and W. Greller, "The pulse of learning analytics understandings and expectations from the stakeholders," In *Proceedings of the 2nd international conference on learning analytics and knowledge*, (ACM, 2012): 120-129; H. Drachsler and W. Greller, "Privacy and analytics: it's a DELICATE issue a checklist for trusted learning analytics," In *Proceedings of the Sixth International Conference on Learning Analytics & Knowledge*, (ACM, 2016): 89-98.

¹⁶⁵ N. Sclater, *JISC Code of Practice for Learning Analytics*, 4 June (2015): https://www.jisc.ac.uk/sites/default/files/jd0040_code_of_practice_for_learning_analytics_190515_v1.pdf

¹⁶⁶ B. Mittelstadt et al., "The ethics of algorithms: Mapping the debate," *Big Data & Society* 3:2, (2016): doi: 10.1177/2053951716679679.

¹⁶⁷ V. Scholes, "The ethics of using learning analytics to categorize students on risk," *Educational Technology Research and Development* 64: 5 (2016): 939-955.

¹⁶⁸ P. Prinsloo and S. Slade, "Student privacy self-management: implications for learning analytics," In *Proceedings of the Fifth International Conference on Learning Analytics And Knowledge*, (ACM, 2015): 83-92.

¹⁶⁹ S. Slade and P. Prinsloo, "Learning analytics ethical issues and dilemmas," *American Behavioral Scientist* 57:10 (2013): 1517.

¹⁷⁰ Gasevic, Dawson and Siemens, "Let's not forget: Learning analytics are about learning," 64.

¹⁷¹ C. Colvin et al., "Student retention and learning analytics: A snapshot of Australian practices and a framework for advancement," (Sydney: Australian Office for Learning and Teaching, 2015).

¹⁷² D. West et al., "Learning analytics: Assisting universities with student retention," (Sydney: Australian Office for Learning and Teaching, 2015).

We need to continue to move the focus of learning analytics towards learning, and in saying this, we refer not so much to learning outcomes, but to learning processes. This echoes the suggestion of Gasevic, Dawson & Siemens who advocated for a “move from static prediction of a single academic outcome, to more sustainable and replicable insights into the learning process.”¹⁷³ Such an understanding can lead to the fulfilment of the often-advertised promise of learning analytics, namely adaptive and personalised learning. However, a key challenge in personalising learning in automated ways is the need to define and then measure appropriate learning-related constructs that will facilitate an individualised and meaningful learning experience for students.¹⁷⁴

A greater emphasis on “learning” constructs and “learning” questions is needed to harness the true value of big data and learning analytics to help students and teachers. Projects and tools that position learning as a central driver for analytics are emerging. The Loop Tool¹⁷⁵ is designed to encourage teachers to articulate their learning design in order to identify pertinent data and analytics. The data is then visualised in meaningful ways to help teachers develop appropriate actions to support learning. Other projects have focused on elements such as the understanding of student higher order learning in Massive Open Online Courses (MOOCs).¹⁷⁶ An emphasis on giving feedback to students on their learning strategies is the focus of the OnTask project (<https://www.ontasklearning.org/>) which gathers data about student activities in learning systems and tools across a semester. The data is analysed and presented in ways that can help teachers to customise and deliver feedback to students in a timely manner. A key feature of these projects is the intersection of big data and learning analytics with learning design in order to understand and support students’ learning processes. This intersection, in combination with strong theoretical framing, also assists to tackle, although not completely resolve, fundamental questions about intent, motivation and cognition.

CONCLUSION

Big data and learning analytics are seductive... and with good reason, given the potential impact on a range of areas of tertiary practice. But in this chapter we have argued that getting learning analytics right is challenging for a range of reasons. Higher education institutions and individuals who want to use learning analytics need to be mindful of and address these fundamental challenges at a strategy and policy level, as well as from a practical and technical perspective.

In addition, the fundamental starting point when it comes to institutional or individual activity in the area of learning analytics is asking appropriate questions of big data. University leaders, administrators, educators and researchers need to be challenged to ask: the analytics of what? The types of learning and academic analytics we pursue as institutions and individuals will flow from this. We advocate that among these questions, those that specifically target student learning – a fundamental and

¹⁷³ Gasevic, Dawson and Siemens, “Let’s not forget: Learning analytics are about learning,” 66.

¹⁷⁴ R. Baker, “Using learning analytics in personalized learning.” *Handbook on personalized learning for states, districts, and schools*. Philadelphia, PA: Center on Innovations in Learning (2016): 165-174.

¹⁷⁵ Corrin et al., “Completing the Loop: Returning Meaningful Learning Analytics Data to Teachers”.

¹⁷⁶ S. K. Milligan and P. Griffin, “Understanding Learning and Learning Design in MOOCs: A Measurement-Based Interpretation,” *Journal of Learning Analytics* 3:2 (2016): 88-115.

often stated promise of learning analytics – are given appropriate priority. Driving the policy, research and development agenda in this direction will help us go some way in negotiating the seduction of big data and learning analytics.

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7

ADVANCING EQUITY IN THE AUSTRALIAN HIGHER EDUCATION SYSTEM

MATT BRETT & ANDREW HARVEY

ABSTRACT

This chapter highlights the origins and importance of Australian student equity policy, and the need for greater integration of equity within mainstream higher education policy. Student equity was a founding commitment among Australian universities, and this commitment has been supported by broader government legislation and policy. Most notably, both the Dawkins and Bradley reforms sought dual objectives of an increase in enrolment growth and greater student equity. The objective to expand the sector has been met, and student equity has improved under the growth facilitated by the Unified National System and the subsequent demand-driven system. Nevertheless, many groups remain under-represented within Australian universities, and equity remains marginal to higher education policy. The paper argues for the need to mainstream student equity within policy, metrics and evaluation. New approaches could include a re-conceptualisation of equity that responds to patterns of participation across disciplines, provider types and course levels. Improved metrics for learning and graduate outcomes are also required. As Australia approaches universal levels of participation, equity will need to be positioned and measured as a fundamental property of quality.

CONTEXT: A BRIEF HISTORY OF AUSTRALIAN HIGHER EDUCATION EQUITY POLICY

Australian higher education is deeply rooted within community egalitarian aspirations. Unlike the English and American systems, Australia's higher education system was formed at a time when secular, egalitarian, and socially mobile aspirations were aligned with the mission of universities, as exemplified by the University of Sydney's founding legislation¹⁷⁷ that sought the *'better advancement of religion and morality and the promotion of useful knowledge to hold forth to all classes and denominations'*. While the espoused principle of accessibility to 'all classes' has never been realised (the first Indigenous person to graduate from an Australian university was not until 1966¹⁷⁸), equally, the ideal has never been abandoned. Today, the enabling legislation of most Australian universities includes an overt commitment to equity.

¹⁷⁷ University of Sydney Act 1850, accessed 5 October, 2016, http://www.foundingdocs.gov.au/resources/transcripts/nsw10_doc_1850.pdf

¹⁷⁸ Aboriginal and Torres Strait Islander Participation, University of Sydney, accessed 5 October, 2016, <http://sydney.edu.au/about-us/vision-and-values/aboriginal-and-torres-strait-islander-participation.html>

Institutional commitments to student equity have been complemented by various legislative and policy frameworks adopted by governments over time, including by university financing, with the Higher Education Support Act¹⁷⁹ (HESA) highlighting the need for a higher education system “characterised by quality, diversity and equity of access”. However, most influential to equity policy today were the Dawkins reforms of the late 1980s and early 1990s, and the Gillard reforms of the late 2000s and early 2010s. Both reform movements sought to expand the higher education sector and to improve student equity, and both were premised on the basis that growth and equity were separate but related objectives. Understanding these two major reform periods is crucial to understanding existing policy settings and their potential for improvement, particularly in supporting student equity.

DAWKINS AND EQUITY

The Dawkins reforms collapsed the binary higher education system and established the Unified National System. Collectively, the reforms facilitated policy trends that still dominate Australian higher education today¹⁸⁰, particularly the concentration of higher education activity in public universities. Equity was a central consideration in Dawkins’ policy design. Higher education expansion served as a safety net to support Australia’s adjustment to microeconomic reforms that dismantled protectionism and opened the Australian economy to global competition. Expansion would involve greater participation from those underrepresented in higher education and allow workers displaced by microeconomic reform to be retrained. Australia’s income contingent loan scheme (the Higher Education Contribution Scheme, HECS) was introduced at this time to ensure that the reintroduction of tuition fees – the mechanism by which expansion could be financed – would not be a barrier to participation.

The broad policy priority given to equity is exemplified by the publication of ‘A Fair Chance For All.’¹⁸¹ This policy document affirmed the groups whose participation would be prioritised, described barriers to participation experienced by these groups, and articulated a range of systemic and institutional interventions to ensure that higher education would be more representative of the broader population. The document stipulates:

A Fair Chance for All sets out for the first time a coherent set of national objectives, targets and strategies for ensuring that the benefits of higher education are within everyone’s reach.¹⁸²

The impact and legacy of ‘A Fair Chance For All’ was substantial, although student equity was undermined by sub-optimal resourcing and variable policy commitment over time.¹⁸³ The framework established in ‘A Fair Chance For All’ was multi-dimensional and included dedicated funding for equity, as well as a requirement that universities commit to equity plans. These plans focused the attention of universities on matters of equity, but as time progressed became less relevant and faded in public prominence. Triennium Equity Plans at one point could be found

¹⁷⁹ Higher Education Support Act 2003, accessed 5 October, 2016, <https://www.legislation.gov.au/Details/C2016C00379>

¹⁸⁰ G. Croucher, S. Marginson, A. Norton, and J. Wells, eds., *The Dawkins revolution: 25 years on*. (Carlton: Melbourne University Publishing, 2013).

¹⁸¹ Department of Education, Employment & Training. *A Fair Chance for All: national and institutional planning for equity in higher education* (Canberra: Australian Government Publishing Service, 1990).

¹⁸² *ibid* p 5

¹⁸³ A. Harvey, C. Burnheim and M. Brett, eds., *Student Equity in Australian Higher Education* (Singapore: Springer, 2016).

on university library shelves and outlined university strategies in progressing the objectives of A Fair Chance For All¹⁸⁴, but transformed over time into more opaque template reports submitted to Canberra with limited public visibility. Notwithstanding variable prominence for equity planning, 'A Fair Chance For All' at least catalysed the capability to track system equity performance through the establishment of Equity and General Performance Indicators.

BRADLEY AND EQUITY

The Unified National System underpinned significant system expansion, but the rate of expansion remained subject to government control. The next most influential change to higher education equity policy arose from the Review of Australian Higher Education (the Bradley Review).¹⁸⁶ The Review, and subsequent Government reforms, aimed to promote both growth and equity within higher education. Growth was to be achieved by uncapping places, providing eligible students with an entitlement to a government subsidised place. The so-called 'demand-driven system' would reduce the role of government in place allocation and place greater power in the hands of students to choose their course and institution. Growth in the sector would again be achieved partly by enrolling a greater proportion of historically underrepresented student groups in higher education and a 20 per cent participation rate target was set for students from the lowest quartile of socioeconomic status (SES) background. The Review panellists acknowledged the challenges of recruitment and learning support associated with underrepresentation, and recommended a target of 4 per cent of total grants for teaching to be allocated on equity grounds.¹⁸⁷

The Government adopted many but not all of the recommendations of the Bradley Review.¹⁸⁸ To achieve growth objectives, the demand driven funding system was introduced, along with a target of 40 per cent bachelor degree attainment among people aged 25-34 years old by 2025. While believing that much of the enrolment growth would stem from traditionally underrepresented groups, the Government nevertheless committed to additional equity targets and measures. In particular, the recommended 20 per cent target for low SES students was adopted, and measures such as the Higher Education Participation and Partnership Program (HEPPP) were introduced to help the sector meet this specific objective. The resulting equity policy architecture included institutionally negotiated social inclusion targets and reward funding, and a ten-fold increase in dedicated equity funding. HEPPP provided institutions with additional funding for outreach and support, allocated on the basis of institutional share of undergraduate students from low socioeconomic status backgrounds. Support for regional delivery of higher education was increased through a bolstered regional loading. Indigenous participation support was also increased and refocused. Meanwhile, and despite recommendations for a major boost, disability support increased only as a result of annual indexation.

¹⁸⁴ Department of Employment, Education and Training, *Equity in higher education: a summary report: institutional equity plans 1992-94 triennium, an informational paper*. (Canberra: Australian Government Publishing Service, 1993); Department of Education, Training and Youth Affairs, *Higher education equity plans for the 1999-2001 triennium, Australia* (Canberra: Department of Education, Training and Youth Affairs, Higher Education Division. Australian Government Publishing Service, 1999).

¹⁸⁵ L. Martin, *Equity and General Performance Indicators in Higher Education: Equity indicators; v. 1*. (Canberra: Australian Government Publishing Service, 1994)

¹⁸⁶ D. Bradley et al., *Review of Australian higher education: final report* (Canberra: Department of Education, Employment and Workplace Relations, 2008): 15-17.

¹⁸⁷ *Ibid*, page xxiii

¹⁸⁸ Department of Education, Employment, and Workplace Relations. *Transforming Australia's Higher Education System*. (Canberra: Commonwealth of Australia, 2009).

The Bradley reforms triggered rapid expansion in the system, but also coincided with the global financial crisis. Government's diminishing capacity to absorb increasing higher education costs saw social inclusion targets and reward funding abolished. The anticipated uplift in aggregate equity and HEPPP specific funding was never fully realised, and the partnership element of HEPPP was dropped to focus on higher education participation. Nevertheless, while the equity agenda outlined in the Bradley Review and Government response was not introduced in full, nor sustained over the longer term, its development had a significant impact on participation rates. The persistently stable participation rate for students from low socioeconomic status backgrounds was finally disrupted. The average low SES participation rate from 1997 to 2011 was 15.0 per cent, but exceeded 16.0 per cent for the first time in 2012, and is now close to 17 per cent on the most recent available data.¹⁸⁹ Access rates for low SES students are now above 18 per cent.¹⁹⁰

While the impact of the demand-driven system, HEPPP and related policies on low SES participation is clear, the effect on other identified equity groups is less clear. Success of low SES focused policy architecture has not translated into improved outcomes for the other large equity category, regional students, where participation rates remain stable. Rising patterns of participation for women in non-traditional areas¹⁹¹ and students with disabilities¹⁹² are positive, but can be primarily attributed to broad social trends and non-higher education focused policy reforms. Indigenous student participation is also increasing, and remains an important area of policy focus.¹⁹³ Debate continues about the importance of the non-English speaking background (NESB) indicator, with strong participation rates masking broader problems in university achievement and graduate outcomes.¹⁹⁴

CONSEQUENCES OF EXPANSION

The demand-driven system has led to a rapid increase in overall student enrolments, with the higher education sector growing by 30 per cent since the Bradley Review.¹⁹⁵ Demand for higher education continues to grow as Australia continues its transition to a high skill, services-centric economy. Labour market demand for graduates continues to grow; the annual percentage growth in employment for those without a degree from 2007 to 2015 was 0.23 per cent, compared with 4.87 per cent for those with a degree.¹⁹⁶ For younger Australians aged between 20 and 24, the value of a degree is also clear. Over the same period, annual employment growth was a meagre 0.08 per cent for those without a degree compared with 2.78 per cent for those with a degree. The differential rate of employment growth represents increasing demand in the labour market for those with a higher education qualification.

¹⁸⁹ Department of Education and Training, *Higher Education Statistics, Student Data various years*, accessed October 4, 2016, <https://www.education.gov.au/student-data>

¹⁹⁰ Department of Education and Training. *Custom data. Selected Higher Education Statistics*. Canberra: Department of Education and Training, 2015.

¹⁹¹ S. Bell. "Ivory towers and glass ceilings: Women in non-traditional fields." In *Student Equity in Australian Higher Education* (Singapore: Springer, 2016): 109-124.

¹⁹² M. Brett. "Disability and Australian higher education: Policy drivers for increasing participation." In *Student Equity in Australian Higher Education* (Singapore: Springer, 2016): 87-108.

¹⁹³ L. Behrendt, S. Larkin, R. Griew and P. Kelly. *Review of higher education access and outcomes for Aboriginal and Torres Strait Islander people: Final report*, 2012

¹⁹⁴ Mestan, K. and A. Harvey. "The higher education continuum: access, achievement and outcomes among students from non-English speaking backgrounds." *Higher Education Review* 46:2 (2014): 61-80.

¹⁹⁵ Department of Education and Training. *uCube – Higher education statistics*. Canberra: Department of Education and Training, 2016. <http://highereducationstatistics.education.gov.au/Help.aspx>

¹⁹⁶ Cadence Economics, *The Graduate Effect: Higher Education Spillovers to The Australian Workforce*. Report for Universities Australia. May 2016. Canberra: Cadence Economics, 2016.

Lagging indicators provide strong evidence that graduates generally perform well, no matter the awarding institution or equity status of the graduate, although disciplinary differences are deterministic of just how well graduates fare.¹⁹⁷ One can be less definitive about the future, and much is made of the impact of globalisation and digital disruption on the future of higher education¹⁹⁸. However, in the short to medium term, there is little doubt that holding a traditional higher education degree will continue to be of substantial financial benefit to the vast majority of graduates.¹⁹⁹

The ‘graduate effect’ will sustain aggregate demand for higher education, and drive greater participation in the upper tiers of the Australian Qualification Framework, at the postgraduate and doctoral levels. The underlying drivers of increasing demand for higher education were described by Martin Trow (1973),²⁰⁰ and this account remains a powerful explanation of global expansion in higher education systems.²⁰¹ Those groups that do not participate in higher education will face distinct challenges to finding and sustaining employment. Higher education participation will also be increasingly normalised as a social expectation. For groups that do participate in higher education, there will be pressure to pursue higher qualifications to remain distinctive among the expanding crowd of graduates. The continuing graduate effect and rise of ‘credential inflation’²⁰² are partly behind the surge in postgraduate enrolments since the creation of the Unified National System (and evident in other higher education systems²⁰³), with postgraduates now representing around one quarter of total Australian enrolments.²⁰⁴

Critics of the demand-driven system argue that quality is being undermined by the institutional race to enrol students.²⁰⁵ The demand-driven system has opened university doors to more low SES and under-represented students, but also to more students with relatively low prior educational achievement, who are at higher risk of attrition (Department of Education and Training, 2015c). The celerity of change and decline in retention among some cohorts has led some commentators to bemoan the loss of quality. At its extreme, these concerns are exemplified by questions posed by the Executive Director of the Menzies Research Centre:

Should the government be subsidising third-rate courses in third-rate universities from which four out of 10 students are likely to drop out?²⁰⁶

Philosophical concerns are often aligned with more pragmatic concerns about the impact of the demand-driven system upon the federal budget. Expenditure on

¹⁹⁷ Wilkins, R. “The Household, Income and Labour Dynamics in Australia Survey: Selected Findings from Waves 1 to 12.” *Melbourne Institute of Applied Economic and Social Research*, The University of Melbourne, 2015.

¹⁹⁸ Tierney, W. G. “Higher education research, policy, and the challenges of reform.” *Studies in Higher Education* 39:8 (2014): 1417-1427; J. Bokor, *University of the Future* (Ernst and Young, 2012).

¹⁹⁹ A. Norton. *Graduate Winners: Assessing the public and private benefits of higher education*. Melbourne: Grattan Institute, 2012.

²⁰⁰ M. Trow. “Problems in the Transition from Elite to Mass Higher Education.” (Berkeley: Carnegie Commission of Higher Education, 1973).

²⁰¹ Marginson, S. “High Participation Systems of Higher Education.” *The Journal of Higher Education*, 87:2 (2016): 243-271; Marginson, S. *The Dream Is Over. The Crisis of Clark Kerr’s California Idea of Higher Education*. (California: University of California Press, 2016).

²⁰² H. Cuervo, and J. Wyn. “An unspoken crisis: the ‘scarring effects’ of the complex nexus between education and work on two generations of young Australians.” *International Journal of Lifelong Education*, 35: 2 (2016): 122-135, DOI: 10.1080/02601370.2016.1164467

²⁰³ A. L. Støren, and J. Wiers-Jenssen. “Transition from higher education to work: are master graduates increasingly over-educated for their jobs?” *Tertiary Education and Management* 22:2 (2016): 134-148, DOI: 10.1080/13583883.2016.1174290

²⁰⁴ uCube

²⁰⁵ O. Faruqi, “Focus on quantity unfair to students,” *The Australian*, 3 February, 2016.

²⁰⁶ N. Cater, “Utopian university entrance plans fail poorer students,” *The Australian*, 1 March, 2016.

higher education has risen by 59 per cent since 2009,²⁰⁷ and budget constraint may prove to be an elixir for those who see the sector as too large or ideologically driven around student equity. Certainly, there is the potential for the current review of higher education, 'Driving Innovation Fairness and Excellence in Australian Higher Education' (2016) to lead to a reduction in specific commitments to student equity. Treasury and Finance officials remain legitimately concerned with structural Commonwealth deficits, and in a political context where savings are sought and major structural reform appears elusive, programs such as HEPPP are vulnerable since funding can be reduced without changes to legislation. Nevertheless, the demand-driven system, HEPPP, and A Fair Chance for All currently maintain bipartisan support, and it is noteworthy that the extant student equity framework has survived for 25 years under a variety of governments across the political spectrum.

Indeed, the survival of the student equity framework reflects broad political acknowledgement that student equity is necessary not only for reasons of social justice, but for economic growth and prosperity. Not to participate in higher education increases the risk of consignment to an underclass excluded from the labour market. Similarly, to participate in higher education but not complete or progress to higher levels of qualification increases the risk of being excluded from more secure and higher paying work. Given that characteristics such as gender, race, ethnicity, Indigeneity, disability and place of upbringing correlate strongly with levels of access to, and success in, higher education, there will be a continuing public interest in the social composition of higher education. Broader research from the US is also demonstrating the need for socially diverse universities to strengthen quality and prepare graduates for real world experiences.

Despite bipartisan commitment to supporting equity at a high level, ideological differences remain in relation to the extent equity should be actively promoted. Inequity remains deep and structural in Australian society, and there is increasing recognition that the existence of legislative equality is insufficient to secure equity of university access and participation among different groups. In some Australian states the underlying logic of anti-discrimination has shifted from equality of opportunity to substantive equality.²⁰⁹ Providing formal equality at law is thus deemed a necessary but insufficient condition to improve student equity. As participation becomes normalised, and the pathway to secure higher wage employment becomes more competitive, equity policy frameworks will need to be strengthened to redress deep, structural inequities that extend beyond the higher education sector. The social and economic outcomes between various graduate cohorts will become as important as patterns of participation within the higher education system.

WHERE EQUITY FITS IN HIGHER EDUCATION POLICY

The current equity policy paradigm is often perceived in terms of narrow funding streams like HEPPP, but is multi-dimensional and involves a complex array of institutional self-regulation and monitoring practices, and government regulation and financing policy instruments.

²⁰⁷ Department of Education and Training. *Driving Innovation Fairness and Excellence in Australian Higher Education*. Canberra: Department of Education and Training, 2016.

²⁰⁸ J. F. Milem, M. J. Chang and A. L. Antonio. *Making diversity work on campus: A research-based perspective* (Washington, DC: Association American Colleges and Universities, 2005).

²⁰⁹ Forsyth, A. "The (human) right to equality: sweeping changes to equal opportunity legislation recognise that the human right to equality is as important as equality of opportunity." *Law Institute Journal*, 85: 10 (2011): 36.

To operate as a higher education provider, an institution needs to be registered with the Tertiary Education Quality and Standards Agency (TEQSA), which requires compliance with the Higher Education Standards Framework (Threshold Standards). The 2011 Standards²¹⁰ are largely silent on matters of student equity and diversity, but require providers to routinely monitor and act on the comparative performance of student cohorts across indicators such as attrition. In 2017 the sector will transition to comply with the 2015 Standards Framework²¹¹ that is more explicit about student diversity and equity.

Consistent with principles of institutional autonomy, institutional equity focus will be self-determined and monitored. This autonomy raises questions about the degree to which Australian universities will align their equity endeavour with national policy objectives and public expectations. Some alignment with policy and public expectation is inescapable. The Australian higher education system is dominated by the public university, which enrolls over 90 per cent of students.²¹² Universities derive over 90 per cent of their teaching revenue from the Government.²¹³ Equity is at the heart of higher education financing through the income contingent loan scheme, and access to Commonwealth support through HECS-HELP or FEE-HELP is a critical driver of participation.

The financing of equity in higher education includes both base funding for the teaching of students from equity groups, and funding for specific equity programs. In 2014, around half of all undergraduate students in higher education were members of at least one equity group.²¹⁴ By extension, around half of the \$11.7 billion²¹⁵ currently invested by the Commonwealth in higher education goes towards the participation of students from equity groups. This is predominantly expended through the Commonwealth Grant and Loan schemes, but also includes outlays on equity specific programs such as the Regional Loading (\$71 million in 2016/17), Higher Education Participation and Partnership Program (\$146 million 2016/17), and Disability Support Program (\$7.3 million 2016/17)²¹⁶. Additional Commonwealth expenditure is also made through means-tested scholarships and student income support.

Australia's higher education policy architecture embeds consideration of equity from regulatory frameworks, performance monitoring, macro financing, and tagged funding targeted at specific equity cohorts. The impact of these equity policies against underlying policy objectives is mixed. Consistent with an expanding sector, the enrolment of students across all equity groups is increasing.²¹⁷ However, participation ratios (participation relative to population reference values) highlight increasing and decreasing ratios of participation by group (Table 1).

²¹⁰ Higher Education Standards Framework (Threshold Standards) 2011, accessed 4 October, 2016, www.legislation.gov.au/Details/F2013C00169

²¹¹ Higher Education Standards Framework (Threshold Standards) 2015, accessed 4 October, 2016 www.legislation.gov.au/Details/F2015L01639

²¹² Tertiary Education Quality and Standards Agency. "Statistics Report on TEQSA Registered Higher Education Providers". 2016.

²¹³ F. P. Larkins and I. Marshman. *Domestic Student Load and Financing Trends for the Deregulated Demand-Driven Australian Universities System: A Comparative Analysis of the Period 2004 to 2009 with 2009 to 2014*. LH Martin Institute, University of Melbourne, 2016.

²¹⁴ Department of Education and Training. *Custom data. Selected Higher Education Statistics*. Canberra: Department of Education and Training, 2015.

²¹⁵ Commonwealth of Australia. Portfolio Budget Statements 2016–17. Budget Related Paper No. 1.5. Education and Training Portfolio. Budget Initiatives and Explanations of Appropriations Specified by Outcomes and Programs by Entity. 2016.

²¹⁶ Portfolio Budget Statements. 2016

²¹⁷ P. Koshy. *Student Equity Performance in Australian Higher Education: 2007 to 2012*. National Centre for Student Equity in Higher Education (NCSEHE), Perth: Curtin University, 2014.

Table 1: Selected Equity Group Participation Ratios 2011-2015

	PARTICIPATION RATE 2015	PARTICIPATION RATIO				
		2011	2012	2013	2014	2015
Low SES All ages (2011 Postcode) ▲	16.61%	0.43	0.45	0.46	0.47	0.48
Regional (ASGS) ▼	19.62%	0.70	0.70	0.69	0.68	0.68
Remote (ASGS)	0.89%	0.39	0.38	0.38	0.38	0.38
Disability ▲	5.84%	0.53	0.57	0.60	0.60	0.63
Indigenous ▼	1.59%	0.61	0.61	0.60	0.52	0.53

Source: Higher Education Statistics, Student Data, 2015

Defining equity performance in these terms highlights both the enduring utility of the higher education equity indicator framework, but also the limitations of over-reliance on participation-based indicators. These headline indicators do little to highlight institutional stratification of the sector, the emerging importance of online education, the relevance of field of study and course choice, rising significance of graduate study, nor insights into the graduate outcomes across equity groups. A deeper dive into the higher education data collection can provide a richer account of these important considerations, but analysis of this type is more bespoke than routine and can run the risk of missing the bigger picture policy objectives. Investment in new transparency measures such as Quality Indicators for Learning and Teaching (QILT)²¹⁸ forms part of this bigger picture, but QILT makes no attempt to position equity as a relevant factor in performance.

As the higher education system continues to expand and evolve, policy makers could consider whether the higher education sector:

- has a composition reflective of the society from which it draws;
- delivers the assumed benefits it confers to graduates;
- is financed in ways that can be absorbed by the taxpayer and individual participants;
- is fulfilling the public service obligations consistent with high levels of public investment.

In examining these questions, there is clearly scope for reform to Australian higher education equity policy. Participation ratios demonstrate significant under-representation. Recent graduates are finding it harder to gain a foothold in the labour market, and some groups such as those with profound disability are effectively excluded from the labour market. Recent analysis highlights real concerns with the financial sustainability of the higher education loan program.²¹⁹ Some universities would appear to be strategically drawn towards international engagement and global

²¹⁸ Quality Indicators for Learning and Teaching, accessed 4 October, 2016, www.qilt.edu.au

²¹⁹ Parliamentary Budget Office. *Higher Education Loan Program: Impact on the Budget Report No 02.21016*. Commonwealth of Australia, 2016.

prominence at the expense of investment in equitable participation of domestic students. These realities of the Australian higher education system are partly a function of the existing equity framework. If we are to advance equity in Australian higher education a different approach is warranted.

RENEWAL OF AUSTRALIAN HIGHER EDUCATION EQUITY POLICY

Common parlance on achieving major policy reform is that one would ideally ‘not start from here’. Nonetheless, it is here that we find ourselves with all the path dependencies and complexities of contemporary Australian higher education, and it is from here that we must find ways to achieve the effective renewal of Australian equity policy.

The new Threshold Standards 2015²²⁰ provide a useful starting point for reform as standards on diversity and equity provide much freedom for institutions to describe their equity priorities. There is scope within higher education regulation and financing to set clearer parameters on how these standards could be met. Opt-in guidelines are likely to be more palatable than onerous reporting requirements given the policy directions set by reviews of higher education regulation²²¹ and reporting.²²² It is likely that institutions will describe their equity priorities in ways that are aligned with the longstanding equity paradigm and performance indicator framework, although there is a body of work emerging that advocates for the refinement of this paradigm.²²³ The temptation in recalibrating these equity frameworks is to reflect underlying system complexity by utilising more data and more indicators. The strength of the existing framework, however, is in part due to its simplicity and mobilising catalytic function.²²⁴ The policy challenge will be aligning the equity paradigm with a more complex and diverse sector whilst maintaining clarity and focus.

A key consideration in any update should be how the reality of student engagement with the system, which involves multiple entry and exit points, can be accommodated in national and institutional performance indicators. To illustrate, existing measures such as retention are calculated in ways that inflate attrition rates for students whose entry, exit and re-entry to the system is non-linear, and who spend a year or more outside the sector. The existing focus on home postcode for low SES and regional cohorts can also mask important issues of social mobility across the higher education student cycle. The Commonwealth Higher Education Student Support Number (CHESSN) provides a potentially underutilised mechanism for tracking equity across time, rather than reporting an imperfect snapshot of current residential circumstance. As with recent analysis of welfare recipients across time²²⁵ there may be opportunities to link higher education data sets to other indicators of social outcomes

²²⁰ Higher Education Standards Framework (Threshold Standards) 2015

²²¹ K. L. Dow and V. Braithwaite. *Review of higher education regulation report*. Canberra: Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education, 2013.

²²² PhilipsKPA. *Review of Reporting Requirements for Universities: Final Report*. December, 2012.

²²³ Australian Institute of Health and Welfare. “Towards a performance measurement framework for equity in higher education”. Cat. no. IHW 129. Canberra: AIHW, 2014; Pitman, T. and P. Koshy. *A Framework for Measuring Equity Performance in Australian Higher Education, Draft Framework Document V1.6*. National Centre Student Equity in Higher Education. Curtin University, 2014; A. Harvey et al. *Towards a fairer chance*.

²²⁴ L. Martin, “Framing the Framework: The Origins of A Fair Chance For All,” in *Student Equity in Australian Higher Education*, A. Harvey, C. Burnheim and M. Brett, eds., (Singapore: Springer, 2016): 21-38

²²⁵ Department of Human Services, *Valuation Report*. 30 June 2015. *Baseline Valuation. Final Report 2016*. Pricewaterhouse Coopers. Department of Social Services, 2016.

to better evaluate and target interventions. Effort is already underway to better align Department of Education and Training data with Australian Taxation Office data to inform more nuanced evaluation of the Higher Education Loan Program.²²⁶ This opens opportunities to explore the relevance of equity characteristics in labour market outcomes post participation in higher education.

University equity plans could also be published and shared across the sector, along with more robust evaluation of their impact. Australian university strategic plans and annual reports were more likely to include specific equity priorities and performance indicators after the release of the Bradley Review of Australian Higher Education and Transforming Australian Higher Education. This correlation suggests that the right combination of policy drivers can cultivate university focus on student equity and be exploited within the transition to the 2015 Threshold Standards.

The Threshold Standards may provide a focal point for student equity, but significant progress is unlikely to be achieved without some constellation of financial incentives. These incentives could recognise the powerful driver of base funding for teaching as well as the important facilitating role of tagged program funding. As the Government embarks on consultation around higher education financing and undertakes another review of patterns of institutional income and expenditure across disciplines and funding clusters, there is an opportunity to fully integrate equity within base funding mechanisms. Universities may be more responsive to the billions of dollars in government outlays for base funding than the millions of dollars currently tagged for equity support, providing that clear accountability for equity outcomes is part of any reform to base funding arrangements. There are also lessons that can be taken from the UK experience in higher education financing, where institutional tuition fee pricing above specified thresholds is linked to negotiated access agreements, and further fee increases will be linked to teaching and learning performance standards.²²⁷ The net impact of recent and proposed reforms on student equity remains highly contested, but the UK example suggests that financing mechanisms that embed equity as a design feature are possible.

Quality in the demand driven funding system is increasingly seen as a determinant of student choice through the operation of the competitive market model. There are, however, limits to the effective functioning of the market model, with supply concentrated in a small number of providers at a fixed price. The pathways for new entrants and potential substitutes are complex and governed by rules influenced by existing suppliers. Notwithstanding the limitations of the competitive model in higher education, a market based place allocation model remains in place. Recent investment in QILT seeks to provide students with better information to inform their decision making and optimise the functioning of the market.

There are opportunities to integrate equity considerations within QILT, to inform student choice, signal to institutions the importance of prioritising equity, and to support systematic data collection on equity outcomes. These outcomes could be achieved by the juxtaposition of student demography and quality indicators. Students

²²⁶ Australian National Audit Office. Administration of Higher Education Loan Program Debt and Repayments., accessed 4 October, 2016 www.anao.gov.au/work/performance-audit/administration-higher-education-loan-program-debt-and-repayments

²²⁷ Department of Business Innovation and Skills, *Success as a Knowledge Economy: Teaching Excellence, Social Mobility and Student Choice*, May 2016. accessed 4 October, 2016, www.gov.uk/government/publications/higher-education-success-as-a-knowledge-economy-white-paper www.gov.uk/government/publications/higher-education-success-as-a-knowledge-economy-white-paper

²²⁸ F. J. Millem et al. *Making diversity work on campus*.

within some equity groups would likely be interested in the learning experiences of their cohort, for example, which may be significantly different from the aggregate data presented. Other students would likely be interested in the diversity of the cohort at different institutions, particularly given clear links between student diversity and learning quality²²⁸. The reporting of this data may better mobilise institutions to optimise the learning of equity cohorts. Equally, graduate outcome data for students from equity groups may drive their choice of course and institution in more influential ways than current information provision. There is already a commitment to extend QILT, and additional funding has been allocated for this purpose. However, without an embedded equity dimension to these indicators, their utility as a driver of improved student equity in higher education will be weakened.

A more nuanced area of focus will be better quantification of progress against intended learning outcomes. Universities tend to market themselves within a narrow band of graduate attributes for which assessment of learning outcomes is not undertaken systematically. Australia would benefit from a genuine standardised assessment of learning outcomes that aligns with the most common graduate attributes, and which integrates consideration of equity.

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UNIVERSITIES AND THE EVOLVING GRADUATE LABOUR MARKET

ANDREW NORTON

ABSTRACT

Inherent uncertainties in the labour market make it hard to predict skills needs. Technological change, rising and falling industries and the economic cycle all affect the demand for labour, while migration as well as universities affect its supply. As a result, no higher education system can guarantee high skill jobs for all graduates or no skills shortages for employers. But Australia's previous system of distributing student places to universities, which was based largely on historical allocations, led to avoidable skills shortages. The demand driven system phased in during the years to 2012 gave universities more capacity and stronger incentives to focus on skills shortages and graduate employability. In its early years, the demand driven system has successfully met most skills shortages and universities are paying more attention to general graduate attributes that contribute to employability. But a surge in student numbers has produced more graduates than the labour force needs in high-skill occupations. Better informed demand, particularly on the choice between vocational and higher education, could improve the demand driven system.

INTRODUCTION

It has never been easier to become a university student. But it has never been harder for university graduates to get work that uses their skills. The disjunction between these facts raises doubts about how well our higher education system adapts to changes in the labour market. While policy changes have helped employers hire sufficient numbers of skilled workers, large numbers of graduates are working in jobs that do not require higher education qualifications.

GRADUATE EMPLOYMENT

Graduate employment problems are now a high-profile issue. But in 2008, when a higher education policy review chaired by Denise Bradley was considering removing the then constraints on student numbers, graduate employment prospects looked good. Forty high-skill professional and managerial occupations, many reserved by regulation for graduates, were listed as in skills shortage. This was the highest number

in a survey going back to 1986.²²⁹ Only 15 per cent of new graduates seeking full-time work were without it four months after completing their courses, the lowest number since before the early 1990s recession.²³⁰ Just 2 per cent of graduates seeking work were unemployed.²³¹ According to research commissioned by the Bradley committee, the good times would continue. It forecast that demand for graduates would exceed supply by 2010, with shortages to continue until at least 2018 without policy change.²³²

In reality, 2008 was the peak of a boom. Although the graduate unemployment rate remains low – it was 3.4 per cent in 2015 – all graduate labour force indicators are worse now than in 2008. By early 2014, new graduates had more difficulty finding full-time work than any completing cohort before them. Thirty-two per cent of recent graduates were unemployed or in part-time or casual jobs while looking for full-time work.²³³ Several thousand more graduates found full-time jobs in 2015 than in 2014, but with course completions still growing the percentage still looking for work declined only a little.²³⁴ A three year after completion survey finds significant improvement over time, but a parallel trend of declining full-time employment.²³⁵

To stay in work, graduates take administrative, sales, hospitality and other jobs that are unlikely to require higher education qualifications. By 2015, more than a million graduates, or around 30 per cent of the graduate workforce, were in such jobs.²³⁶ The number of professional and managerial occupations in skills shortage had fallen from forty to six. Some analysts predict that technological change will reduce graduate jobs in key fields including law, health, architecture, education and management consulting.²³⁷

GOVERNMENT POLICY ON GRADUATE EMPLOYMENT

We know that technological change will affect how work is done, we know that some industries and occupations will grow while others will decline, and we know that there will be economic booms and busts. We know that migration in and out of the country as well as the number of people completing higher education qualifications in Australia affects the size and skills mix of the graduate labour force. But the scale, timing, detail and interaction of all these factors can never be known years in advance with any precision. As a result, no higher education system can perfectly match graduates with jobs or guarantee employers all their vacancies will be filled. But government policy can affect the capacity of universities to adapt to the labour market.

²²⁹ Department of Employment, *Skill shortage ratings—1986 to 2015* (Canberra: Department of Employment, 2016).

²³⁰ GCA, *Graduate Destinations 2015: A report on the work and study outcomes of recent higher education graduates* (Melbourne: Graduate Careers Australia, 2016): 19.

²³¹ ABS, *Education and work 2008, Cat. 6227.0* (Canberra: Australian Bureau of Statistics, 2008), table 11.

²³² D. Bradley et al., *Review of Australian higher education: final report* (Canberra: Department of Education, Employment and Workplace Relations, 2008): 15-17.

²³³ GCA, *Graduate Destinations*, 19. Only those seeking full-time work are included in this analysis.

²³⁴ Grattan analysis based on GCA, *Graduate Destinations* and Department of Education and Training, *uCube—Higher education statistics* (Canberra: Department of Education and Training, 2016).

²³⁵ GCA, *Beyond Graduation 2015: A report of graduates' work and study outcomes three years after course completion* (Melbourne: Graduate Careers Australia, 2016).

²³⁶ ABS, *Education and work 2015, Cat. 6227.0* (Canberra: Australian Bureau of Statistics, 2015), table 10.

²³⁷ R. Susskind and D. Susskind, *The future of the professions: how technology will transform the work of human experts* (Oxford: Oxford University Press, 2015).

Before 2009, universities could respond to labour market needs, but this was not always easy or in their interests.²³⁸ They received a block grant for a specified number of student places. Except when the government funded new student places, increasing student places in one field meant reducing them in another. As fewer places may upset internal and external university constituencies, adjustments could be politically difficult. Universities could also be financially disadvantaged by moving student places from low to high-cost disciplines.²³⁹

Universities faced limited market pressure to incur these political and financial costs. The government kept the total supply of student places well below student demand.²⁴⁰ If a prospective student did not like what a university offered, somebody else would take her place, ensuring the university received its funding. For its part, the government did not routinely monitor or report on university performance in meeting skills needs. If it felt the need to meet skills shortages, it also avoided hard political decisions, and allocated new places rather than redistributing existing places.

In the years before the Bradley committee's deliberations, the government had provided new places to meet labour market needs, especially in engineering and health fields.²⁴¹ The mining boom that was driving up demand for engineering graduates was relatively new. But most other shortages were in health-related occupations, where in some cases skills shortages, as measured by difficulty filling vacancies, had been experienced since the 1990s.²⁴² The old system was slow to respond to clear needs.

Under the 'demand driven' system proposed by the Bradley committee and largely implemented by the Rudd-Gillard governments, universities have more capacity to meet student and labour market demand. They can take unlimited numbers of bachelor-degree students, ending trade-offs between old and new places. They can now expand to meet existing skills shortage needs, and start new courses aimed at emerging fields and occupations, without reducing enrolments in current courses. For each new place, they receive the full funding rate for that discipline – when under the previous system they received a lower or zero funding rate for students above their government allocation. While previously universities could be politically and financially penalised for meeting student demand, now there are potential costs in not meeting it, as they could lose enrolments to other universities.

OCCUPATION-SPECIFIC SKILLS AND THE DEMAND DRIVEN SYSTEM

Demand driven funding largely achieved what it set out to do on occupational skills shortages. The review of the demand driven review I completed with David Kemp in early 2014 examined all persistent skills shortages between 2007 and 2012 that could

²³⁸ Strictly speaking, the demand driven system was phased in from 2010 to 2012. But following a partial relaxation of previous caps on student numbers from 2008, enrolments started increasing significantly from 2009.

²³⁹ A. Norton, *Keep the caps off!: Student access and choice in higher education* (Melbourne: Grattan Institute, 2013), 13-14.

²⁴⁰ For unmet demand figures, see A. Norton, 'Equity and markets', in *Student equity in Australian higher education: Twenty-five years of A Fair Chance for All*, A. Harvey, M. Brett and C. Burnheim, Eds., (Singapore: Springer, 2016): 186.

²⁴¹ A. Norton, 'Markets and central planning in meeting labour market needs: lessons from higher education', in *Competition in the training market*, T. Karmel, F. Beddie and S. Dawe, Eds. (Adelaide: National Centre for Vocational Education Research, 2009): 27-29.

²⁴² Department of Employment, *Skills shortages*.

be analysed with applications and enrolment data. We had only one year of enrolment data in the fully operating demand driven system, but four years in which universities had been significantly increasing enrolments. Of the 14 skills shortage occupations, in engineering and health-related fields, universities had responded with increased supply in 12 by 2012.²⁴³ By 2014, one of the remaining occupations had ended its skills shortage and enrolments grew by nearly a third in the other.²⁴⁴

Some skills shortages are more complex than lacking graduates in the relevant field. In 2014, more than half of Information and Technology (IT) industry respondents to an employer survey said they would hire more graduates if they could find suitable applicants.²⁴⁵ But a third of IT graduates could not find full-time work in the months after completing their courses. The comments of IT professional bodies, student satisfaction surveys and attrition rates from IT courses all point to issues with IT education in Australia, although attrition has been declining.²⁴⁶ That these issues were still significant years into the demand driven system suggests a slow response. In April 2016, however, the Australian Council of Deans of Information and Communications Technology announced plans to adapt courses to changes in the IT industry.²⁴⁷

Under Australia's higher education system, universities can offer courses for jobs that may not yet exist. As self-accrediting institutions within a demand driven system few regulatory obstacles stand in their way. Some universities are working with the idea that many students will start their own businesses. In 2014, more than a dozen bachelor degree courses had the word 'entrepreneur' in their title. The 'transdisciplinary' Bachelor of Creative Intelligence and Innovation offered by the University of Technology, Sydney (UTS) aims to help students become lifelong innovators and entrepreneurs.

The period since the demand driven review shows that, at the field of education level, students and universities regularly adjust to skills over-supply as well as under-supply. As the mining boom ended, applications and commencing bachelor degree enrolments for engineering declined. As reports emerged of fewer opportunities for new teaching graduates, applications and enrolments responded. The same pattern is evident in business courses.²⁴⁸ Business graduates do not have unusually high joblessness, but their professional and managerial employment levels are low for a field that is vocationally oriented.²⁴⁹ Possibly job quality information is feeding back into the student market.

²⁴³ D. Kemp and A. Norton, *Review of the demand driven system: final report* (Canberra: Department of Education, 2014): 21-25.

²⁴⁴ Chemical engineering exited skills shortage. Surveying remained in skills shortage but enrolments increased to 2014: Department of Education and Training, *Higher education statistics collection* (Canberra: Department of Education and Training, 2016).

²⁴⁵ GCA, *Graduate Outlook 2014: The report of the 2014 Graduate Outlook Survey, Perspectives on graduate recruitment* (Melbourne: Graduate Careers Australia, 2015): 6.

²⁴⁶ A. Norton and B. Cakitaki, *Mapping Australian higher education 2016* (Melbourne: Grattan Institute, 2016), 92-96. There are substantial differences between universities, ranging from 14 per cent to 49 per cent looking for full-time work.

²⁴⁷ S. Matchett, 'Worse western: hundreds of UWA jobs to go', *Campus Morning Mail*, 25 August 2016, <http://campusmorningmail.com.au/worse-western-hundreds-uwa-jobs-go/>

²⁴⁸ Department of Education and Training, *uCube – Higher education statistics; Undergraduate applications, offers and acceptances, February 2016 and Undergraduate applications, offers and acceptances 2015* (Canberra: Department of Education and Training 2015 & 2016); ABS, *Labour force, Australia, detailed quarterly, May 2016, Cat. 6291.0.55.003* (Canberra: Australian Bureau of Statistics, 2016); Andrew Norton, 'Should teacher education places be capped?', andrewnorton.net.au, 26 September 2016.

²⁴⁹ This labour market is affected by large numbers of non-citizens. For Australian citizens, the professional and managerial employment rate for business graduates is 64 per cent, six percentage points below the overall rate: ABS, *Microdata: Education and work, May 2015, Cat. 6227.0.30.001* (Canberra: Australian Bureau of Statistics, 2016).

An exception to this pattern of student markets adapting to labour market trends is science. Science applications increased from 2009 to 2016, while employment outcomes declined from mediocre to very poor, with a full-time employment rate 17 percentage points below the figure for all bachelor-degree graduates.²⁵⁰ Arguably, prospective students are responding to labour market information but have been misled about their prospects. Science degrees have been promoted by politicians and others since 2007.²⁵¹ Another view is that poor science employment outcomes are temporary before new industries emerge to use science graduates' skills.²⁵²

The wisdom of making school leaver course choices so important to skills supply is sometimes questioned. But the demand driven system's mechanisms for helping graduates get available job opportunities broadly work. Student choices generally move in directions that are consistent with available data: growing in fields where employment is likely to increase, and declining when jobs are harder to find.

Universities respond to these signals from the market with speed and reliability. Bureaucratic systems of allocating student places could identify the same labour market trends, but could not respond as efficiently. They must decide not just on which disciplines should grow, but which universities should take additional places. Negotiations with universities take months, with no guarantees that places will end up in the right institutions. In the demand driven system universities decide how to respond, using local information about potential interest that is not easily accessible to the bureaucracy. Without prescriptive student place allocations, there is no system-level issue if some universities end up with more students than expected and others fewer. Adjustments occur in the market, avoiding the potential sectoral, regional, employer and professional association political problems of bureaucratic intervention.

GRADUATE ATTRIBUTES AND EMPLOYMENT

Employer surveys consistently find that graduate job opportunities are missed because employers can find too few suitable applicants. In 2015, more than a quarter of employers reported this problem, and the proportion has never been below 18 per cent.²⁵³ As the graduate employment figure cited earlier suggest, this is rarely because too few people have the relevant qualifications. More commonly, employers find issue with the more general graduate attributes of their applicants. These include communication, teamwork, problem-solving and interpersonal skills. Nearly three times as many employers cite 'communication skills' as one of their three most important selection criteria than 'academic qualifications'.²⁵⁴

Universities have broader objectives than job training, and not all employer complaints about graduates should necessarily be remedied by universities. But critical thinking, problem solving and communication skills are graduate attributes that are important to both higher education and employment. While most employers are satisfied with job applicants' written communication skills, more than one in five rated them as less than

²⁵⁰ Norton and Cakitaki, *Mapping*, 84-91.

²⁵¹ See citations in Norton and Cakitaki, *Mapping*, 84.

²⁵² J. Segal, 'Australian universities are not producing enough STEM graduates', *Australian Financial Review*, 10 August 2016.

²⁵³ GCA, *Graduate Outlook 2015: The report of the 2015 Graduate Outlook Survey, Perspectives on graduate recruitment* (Melbourne: Graduate Careers Australia, 2016): 5.

²⁵⁴ GCA, *Graduate Outlook*, 19.

good.²⁵⁵ In teacher education, the issue has led to a literacy and numeracy test being introduced as a condition of professional admission.²⁵⁶

Universities have listed their desired graduate attributes for many years. Every university includes communication skills among these attributes.²⁵⁷ But these attributes are typically not separately taught, verified or rated. Development of general graduate attributes is usually discipline-specific rather than taught separately as general skills applicable across fields and contexts, although this is changing in some universities (see below).²⁵⁸ As a result, universities do not know whether their graduates have the attributes claimed for them, and graduates have no way of proving what skills they have.

This approach to graduate attributes reflects longstanding practices in higher education. While the vocational education system assesses specific competencies, higher education usually awards overall marks for subjects. Performance on generic skills is embedded in these marks, but their particular contribution is not obvious to students or prospective employers. Assessment based on subjects rather than the course also works against any cumulative measure of skills development.

The higher education funding system entrenches this approach to general skills. Universities are only funded by government for subjects taught as part of qualifications, and apart from student contributions for those subjects there are strict controls on academic fees, including for assessment.²⁵⁹ Universities can only charge for additional services if they are not essential for a subject or course, and these fees cannot be compulsory. In practice, universities usually fund employability skills development out of their general revenue.

Within these constraints, universities are acting to improve student and graduate general skills. Desktop research found evidence of general curriculum changes (11 universities planned or in progress in September 2016), subjects or online modules that focus on cultivating employability skills (12 universities), work experience outside the university (38 universities with for-credit work integrated learning and 39 with not-for-credit internships). Universities and industry are collaborating to expand and improve on work integrated learning.²⁶⁰

Work integrated learning is a favoured strategy. Compared to other employability strategies, it can substantively increase skills, teach students about the workplace, and provide employers with information about students as potential employees. Forty per cent of employers who hire graduates take applicants who have already worked for them.²⁶¹

Although work integrated learning is the most common way of demonstrating graduates' skills to employers, universities also use other ways to provide information.

²⁵⁵ GCA, *Graduate Outlook*, 21.

²⁵⁶ ATSL, *Accreditation of initial teacher education in Australia: standards and procedures 2015* (Melbourne: Australian Institute for Teaching and School Leadership, 2015).

²⁵⁷ L. Martin, *Using assessment of student learning outcomes to measure university performance: towards a viable model*, PhD thesis (Melbourne: University of Melbourne, 2016): 78.

²⁵⁸ B. Oliver, *Assuring graduate attributes* (Sydney: Australian Learning and Teaching Council, 2011).

²⁵⁹ Department of Education and Training, *Higher education administrative information for providers February 2015* (Canberra: Department of Education and Training, 2015): 47-49.

²⁶⁰ Universities Australia, ACCI, AIG, Business Council of Australia, Australian Collaborative Education Network, *National strategy on work integrated learning in university education* (Canberra: Universities Australia, 2016).

²⁶¹ GCA, *Graduate Outlook*, 12.

Twenty-five universities have awards or certificates for co-curricular, extracurricular and leadership activities of students (while potentially giving students a point of difference, only seven per cent of employers put extra-curricular activities in their top three selection criteria²⁶²). Twenty-eight provide ePortfolio software which helps students demonstrate a wider range of activities. One university offers awards or badges for particular graduate attributes.

Under the demand driven system, there are potential enrolment penalties for poor employment outcomes. Employment results by university and course are now available to prospective students on the Quality Indicators for Learning and Teaching (QILT) website, and universities promote their employment outcomes on their websites and through advertising. It is plausible that the demand driven system is encouraging universities to do more for graduate employability. Some employability measures recorded in our desktop research are clearly recent, although we lack a count from before the demand driven system. In September 2016, universities ranged from four to ten employability initiatives and activities, with an average of six.

OVERALL GRADUATE OVER-SUPPLY

Despite clear strengths of the demand driven system in reacting to the labour market, we are nevertheless left with poor employment outcomes in recent times. Did the system respond ineffectively as employment outcomes trended down to 2014? Public university commencing bachelor degree enrolments increased by 42 per cent between 2008 and 2014. Now the boom years of university enrolments are over. Commencing bachelor degree enrolment growth was only one per cent between 2014 and 2015, the lowest rate for seven years.²⁶³ Early offers data for 2016 suggests another year of about one per cent growth.²⁶⁴ Arguably the enrolment response should have been faster and larger. But the propositions that the labour market did not need so many graduates and that most students made the right decision to go to university can both be true.

Although recent graduate employment outcomes are poor compared to 2008 and earlier, young people had no easy employment options. The labour market plunged after the global financial crisis and then entered a faltering recovery. Figure 1 shows annual job increases for the professional occupations to which graduates normally aspire, along with job increases for all other occupations. Broader economic forces were affecting all occupations, not just those which graduates sought. Despite periods of low growth in professional employment, in most years professionals increased their share of all jobs. In 1997, 17.8 per cent of all employed persons were professionals; in 2015 that figure was 22.9 per cent. In 2014 and 2015, around half of all job growth was in professional occupations. Young people completing vocational education diploma qualifications experienced worse employment difficulties than university graduates.²⁶⁵ Despite their poor employment outcomes by historical standards, most

²⁶² GCA, *Graduate Outlook*, 19.

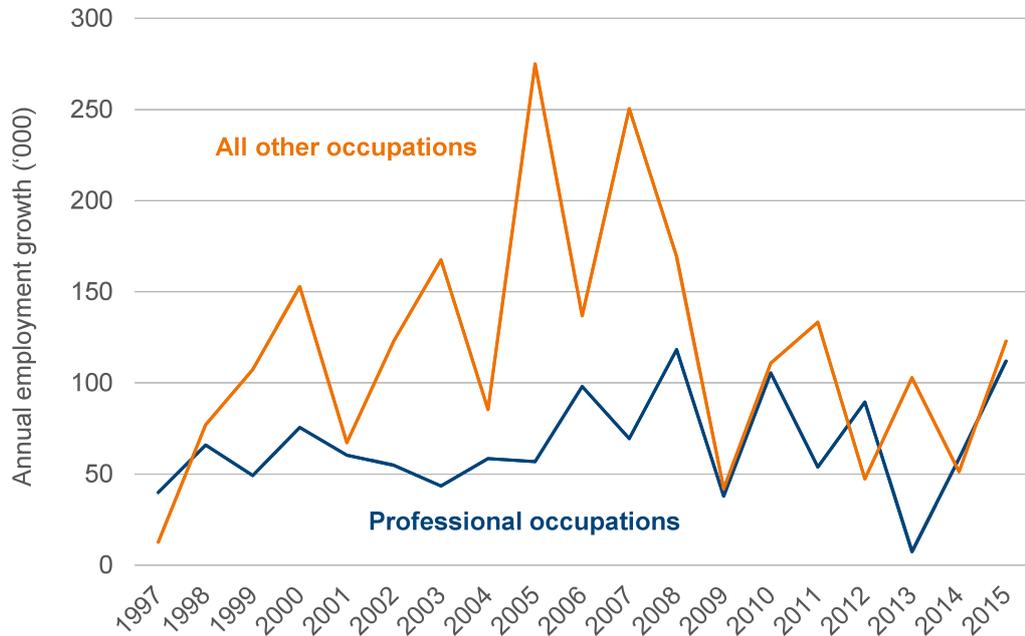
²⁶³ Department of Education and Training, *uCube*.

²⁶⁴ Department of Education and Training, *Undergraduate applications 2016*, 23.

²⁶⁵ Direct comparisons are difficult, but for 2008-15 diploma holders six months after completion unemployment has averaged 15 per cent and full-time employment has averaged 34 per cent. For bachelor degree holders four months after completed, unemployment has averaged 9 per cent and full-time employment has averaged 48 per cent: NCVET, *VOCSTATS: Student outcomes survey* (Adelaide, National Centre for Vocational Education Research, 2016); GCA, *Graduate Destinations*, various years.

recent higher education students were still minimising their risks and maximising their opportunities, given their realistic options.

Figure 1: Annual employment growth, professional and all other occupations 1997-2015



Source: Australian Bureau of Statistics, Labour force, Australia, detailed quarterly, May 2016, Cat. 6291.0.55.003. Quarterly figures have been averaged.

Although most students made prudent further education decisions, some probably did not. Despite poor recent employment outcomes for diploma graduates, the relationship between vocational and higher education remains an issue in the demand driven system. Increasing numbers of young people are choosing higher education over vocational education.²⁶⁶ Average outcomes in either higher or vocational education are not necessarily a good guide to particular prospective students, and the pathways and prospects of low to mid-ATAR young people need more attention. Attrition rates clearly increase as ATAR goes down, raising the risk that students will not acquire a degree.²⁶⁷ For lower-ATAR students who complete, we need to check whether they are over-represented among those not securing high-skill work. For them, a diploma or Certificate IV course may offer similar or better employment opportunities at a lower cost.

THE FUTURE

We cannot know exactly what skills graduates of the future will need. We need a system that reacts efficiently to changes in work affecting higher education.

In most cases, the demand driven system offers universities the flexibility and incentives needed to respond to labour market needs. We see this in their behaviour

²⁶⁶ P. Noonan, *A new system for financing Australian tertiary education* (Melbourne: Mitchell Institute, 2016): 6.

²⁶⁷ Department of Education and Training, *Completion rates of domestic bachelor degree students: a cohort analysis, 2005-2013* (Canberra: Department of Education and Training, 2015).

since 2008, making more student places available in areas of skills shortage, and increasing the attention paid to general graduate attributes. The pre-demand driven system could react to skills shortages, but caps on student places and funding disincentives hampered its response mechanisms. Under demand driven funding, skills shortages have resulted in increased enrolments.

Although not yet causing major problems, the system of per-student funding may in future weaken mechanisms for meeting skills needs. If discipline-level funding rates fall below costs universities may decide against responding to demand. Funding rates are being reviewed at the time of writing. As noted, funding subjects embedded in qualifications does not directly support the teaching or verification of general skills valued by employers.

While some people question letting school leavers influence skills supply, students have reflected broad occupational employment trends in their course choices. But not all prospective students have the information needed to make the best possible choices. If more students realised that they may never complete a bachelor degree course, or struggle to get a professional job if they do complete, fewer may choose higher education. Capping the number of student places for universities below current levels would steer more students towards vocational education. But capping would have consequences for students who still get accepted, as well as those who do not. The system would lose flexibility in responding to their needs.

Helping students make better choices rather than limiting their choices is the better way to respond to recent problems in graduate employment. The government has already improved student information through the MySkills and QILT websites. But more could be done to individualise the advice we give prospective students. We can say more about the choices between rather just than within vocational and higher education. We can say more about how further education risks and benefits vary according to prior academic performance and other personal characteristics. The better informed demand is, the better a demand driven system will perform.

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9

STANDARDS AND QUALITY IN AUSTRALIAN HIGHER EDUCATION

PIP PATTISON

ABSTRACT

In this chapter, I focus on the question of how higher education providers and others will ensure ongoing gains in the quality of higher education in the current Australian regulatory regime. I suggest that, whereas there is broad international agreement on diagnosing the core issues in evaluating and improving educational quality, there is less agreement on the most fruitful way to advance national and institutional agendas for quality improvement. Like others, I propose a more explicit focus on the quality of educational outcomes at academically meaningful ‘program’ or discipline levels, and on building the capabilities within relevant academic groups to utilise this information to drive further improvements in these outcomes. I argue that academic leadership and culture, especially at program and discipline level, are vital catalysts for this process because they support a shared vision of educational excellence among those responsible for a program and a local culture fostering openness, collaboration, experimentation and evidence.

INTRODUCTION

At the beginning of 2017, it is timely to reflect on quality and standards in higher education in Australia. At this time, the Tertiary Education Quality and Standards Agency (TEQSA) celebrates its fifth birthday, the new Higher Education Standards Framework takes effect as a legislative instrument and the Australian Government prepares to receive its initial review of the TEQSA Act.

The 2011 TEQSA Act established TEQSA and a new regulatory framework for Australian higher education, replacing the Australian Universities Quality Agency (AUQA) and a set of national protocols previously adopted by the Council of Australian Governments (COAG). Although TEQSA’s original brief included both regulation and quality, its focus was later narrowed to a primarily regulatory role.²⁶⁸

The one hundred standards that make up the new Higher Education Standards Framework (HESF) (2015) set out the requirements for providers of higher education

²⁶⁸ K. Lee Dow and V. Braithwaite, *Higher Education Review of Regulation Report* (Canberra: Department of Education and Training, 2013).

in Australia from 1 January, 2017 and serve as the threshold against which TEQSA exercises its regulatory authority. The development of the HESF by the initial Higher Education Standards Panel involved extensive consultation with the higher education sector, and the resulting framework has been well received by the sector as a sound and coherent statement of threshold requirements for higher education providers. TEQSA itself has engaged in extensive consultation in preparation for the adoption of the new framework and has adapted its distinctive risk-based regulatory approach to the new standards.

The Standards are set out in seven domains – student participation and attainment, learning environment, teaching, research and research training, institutional quality assurance, governance and accountability, and representation, information and information management – and cover all aspects of a university's operation including the core activities of education and research. In line with the objects of the TEQSA Act, the Standards have a strong focus on the protection of students, including research students, and hence on effective educational practice from admission to graduation. The coverage of research practice has a relatively lighter touch with primary attention to the good management and ethical conduct of research.

What does this regulatory focus mean for quality and standards more generally in Australian higher education? Although yet to be fully tested, the expectation is that TEQSA will serve its regulatory purpose well and ensure that all higher education providers meet the agreed threshold standards set out in the HESF. It is expected, in other words, that TEQSA will utilise the Standards to set an effective performance bar for Australian higher education providers.

But what will drive more aspirational behaviour on the part of providers? What will encourage universities and other providers to continue to lift quality, and seek excellence in research and education?

In research, the drivers towards excellence are arguably already strong. Peer review and competitive processes are deeply engrained in the processes of research funding and publication and operate in the context of information-rich networks of collaboration and exchange that link researchers around the world. Both *Excellence in Research for Australia* outcomes and numerous global rankings suggest that the Australian higher education sector is performing at an increasingly high level in traditional research quality metrics. Of course, a greater focus on impact, translation and innovation²⁶⁹ adds complexity to this story but the same competitive and reputational forces will be at play, albeit over a broader network that includes government, industry and community players and with respect to broader and yet-to-be defined metrics.

For education, however, the drivers towards excellence are less clear. Although most academics place very high value on the educational mission of their university and a transformative educational experience for their students, some appear to lack the conviction that their institutions embrace the mission to the same degree.²⁷⁰ Still,

²⁶⁹ I. Watt, *Report of the Review of Research Policy and Funding Arrangements* (Canberra: Department of Education and Training, 2015).

²⁷⁰ University of Sydney, "Developing a distinctive undergraduate education," 2016, 7-8, <https://intranet.sydney.edu.au/content/dam/intranet/documents/news-initiatives/strategy/Strategy-Discussion-Paper-Education.pdf>; Harvard Magazine, "John Harvard's Journal: Towards Top-Tier Teaching," Harvard Magazine, March-April 2007, <http://harvardmagazine.com/2007/03/toward-top-tier-teaching.html>.

competition is rising in the educational arena as well. The demand-driven system has helped to fuel competition for students among institutions, and more information on quality indicators for education is now available on the Australian government's QILT website²⁷¹ (even though evidence of student reliance on this information is yet to emerge). Most if not all universities have well-established processes for monitoring student feedback on their university experience and are engaging in a variety of improvement-focussed initiatives. Some are also undertaking or have completed major, whole-of-university curriculum renewal projects in an effort to ensure contemporary educational offerings that are fit for a changing world and what are likely to be the dynamic careers of their future graduates. While some or all of these institutional strategies may reflect a response to competition, it is not yet clear that the competitive factors currently at play have created an ineluctable drive towards educational excellence.

Of course, the Standards themselves do provide one driver towards excellence, since included as a core standard in the domain of Institutional Quality Assurance is a requirement to engage in ongoing educational review and quality improvement. In particular, Standard 5.3.7 requires that “The results of regular interim monitoring, comprehensive reviews, external referencing and student feedback are used to mitigate future risks to the quality of the education provided and to guide and evaluate improvements...” But, as Probert ²⁷² has asked in her comprehensive review of quality in Australia's higher education system, is this enough?

The question I address in this chapter is therefore this: in combination with Australia's regulatory framework, what steps by institutions and/or others will ensure ongoing aspirations towards excellence and a lift in the quality of higher education?

A FOCUS ON QUALITY

This is not a new question, of course. There is growing interest internationally and strong interest in Australia in more rigorous approaches to understanding, measuring and improving quality in higher education. This interest has been catalysed by rising rates of participation in higher education as well as by consequential and other increases in the public and/or private costs of higher education. For example, the (former) Office for Learning and Teaching (OLT) in Australia, the Higher Education Academy (HEA) in the United Kingdom and the National Academies of Sciences, Engineering and Medicine the United States have all sponsored expert reviews in recent years on conceptualisations of quality and approaches to quality improvement in higher education.²⁷³ These reviews cover much common ground and reach many common conclusions.

First, all agree that higher education quality has many aspects and while quality is, in general, difficult to define, measure and change, at the heart of the concept is the notion of the educational impact of an institution relative to its educational purpose. If this notion is tested against many commonly used indicators of educational quality,

²⁷¹ See <https://www.qilt.edu.au/>.

²⁷² B. Probert, “The quality of Australia's higher education system: How it might be defined, improved and assured,” Office for Learning and Teaching Discussion Paper Series, 2015.

²⁷³ See, respectively, Probert, 2015; Gibbs, 2010; National Academies of Sciences, Engineering and Medicine, *Quality in the Undergraduate Experience: What is it? How is it measured? Who decides? Summary of a Workshop*, The National Academies Press, 2016.

it is clear that the achievement by students of intended learning outcomes is a vital but often missing quality indicator, since it is this achievement that reflects most directly the intended educational impact of students' higher education experience. There is broad agreement, too, that some potential indicators such as employment outcomes are difficult to utilise comparatively even though longer term career and life outcomes and broader societal impacts should be included in more comprehensive characterisations of educational quality. For many institutions, these broader impacts include 'informed, well-judged and positive contributions to society,'²⁷⁴ a citizenry capable of 'responsible judgment,'²⁷⁵ and graduates equipped for meaningful and fulfilling lives.²⁷⁶

A second point of agreement is the importance of taking account of inter- and intra-institutional variability in efforts to characterise and measure educational quality. Institutions have diverse educational missions and distinctive student cohorts, and this complicates any attempt to make comparisons across institutions on most quality indicators.²⁷⁷ There is also a substantial level of intra-institutional variability in popular quality indicators such as engagement metrics, raising the question of the appropriate level of analysis for any quality indicator, especially those assessed from student data. For a variety of reasons discussed further below, all of the reviews argue for attending much more closely to quality indicators at 'program'²⁷⁸ and/or discipline level rather than just at the level of instructors, individual units of study or the entire institution.

Third, all three reviews emphasize the importance of internal quality improvement processes and the important and distinctive roles of data, self-assessment and peer review in these processes. In particular, expert judgment and its anticipation are often unique sources of quality information in cases where complex educational activities are under consideration. In an era of new levels of access to technology-enabled data, there is also an opportunity to enrich these processes considerably with more timely and relevant data.

Fourth, all reviewers note the strong evidentiary consensus on a number of so-called 'high impact'²⁷⁹ educational practices that promote student engagement and learning, including the design of experiences in which students apply their developing knowledge and skills to real-world problems and challenges. While there is much to learn about effective educational practice, we do already understand the high level of effectiveness of certain educational practices, and this knowledge should more directly inform the selection of quality indicators.

A fifth common point is the potential impact on quality of the changing nature of the academic workforce. In all reviews, the 'unbundling' of research and teaching and the increasing casualisation of the teaching workforce were recognised as giving rise to

²⁷⁴ University of Sydney, "Developing a distinctive undergraduate education," p.9.

²⁷⁵ W. Sullivan and M. Rosin, *A New Agenda for Higher Education: Shaping a Life of the Mind for Practice* (San Francisco: Jossey-Bass, 2008).

²⁷⁶ See, for example, A. Kronman, *Education's End: Why Our Colleges and Universities Have Given Up on the Meaning of Life* (New Haven: Yale University Press, 2007); B. Thompson, *Beyond Reason and Tolerance: The Purpose and Practice of Higher Education* (Oxford: Oxford University Press, 2014).

²⁷⁷ See, for example, J. Matsudaira, "Defining and measuring institutional quality in higher education," in National Academies of Sciences, Engineering, and Medicine, *Quality in the Undergraduate Experience: What is it? How is it measured? Who decides? Summary of a Workshop*, The National Academies Press, 2016.

²⁷⁸ By 'program' is meant a degree or stream, or a coherent component of a degree or stream, such as a major.

²⁷⁹ See, for example: G Kuh et al., *Student Success in College: Creating Conditions That Matter* (San Francisco: Jossey-Bass, 2005); J. Browner and L. Swaner, *Five high-impact practices: Research on learning outcomes, completion and quality* (Washington DC: Association of American Colleges and Universities, 2010); E. Pascarella and P. Terenzini, *How College Affects Students, Volume 2: A Third Decade of Research*, (San Francisco: Jossey-Bass, 2005).

potential quality risks. Each review also raised the importance of professional learning for university teachers, and the mixed evidence on how best to provide it. Several also noted as a missed opportunity the incorporation of foundational programs for university teaching in PhD training programs.

A sixth shared observation is the importance of curriculum and program-level design, especially its level of challenge and coherence. The entirety of a student's educational experience is likely to impact on cumulative educational outcomes, so the curriculum structure and the aspiration for learning embedded in the overarching program-level design of learning activities are likely to be important. This observation supports a view of quality as having a specific program or discipline level component, rather than being simply the aggregation of quality within individual units of study. While this may seem an obvious point, it is probably the case that many institutional efforts to understand quality place heavy emphasis at the individual unit of study level. A distinct but somewhat related issue for students is access to information to support decision making at program level.

Finally, all three reviewers point to a cultural dimension in the pursuit of educational excellence. In addition to academic staff having the tools and understanding to promote excellence in student learning, they argue for the importance of academic environments in which an institution's educational mission is valued as highly as its research endeavours and supported by academic leaders who are champions for educational excellence.

What these three reviews reveal, then, is a relatively high level of consensus on the core conceptual and practical issues in measuring quality and understanding how to build it. There is, nonetheless, no evident consensus on high yield, low risk, next steps, even though all reviews refer to some promising prospects for either measuring quality or quality improvement.

WHERE NEXT?

IMPROVED INDICATORS OF EDUCATIONAL QUALITY

Gibbs²⁸⁰ argues that the most immediately practical and valid approach to improving indicators of educational quality is to focus on educational 'process' variables such as student engagement and formative feedback which have not only been demonstrated to predict educational gain but also point directly to potential improvement strategies. He also suggests some areas for fruitful exploration, such as the idea that representations of curriculum might be mined for effective indicators of quality, an approach that is increasingly possible as curricula take a more structured digital form in various mapping tools. He observes as well that 'capstone' level dissertations or project reports offer an important resource for valuable assessment of the quality of educational outcomes, either through peer review or through systematic evaluation with respect to an agreed framework, such as the Structure of Observed Learning Outcomes (SOLO) taxonomy.²⁸¹

This latter suggestion of applying a common assessment framework across a variety of potentially different assessment tasks was also highlighted at the December 2015

²⁸⁰ G. Gibbs, *Dimensions of Quality*, (York: The Higher Education Academy, 2010).

²⁸¹ J. Biggs and K. Collis, *Evaluating the Quality of Learning – the SOLO taxonomy* (New York: Academic Press, 1982).

Workshop hosted by the National Academies of Sciences, Engineering and Medicine. For example, a number of universities have used the Valid Assessment of Learning in Undergraduate Education (VALUE) rubrics developed with sponsorship of the Association of American Colleges and Universities.²⁸² The rubrics were developed by academics across many institutions to assess broad learning outcomes such as inquiry and analysis, problem solving, critical thinking, creative thinking, ethical reasoning, information literacy, teamwork and integrative learning. An early finding from use of these rubrics has been that some of the skills, such as communication and use of evidence, require much greater development within the curriculum, demonstrating the potentially valuable connection between assessment of these broader skills and program- and discipline-level curriculum re-design.²⁸³

In Australia, the Group of Eight's Quality Verification System, a form of discipline-based benchmarking of assessment standards across member universities, also has a strong focus on final year assessments within capstone units, and is based on the assumption that these units do indeed provide a valuable setting within which to benchmark assessments of students' higher level and integrative skills.²⁸⁴

These examples suggest several fruitful avenues for assessment-based approaches to the development of quality indicators. The key to further successful development of these approaches is that they offer information of genuine value to academic teachers and educational leaders in quality monitoring and improvement projects, as it is only then that they are likely to be adopted in a sustainable fashion. It is promising, therefore, that the VALUE rubrics have already been widely utilised in the United States and have demonstrated their capacity to identify high level gaps in the curriculum. In Australia, it is also encouraging that the Group of Eight has expanded its Quality Verification System to include the final year of graduate entry-to-profession courses as well as the final year of undergraduate degrees and to increase the rate of review to ensure coverage of all fields of education within a 7-year cycle. Certainly, these approaches are more likely to be culturally and financially sustainable than direct assessment of broader capabilities through psychometric testing (e.g. use of the Collegiate Learning Assessment or the OECD's Program for the International Assessment of Adult Competencies), though such instruments have a potential role to play in validity studies for any more broadly adopted approach.

IMPROVED APPROACHES TO QUALITY IMPROVEMENT

An important prospect of better indicators of educational quality is a much improved quality improvement cycle since more relevant indicators will better inform educational improvement efforts and the iterative re-design of educational activities.

At the level of individual units of study, this means developing assessments that have greater diagnostic value for students and staff, both in terms of students' development of key concepts and skills, and in their capacity to apply those skills and concepts to authentic and challenging problems and issues. This diagnostic focus would also help to realise the promise of learning analytics since it would embed in the digital record clearer and well-designed markers of student learning. As the

²⁸² See <https://www.aacu.org/value/rubrics>.

²⁸³ National Academies of Sciences, Engineering & Medicine

²⁸⁴ "2016-2020 Strategic Plan," 2016, p.37 <http://sydney.edu.au/dam/intranet/documents/strategy-and-planning/strategic-plan-2016-20.pdf>

planning committee for the National Academies Workshop referred to earlier put it, “assessment is a dish best served formatively...”²⁸⁵

At the program level, the capacity to improve the cycle of evaluation and improvement through improved quality indicators should support collaborative efforts among those with program responsibility and also add valuable data for the application of learning analytics at the program level. This is therefore where the potential gains from effective program-level quality indicators would likely have their greatest impact.

Of course, there is a trade-off that needs to be noted between the capacity to make inter- and intra-institutional comparisons for quality monitoring purposes and the capacity to build program level quality indicators into quality improvement cycles. This is because program level outcomes are not only likely to vary from one program to the next, but their emphases will likely vary as well, even where they rely on a common evaluation framework.

ACADEMIC CULTURE, ACADEMIC LEADERSHIP

Improved indicators of educational quality and the more finely targeted cycles of evaluation and improvement that they enable are, nonetheless, unlikely on their own to achieve the kinds of improvements in educational quality that many believe possible. A more systemic drive towards educational excellence is likely necessary, and most institutions have adopted one or more institution-wide strategies as part of their commitment to quality improvement.

There is, of course, a clear role for professional learning in ensuring that staff or teams of staff have the concepts and tools to create, implement, evaluate and iteratively re-create effective design of educational activity at a range of levels from individual task to program. Institutions are continuing to explore a variety of models for providing these professional learning opportunities, but many combine an initial program for new staff on core concepts and tools with a just-in-time suite of more targeted learning opportunities. Graduate qualifications in university teaching and/or professional accreditation processes also play a useful role in capacity building. There does not appear to be a strong consensus on ideal models but one common trend is that specialist educational design roles are clearly on the rise. Professional learning supports are often also accompanied by institutional programs that provide targeted resources to support individuals or teams in innovation and quality improvement initiatives.

Another important consideration is the set of criteria for promotion and the recognition of excellence, as well as the way in which these criteria are utilised in practice. While many policies can be seen as strong expressions of institutional commitment to educational excellence, their execution can reflect cultural norms that push in other directions and sustain some of the apparent staff doubts about institutional commitment.

Most higher education providers have also sought to implement some form of institutional performance management system at the level of individual academic staff members and/or academic units and, in general, these systems embrace educational quality indicators as well as research quality metrics. On the education side, these

²⁸⁵ National Academies of Sciences, Engineering and Medicine, p. 51.

measures continue to be questioned, given the imperfect nature of many current indicators in use, their high reliance on student ratings and emerging criticism of student ratings as proxies for educational impact.²⁸⁶ All the same, most would agree that data on student perceptions do add value to our understanding of the student experience as long as we avoid simplistic interpretations of the information they provide. Further, few would disagree that the source of high levels of dissatisfaction on the part of students needs to be understood. Even so, the apparent scepticism on the part of some academics about the institutional commitment to educational excellence, combined with their concerns about its measurement in performance management systems, may be limiting the effectiveness of these systems as drivers towards overall excellence. While such systems probably play an important role in ensuring that the higher education standards are met, we likely need to look elsewhere for systemic drivers towards the highest levels of educational excellence.

One obvious place to look is to systems of peer review and, certainly, many Australian institutions have sought to increase the forms of peer review that they support and the extent to which peer review is a part of the institutional framework for educational excellence. Peer judgment of educational practice can take due account of the educational context as well as the interdependence, complexity and aspiration of the activity under review. It can also be done in a way that reflects institutional support for innovation and collaboration. However, it too will be limited if the institutional culture leaves doubt in the minds of academics about institutional commitment to educational excellence.

The various institutional strategies mentioned above – professional learning, resources for innovation and improvement, promotion and recognition, performance management, peer review – are mostly all utilised in some form at most institutions. But are they as effective as we would hope? The answer is, unfortunately, probably not, at least not in all institutions. Instead we still see large variability in quality indicators within institutions.

Teasing out the processes that may be limiting the effectiveness of these strategies requires serious research, so it is necessary to be somewhat speculative about the processes at work. But several clues point to the importance of leadership and culture within academic units or program teams. Programs and academic work units are reported to be important sources of variability for educational quality indicators²⁸⁷ and Australian university data from the Voice Project suggests that academic unit leadership is more strongly related to staff views on teaching priority, quality and support than senior leadership.²⁸⁸

Several qualitative studies have also attempted to identify the characteristics of academic units in which teaching excellence is evident.²⁸⁹ Although exploratory, these studies suggest some common cultural elements in high functioning units: high levels

²⁸⁶ See, for example, B. Uttl, C. White and D.W. Gonzalez, "Meta-analysis of faculty's teaching effectiveness: Student evaluation of teaching ratings and student learning are not related," *Studies in Educational Evaluation*, in press.

²⁸⁷ National Academies of Sciences, Engineering and Medicine, pp. 29-30.

²⁸⁸ P. Langford, "Highs and Lows of Leadership Skills in Universities." 10th Universities HR Benchmarking Conference, Perth, Nov, 2013.

²⁸⁹ G. Gibbs, C. Knapper and S. Piccinin, *Departmental leadership of teaching in research-intensive environments*, Research and Development Series (The Higher Education Academy, 2009); T. Roxå and K. Mårtensson, "Understanding strong academic microcultures – an exploratory study," Lund University, Centre for Educational Development, 2011.

of internal trust; recognition and reward of teaching (and research) excellence and development; support for innovation; a collegial supportive environment inclusive of students; a champion in the leader for educational (and research) accomplishments; and a shared sense of purpose and direction in education (and research). These findings are hardly surprising given what we know about effective leadership in most organisations, but they do underline that a core institutional strategy to add to those listed above is an investment in academic leadership at discipline and program level and hence in the creation and support of local academic cultures that foster educational *and* research excellence.

This analysis suggests that educational quality will come from the continuation of many strategies already in place, as well, potentially, from a heightened investment in academic leadership at program and discipline level. Together with a clear institutional educational vision and purpose, improved quality indicators and the institution-wide strategies described above, such an investment will support the collaborative, open, information-rich and innovative environments in which individual staff and teams of staff are supported to pursue educational excellence and educational quality will thrive.

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10

VOCATIONAL EDUCATION AND THE INNOVATION AGENDA: TOWARDS THE CREATION OF EFFECTIVE INNOVATION ECO-SYSTEMS

LEO GOEDEGEBUURE & RUTH SCHUBERT



ABSTRACT

Vocational education should have a more prominent role in supporting Australia's transitioning to a services and advanced manufacturing economy. Given its proximity to the small and medium sized enterprise sector it can stimulate innovation through applied research and knowledge circulation. For this to happen serious capacity building and self-awareness are necessary and a different approach to education focussed on tomorrow's needs and skills base is needed. This is to be complemented with stronger collaboration across vocational education and with higher education to stimulate effective innovation eco-systems.

WHAT IS VOCATIONAL EDUCATION IN AUSTRALIA AND HOW DID WE GET HERE?

The growth of technical education institutions prior to and since Federation has been driven by a mix of community and industry interests, combined with government intervention. States had responsibility for technical education, and for the most part institutions were small and local, and arguably responsive to the local community and industry. In the 1970s several reviews were conducted, the most significant being the 1974 Commonwealth report, 'TAFE in Australia: a report on needs in technical and further education' (the Kangan Report)²⁹⁰. It was from this time that TAFE became synonymous with vocational education in Australia.

The establishment of the Australian National Training Authority (ANTA) in 1994 heralded an era of much greater collaboration in funding and planning between the Commonwealth, State and Territories. It was also during the 1980-90s that Australian traineeships grew in importance and the launch of the New Apprenticeship system

²⁹⁰ M. Kangan and Australian Committee on Technical and Further Education, *TAFE in Australia: Report on needs in technical and further education* (Canberra: Australian Government Publishing Service, 1974).

in 1998 allowed for *User Choice* funding, the first real opening up of the training market. The greater mingling of responsibilities between the States, Territories and Commonwealth has been in most recent years governed by a series of National Partnership Agreements. National reforms included the establishment of income contingent loans (VET FEE-HELP) allowing VET students to access loans for full fee qualifications at Diploma and Advanced Diploma level.

Beginning in Victoria in 2008, State governments across Australia developed more comprehensive training markets. Whilst the market design varies considerably from State to State, the changes in the funding mix consistently applied pressure to traditional TAFE Institutes, forcing change in the governance and business orientation of TAFEs. The reforms also facilitated the rapid rise of private providers as major players in the delivery of vocational education, and the formation of new models of corporate private providers with a national reach. The release in 2016 of the Total VET activity (TVA) by the National Centre for Vocational Education Research (NCVER)²⁹¹ shows for the first time the extent of the change. Private providers now deliver the majority of vocational education (66.3%).

A recent acceleration of the trend to centralise and amalgamate TAFE Institutes appears to be driven by a combination of factors, including loss of revenue and market share, and a view that a larger critical mass will provide economies of scale. Whilst this is not the place to enter into a debate as to whether or not these developments are based on sound principles in terms of both governance and effectiveness, we need to note that key functional rationales appear to be subordinated to economic rationalism. As we argue in the remainder of this chapter, this lack of vision is particularly problematic given the challenges Australia is facing in transitioning its economy.

The launch of the National Innovation and Science Agenda (NISA) by the Turnbull government in late 2015 quite rightly emphasises the need for tertiary institutions to develop a highly skilled workforce capable of entrepreneurial thinking, being digitally literate, and able to collaborate and innovate. It also calls for better articulation and collaboration between industry and tertiary education institutions, and for a better balance between basic and applied research to drive innovation and socio-economic growth. NISA emphasises that Australia is located in the most dynamic and fastest growing region in the world, and argues for further international orientation. Questions, however, remain about whether the current nature of vocational education institutions and the overall system is fit for purpose.

This chapter will explore this by first challenging some of the operational aspects of NISA, followed by a discussion on the nature of research and the role of research in open innovation. This will then be examined in relation to the Australian economy. We argue for a more pronounced role for Vocational Education (VE) and particularly TAFE Higher Education (TAFE HE) in regionally based innovation eco-systems. Our analysis draws inspiration from international reference countries such as Canada and the Netherlands. Here, successful examples and practices can be found demonstrating highly effective innovation eco-systems built around research universities and

²⁹¹ NCVER. *Australian vocational education and training statistics: Total VET students and courses 2015*. 16 July, 2016. <https://www.ncver.edu.au/publications/publications/all-publications/2874#>

other types of tertiary and vocational institutions that work together with other key stakeholders to lift the socio-economic performance of their regions to meet the fundamental challenges of a rapidly changing world, locally and globally.

Reflecting on the National Innovation and Science Agenda: the absence of VE as truly missing the link

The accepted view of the Australian economy is that the nation is in transition from the mining boom to the services and advanced manufacturing industries, or in other words from a resources-based economy to a much more knowledge-intensive economy. This transition has significant implications for the wider tertiary education sector and in particular the vocational education sector. Yet VET is completely – and remarkably – absent in the NISA narrative.

The NISA focuses on four areas: Culture and Capital, Collaboration, Talent and Skills, and Government as an Exemplar. Culture and Capital are code for the continuation of the industry tax break policy, formally known as the R&D Tax Incentive. A recent evaluation found that the programme is not achieving its stated objectives.²⁹² The report argues that '(t)he objectives, as stated in the programme's legislation, are to "encourage industry to conduct research and development activities that might otherwise not be conducted...to benefit the wider Australian economy." In other words, the Incentive seeks to encourage additional R&D (additionality) that benefits others (spillovers).'²⁹³ The report concludes that this billion \$2.95²⁹⁴ programme 'falls short of meeting its stated objectives of additionality and spillovers. There are a number of areas where improvements could be sought in order to improve the effectiveness and integrity of the programme and achieve a stronger focus on additionality.'

The area of collaboration focusses on a perceived shortcoming of the Australian innovation system, namely the lack of engagement between industry and universities. Australia traditionally comes last in the OECD's annual assessment of university-industry collaboration, and for many this is the obvious missing link in our national innovation settings. Whilst there is no denying that this is an issue, one should also consider the impact not merely scope of collaboration. An analysis of the Scopus database through SciVal shows that Australia is a top performing country when the impact dimension of collaboration is included. So while we may not collaborate enough, when we do the results are very good. This, of course, is particularly true in the (bio)medical sciences where much of the collaboration occurs.

The category of Talent & Skills essentially embraces the digital age and reconfigures the current visa policies for attracting overseas talent to Australia. Whilst both are obvious elements of a national innovation strategy, the absence of a focus on our own tertiary institutions significantly contributing to upgrading and improving both the talent and skills components is remarkable, to say the least.

Finally, while it may be surprising that an exemplar role is defined for government in relation to innovation, this does reflect the reality that the public sector is better at

²⁹² B. Ferris, A. Finkle and J. Fraser. 'Review of the R&D Tax Incentive' (Canberra: Office of Innovation and Science, 2016) <https://www.business.gov.au/assistance/research-and-development-tax-incentive/review-of-the-randd-tax-incentive>

²⁹³ B. Ferris, A. Finkle and J. Fraser. 'Review of the R&D Tax Incentive,' 2.

²⁹⁴ All figures have been converted to equivalent Australian Dollars.

innovation than the private sector, contrary to popular belief and dogma.²⁹⁵ This reality has been reconfirmed in the latest Study on Australian Leadership. The study reveals a pattern of mediocre leadership in many organisations likely to impair their capacity to shift to a knowledge economy and impede efforts to raise productivity. As stated on the project website:

“Innovation drives growth and productivity. Yet most organisations struggle to turn knowledge and ideas into successful innovations. Too few (18%) private sector organisations report high levels of radical innovation. Surprisingly, public sector organisations were more likely than private sector organisations to have reported high levels on both types of innovation. However, findings show those organisations that do innovate successfully achieve superior performance outcomes.”²⁹⁶

Although NISA acknowledges the world-class nature of our universities and their potential to assist in transitioning Australia’s economy, this is primarily operationalised through the commercialisation dimension of its research activities. Scant attention is paid to the main ‘product’ of universities: graduates. No attention is paid to VE’s contribution to a highly skilled workforce. This is troubling in itself but becomes even more of a ‘missing link’ when we take a closer look at the nature of research in Australia.

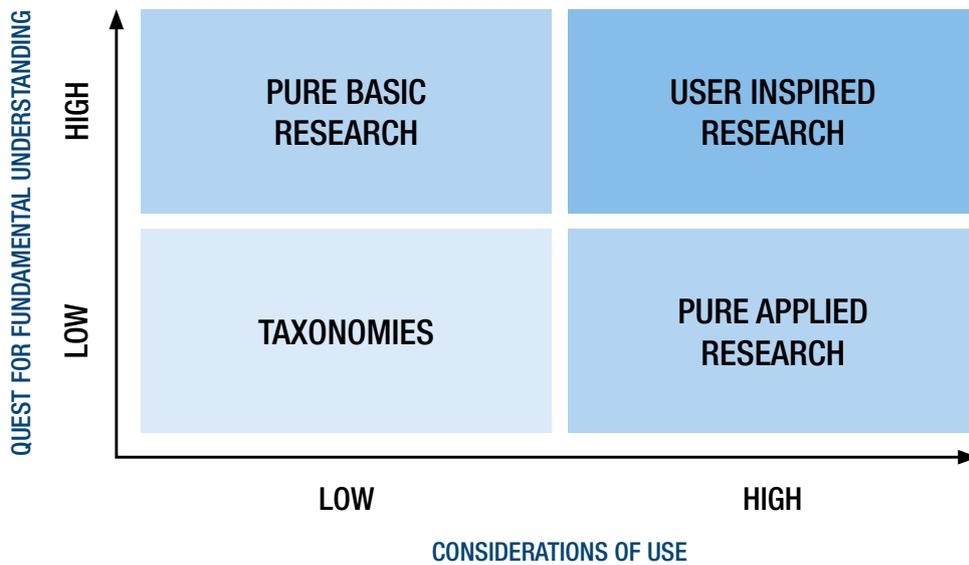
RESEARCH AND OPEN INNOVATION SYSTEMS: A FURTHER REFLECTION

Classifications of research often oscillate between basic and applied research, which are seen as opposite ends of a one-dimensional spectrum. This dates back to the “Science, the Endless Frontier” report, prepared for US president Roosevelt in 1945 by the then director of the Office of Scientific Research and Development, Vannevar Bush (www.nsf.gov/about/history/vbush1945.htm). Yet the view of basic and applied research as residing on opposite sides of the same spectrum is not uncontested. Donald Stokes, a Princeton professor of politics and public affairs, in his 1997 book “Pasteur’s Quadrant; Basic Science and Technological Innovation” argues the case for a much more interactive view of what he labels “understanding” (basic science) and “use” (technological innovation), and rather than conceptualising research as one-dimensional, he proposes a two-dimensional perspective, one being the quest for fundamental understanding and the other being the consideration of use. Looking at research from this perspective, it becomes possible to distinguish at least four types (Figure 1). Whilst these types are delineated in Figure 1, it should be emphasised that as both the axis are sliding scales going from low to high, in effect we are in fact conceptualising research in a much more fine-grained manner. In Stokes’ view much of the most innovative research work is that which moves back and forth between the upper and the right hand quadrants, or “interacts” in his terminology.

²⁹⁵ A. Arundel, C. Bloch and B. Ferguson. “Measuring innovation in the public sector” (2016) <https://www.oecd.org/sti/087%20-%20ARUNDEL%20BLOCH%20Methodologies%20for%20measuring%20innovation%20in%20the%20public%20sector.pdf>

²⁹⁶ “Study of Australian Leadership,” *Centre for Workplace Leadership*, The University of Melbourne, 2016. <http://sal.workplaceleadership.com.au/about-sal>

Figure 1: Quadrant model of scientific research (based on Stokes 1997)



When we map the Australian public research and development effort on this model, it is clear that much university research would sit in the top left quadrant, dominated by ARC- and NH&MRC-funded research, with some on the left side of the top right quadrant (primarily ARC-CRC projects). Research from the publicly funded research organisations such as CSIRO, BOM, ANSTO, AIMS and AAD would primarily be located in the upper right hand quadrant, though some of it would move back and forth with the top left-hand quadrant. Pure applied research would be undertaken by consultancy firms, universities through their external contract-based research and to some extent by vocational education institutions. Taxonomic research primarily would be found in both the university sector and public sector organisations.

Stokes' view on innovation as a multi-dimensional and dynamic activity is in line with the prevailing view that innovation has moved from a closed to an open process, embedded in a system of interacting actors sharing knowledge and experience and collaboration.²⁹⁷ A summary of the differences between closed and open innovation is provided in table 1 (<http://www.openinnovation.eu/open-innovation/>).

²⁹⁷ H. W. Chesbrough. "The Era of Open Innovation. Sloan Management Review," April 15, 2003, <http://sloanreview.mit.edu/article/the-era-of-open-innovation/>

Table 1: Closed and open innovation contrasted

CLOSED INNOVATION PRINCIPLES	OPEN INNOVATION PRINCIPLES
The smart people in our field work for us.	Not all of the smart people work for us* so we must find and tap into the knowledge and expertise of bright individuals outside our company.
To profit from R&D, we must discover, develop and ship it ourselves.	External R&D can create significant value: internal R&D is needed to claim some portion of that value.
If we discover it ourselves, we will get it to market first.	We don't have to originate the research in order to profit from it.
If we are the first to commercialise an innovation, we will win.	Building a better business model is better than getting to market first.
If we create the most and best ideas in the industry, we will win.	If we make the best use of internal and external ideas, we will win.
We should control our intellectual property (IP) so that our competitors don't profit from our ideas.	We should profit from others' use of our IP, and we should buy others' IP whenever it advances our own business model.

* This maxim first came to my attention in a talk by Bill Joy of Sun Microsystems over a decade ago. See, for example, A. Lash. The Joy of Sun: The Standard, June 21. 1999. <http://jfhstaoard.net>.

Source: Chesbrough, 2003.

Thus, open innovation combines the different types of research discussed above, and, in the Australian context, implies interaction and collaboration between public and private R&D and consequently between publicly funded tertiary education institutions, research institutes and their key stakeholders – governments and industry. This interaction and collaboration is key to effective innovation ecosystems as identified by van Agtmael and Bakker.²⁹⁸ Triggered by the major socio-economic transformations that a number of traditional US rustbelts were going through following the demise of their traditional manufacturing industries, they compared a significant number of apparently successful regional innovation ecosystems across the US and Europe, and found a number of similarities. Essentially these are the presence of a research-intensive university, a number of (vocational) colleges, active local and state governments focused on facilitating economic transformation, access to venture capital, and, importantly, agencies and individuals that act as “connectors” to bring these various stakeholders together and stimulate collaboration over competition, realizing these are two sides of the same coin.²⁹⁹

Transforming regional economies is something of great importance to Australia given our long-term dependence on natural resources, the fact that coal-fired power stations from an ecological perspective are no longer sustainable, and the growing realisation that our traditional manufacturing base no longer is competitive in a globalised world. In this context, effective innovation ecosystems and open innovation become more than just academic concepts. They become the vehicles that need to drive socio-economic transformation. But we also need to realise the nature of our economy. As evidenced in the most recent Australian Innovation System Report,³⁰⁰

²⁹⁸ A. van Agtmael and A. Bakker. *The smartest places on earth; Why rustbelts are the emerging hotspots of global innovation* (New York: Public Affairs, 2016).

²⁹⁹ B. J. Nalebuff and A.M Brandenburger. *Co-opetition*. (London: Profile Books, 1996).

³⁰⁰ Department of Industry, Innovation and Science. *Australian Innovation System Report* (Canberra: Department of Industry, Innovation and Science, 2016) <https://industry.gov.au/Office-of-the-Chief-Economist/Publications/Documents/Australian-Innovation-System/2016-AIS-Report.pdf>

Australia does not have a strong foundation of large-scale, multi-national industries, but is primarily a country of small and medium sized enterprises (SME), with a strong concentration in the services sector. According to ABS 2016 data 68% of employment in Australia is in the SME sector, 85% in the services industries (everything excluding agriculture, forestry, fishing, mining and manufacturing), which also is responsible for 77% of industry value add. This has a major impact on the nature of innovation in the country, being driven by SMEs and predominantly of a process-type nature rather than a 'new product' to market. This strongly suggests that widely-heralded innovations such as Wi-Fi, the Cochlear ear-implant and the cervical cancer vaccine are exceptions rather than the rule. According to the Australian Innovation System Report, part of the problem is in a weakly networked innovation system: "Australia ranks poorly against OECD comparators in most business to research and business to business indicators."³⁰¹ This problem of a weakly networked system also was at the heart of the Australian Academy of Technological Sciences and Engineering (ATSE) 2013 position paper "Translating research into economic benefits for Australia; rethinking linkages", which points to the cultural differences between SMEs and Academia as one of the factors inhibiting stronger collaboration.

Whilst much of the analysis of Australia's innovation issues aligns in terms of problem definition, most also stick to the classic interpretation of innovation and research that underpinned Vannevar Bush' 1945 report. The implications of moving into open innovation ecosystems appear not to be considered very well. Nor is the structure of the Australian economy adequately captured in the underlying analysis. Like Australia, the Netherlands is very much a services economy. Taking an open innovation approach as its starting point, this spurred the Dutch Scientific Council for Governmental Policy (WRR) to argue the case for a move away from the traditional R&D model to one much more based on the principle of "knowledge circulation" rather than solely on "knowledge generation."

"The focus cannot be on knowledge generation alone; it will be just as important to see that that knowledge is properly absorbed and circulated. The question, then, is whether a country (especially a small one like the Netherlands) should seek to remain in the lead by investing only in knowledge generation. In many cases, it is not necessary for a country to top the world science rankings, as long as it understands developments in science well enough and is connected to networks in which new knowledge circulates. On the other hand, knowledge will become more important as a basic attitude. People have to be able to absorb new knowledge quickly and make it productive."³⁰²

This line of argument is unlikely to go down well in Australia given vested interests, yet seems appealing from the compelling case of open innovation. The logical consequence would be a far more prominent role for vocational education given its close proximity to the SME sector. This would require the capacity of VE to effectively engage in the process of knowledge circulation, which would in turn require a greater ability to absorb research and translate it to professional practice.

³⁰¹ Ibid, 2.

³⁰² Scientific Council for Government Policy. *Towards a learning economy: Synopsis of WRR-Report No. 90* (2014) http://www.wrr.nl/fileadmin/en/publicaties/PDF-samenvattingen/Summary_Towards_a_learning_economy.pdf

Internationally there are good examples of how higher education and vocational education can contribute to effective innovation ecosystems by contributing different sets of expertise based on their distinct missions and profiles. The Canadian system has developed a comprehensive model of applied research, with students forming a vital part of the innovation workforce as they, in effect, become the R&D department for small and medium-sized enterprises. The Canadian experience provides these enterprises with a powerful and cost-effective means of driving product, process and service innovation. This change is largely due to the support of the Federal government that provides the majority of the funding, about \$85 million annually, under a competitive application process, and, importantly, the private sector provides significant co-funding of \$78 million. In similar vein, the Dutch *Hogescholen* (Universities of Applied Sciences) over the last ten years have developed a similar applied research capability that complements rather than competes with the universities' research capability. A 2016 evaluation of this evolutionary process confirms the remarkable success.³⁰³ Across the Dutch non-university sector some 600 "Lectoraten" (Applied research groups) have been established at an investment of M\$242. The average research group comprises a part-time research leader (0.61FTE) normally with extensive industry experience, a further team of some 6 part-time researchers totaling 1.7 FTE and 1.5 PhD students, with 0.4 FTE administrative support. The average turnover of these research groups is \$411,000 making them self-sustainable. Importantly, although modest in size, they have a very significant impact on innovation as they are industry-driven with a very high consideration of "use" and short time-frames. Also, the results of the projects carried out are directly translated in curriculum innovation, thus contributing to the "knowledge circulation" principle discussed earlier. Like Canada, students close to graduation are part of the research teams.

The Canadian and Dutch examples may be considered "far vistas" when thinking about VE and TAFE in particular, yet we should not ignore what already is happening. One case in point is TAFE Queensland's development of Red Space, the Centre for Applied Research and Innovation. Its mission is to support business innovation and workforce capability building, support innovation in educational delivery, enhance student learning outcomes through the cultivation of entrepreneurial and innovation capabilities as they engage in projects with industry and enterprises, and drive applied research and expertise in specific areas of research specialisation. Whilst a young organisation, it can already demonstrate impact in helping Queensland transition its economy away from its resources basis.³⁰⁴ This brings us to the final component of our argument for the inclusion of vocational education in the national innovation debate and agenda: the changing nature of work.

THE CHANGING NATURE OF WORK

The changing nature of work and the implications for skill development has emerged as a global priority. While the Australian vocational education system has long been regarded as world class, the past decade has significantly weakened the standing of our system internationally, and confidence domestically, and right now we have no unified vision for the next phase of development.

³⁰³ Rathenau Instituut. *Praktijkgericht Onderzoek bij Lectoraten van Hogescholen*. Den Haag: Rathenau Instituut, 2016; see also H. de Boer. *The Netherlands – Strengthening research in Universities of Applied Science*. Brussels: European Commission, 2016. <http://bookshop.europa.eu/>

³⁰⁴ RedSpace, ARIES Case Studies Vol. 1. TAFE Queensland, Brisbane, 2016.

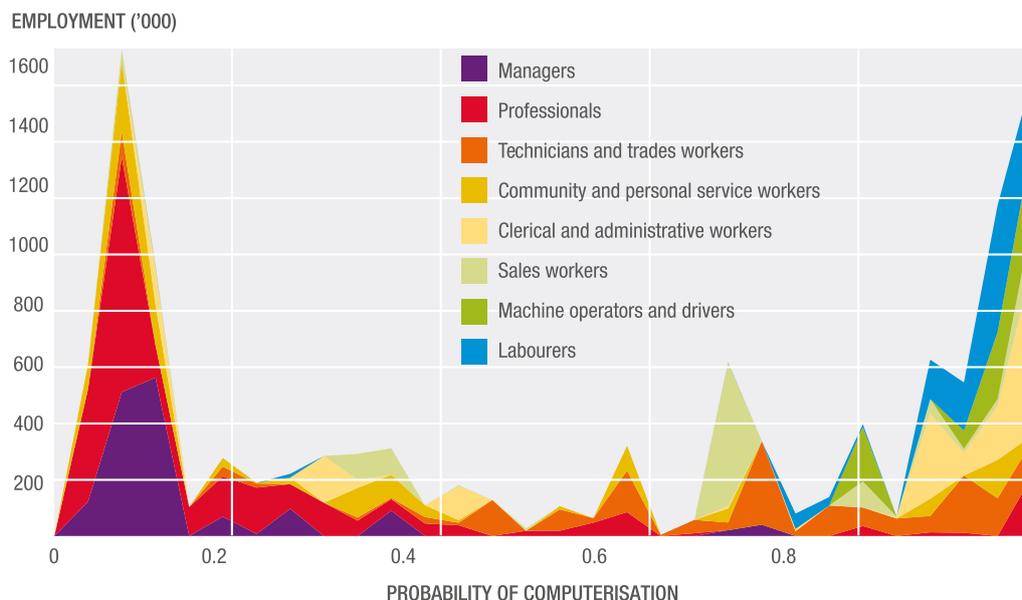
As private and public sector leaders grapple with increasing global complexities and challenges, the single most important leadership quality emerging is creativity. This view was reinforced by the World Economic Forum in 2016 which identified the top 10 skills for 2020:

- 1 **Complex Problem Solving**
- 2 **Critical thinking**
- 3 **Creativity**
- 4 **People Management**
- 5 **Coordinating with others**
- 6 **Emotional Intelligence**
- 7 **Judgment and decision-making**
- 8 **Service Orientation**
- 9 **Negotiation**
- 10 **Cognitive Flexibility**

As developed economies transition into new labour markets there is an increasing demand for people to work in highly skilled jobs that are non-routine. This work requires employees and employers to process new information and solve unstructured problems while working in diverse teams requiring the need for strong interpersonal skills. With the growth of the services sector as a major employer and emerging opportunities in manufacturing, Leahy (2016) noted it is the combination of soft skills and occupational skills that will be required for the new workforce.

The CEDA report published in June, 2015 on the future workforce in Australia provided detailed perspectives on the expected relatively short-term changes in the workforce. Figure 2 below indicates the categories of work that will be impacted.

Figure 2: Distribution of job categories against probability of computerisation



Note: This is the Australian equivalent of Figure 3 on page 37 in Frey and Osborne.

Source: Durrant-Whyte, H. et al. "The impact of computerisation and automation on future employment Australia's future workforce." ³⁰⁵

³⁰⁵ Durrant-Whyte, H., L. McCalman, S. O'Callaghan, A. Reid, and D. Steinberg. "The impact of computerisation and automation on future employment Australia's future workforce." *Australia's future Workforce?* (Melbourne: CEDA, 2015): 56-64. http://adminpanel.ceda.com.au/FOLDERS/Service/Files/Documents/26792~Futureworkforce_June2015.pdf

Patently the changes in the workforce are already underway, so how then can we equip current and future students for the challenges and changes that they will undoubtedly face, and what does this mean for our current system? Some of the most insightful work in recent years has been led by Leesa Wheelahan with a consortium of researchers from Victoria and NSW. The 'Vocations' reports provide detailed case studies highlighting the need for change and options for reforming the vocational education system. Of central importance is the concept of broad vocational streams that would enable the development of skills applicable across wider employment options thereby allowing people to move between work and adapt to changing conditions.

CONCLUSION

If innovation is to be at the heart of socio-economic growth for Australia in the years to come, a reconceptualisation of innovation is needed. We need to move away from the traditional idea of innovation as being linear research and development resulting in commercialisation of publicly funded research towards a more open concept of innovation based on knowledge circulation, collaboration, and diversification of research definitions in the broader context of innovation ecosystems. As demonstrated by international practice and given the changing nature of our workforce, there is an explicit role for vocational education institutions which extends to specific forms of user-driven research.

Such a change in role of VE and its contribution to innovation will not be achieved overnight. It requires capability development and most importantly cultural change. The onus is upon the sector itself to lead this change and transform itself from within. Rather than going cap in hand to governments to claim financial resources for this necessary transformation, the peak body should take the initiative to lead the charge. For too long vocational education has seen itself as a subservient branch of state and territory governments. By initiating the transformation outlined here, vocational education will be able to substantiate its claim for autonomy and become an integral part of Australia's innovation system.

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INTERNATIONALISATION OF AUSTRALIAN HIGHER EDUCATION: WHERE TO FROM HERE?

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ABSTRACT

The internationalisation of Australian higher education has been an incredible success story. International student enrolments increase year-on-year, greater numbers of Australian students go overseas for part of their study than ever before, and Australian academics co-author frequently with their international peers. With successful campus operations overseas and a growing focus on outreach and engagement in Asia, Australian institutions can happily pat themselves on the back for a job well done. Yet, other perspectives on internationalisation paint an alternative picture, in which Australian institutions have had limited success in internationalising the student experience or in convincing internal and external communities of the educational rather than the economic value of internationalisation. This chapter argues that the sustainability of international education in Australia will depend on a more balanced approach to internationalisation in the future, clearly focused on opportunities for all students and staff and measured in terms of its broader contribution to society.

INTRODUCTION

Internationalisation is part of the fabric of higher education institutions around the world. Universities strive to be in the top tier of international rankings, to engage in international research, and to recruit international students, among other activities. Much has been written about the internationalisation of higher education over the last quarter century, both as a policy implemented by individual institutions and as a phenomenon of broader interest to governments and non-government organisations.³⁰⁷ Despite continuing definitional dilemmas over the true nature of internationalisation and moves from various quarters to refocus attention away from

³⁰⁶ This research was completed during Douglas Proctor's PhD candidature at the Melbourne Centre for the Study of Higher Education, for which he received support through an Australian Government Research Training Program Scholarship.

³⁰⁷ D. De Wit and E. Jones, "We Need to Change the Language of Internationalisation" *University World News*, 14 November, 2014; J. Beelen and E. Jones, "Europe Calling: A New Definition of Internationalization at Home." *International Higher Education* 83, (2015): 12.

the commercially-driven aspects of international education,³⁰⁸ Internationalisation and international education are not new to Australian higher education.³⁰⁹ Australia has clearly been at the vanguard of internationalisation worldwide. However, that success has focused primarily on international student recruitment, with other aspects of internationalisation proving more challenging to achieve. In this chapter we ask the question: where to from here for international higher education in Australia?

A BEACON OF SUCCESS IN INTERNATIONALISATION

In line with global trends for greater coordination of international activities,³¹⁰ Australian higher education institutions were early adopters of a strategic approach to internationalisation. This saw them develop international strategies and internationalisation plans in response to a range of external factors, including the growth of mass student mobility across borders,³¹¹ the advent of international rankings of universities,³¹² and new forms of cross-border or transnational education.³¹³ By 1995, survey data indicated that every Australian university had some form of internationalisation policy or strategy in place.³¹⁴ At that time, all Australian universities were enrolling international students and sending students on exchange to overseas universities. The majority had strategies in place for the internationalisation of the curriculum and maintained international research links. Most were involved in the provision of international technical assistance and training, and had twinning arrangements with partner institutions abroad. Furthermore, a small number of Australian universities had developed offshore campuses.

Over twenty years later, it is reasonable to argue that the internationalisation of Australian higher education has been a resounding success. International students now comprise 34.7 per cent of all higher education enrolments,³¹⁵ with international student fee revenue at \$4.7 billion in 2014, that is 17.3 per cent of total annual revenue for Australian universities.³¹⁶ Not all international students study in Australia, however, with a sizeable proportion taught via transnational education (29.7 per cent of all international enrolments in 2015³¹⁷). In support of their offshore

³⁰⁸ L. Rumbley, "‘Intelligent Internationalization’: A 21st Century Imperative," *International Higher Education* 80 (2015): 16; "Affirming Academic Values in Internationalization of Higher Education: A Call for Action," International Association of Universities, last modified April, 2012, http://www.iau-aiu.net/sites/all/files/Affirming_Academic_Values_in_Internationalization_of_Higher_Education.pdf.

³⁰⁹ D. Davis and B. Mackintosh, eds., *Making a Difference: Australian International Education* (Sydney: UNSW Press, 2011), 231.

³¹⁰ L. Childress, "Internationalization Plans for Higher Education Institutions," *Journal of Studies in International Education* 13 (2009): 280; R. Edelstein and J. Douglass, "Comprehending the International Initiatives of Universities: A Taxonomy of Modes of Engagement and Institutional Logics," *Research and Occasional Papers Series (ROPS)*, Center for Studies in Higher Education, University of California, Berkeley, no. CSHE.19.12 (2012).

³¹¹ D. Ward, "Globalization, Public Policies and Higher Education," in *The Globalization of Higher Education*, eds. L. Weber and J. Duderstadt, (London: Economica, 2008), 262–265.

³¹² S. Marginson and M. Van der Wende, "To Rank or to Be Ranked: The Impact of Global Rankings in Higher Education," *Journal of Studies in International Education* 11, no. 3–4 (2007): 306

³¹³ J. Knight, *Higher Education in Turmoil: The Changing World of Internationalisation*, (Rotterdam, The Netherlands: Sense Publishers, 2008), 23.

³¹⁴ K. Back, D. Davis, and A. Olsen, "Internationalisation and Higher Education: Goals and Strategies", (Canberra: Australian Government Publishing Service, 1996): 6.

³¹⁵ Australian Government, "Selected Higher Education Statistics - 2015 All Students," Table 2.10: All Students by State, Higher Education Institution, Citizenship and Residence Status, Full Year 2015.

³¹⁶ F. Larkins and I. Marshman, *Australian Universities Overseas Student Recruitment: Financing Strategies and Outcomes from 2004 to 2014*, (Melbourne: LH Martin Institute, 2016): 4.

³¹⁷ Australian Government, "Selected Higher Education Statistics - 2015 Overseas Students," Table 7.5: Commencing and All Overseas Students by State, Higher Education Institution and Onshore/Offshore Status, Full Year 2015.

education endeavours, Australian universities currently operate twelve international branch campuses (in Malaysia, Singapore, Vietnam, South Africa, the United Arab Emirates, Canada and India). Although other countries have larger numbers of branch campuses abroad, Australia's are amongst the most successful in terms of student enrolments, with eight Australian branch campuses featuring in the top 15 for student numbers.³¹⁸ Beyond inbound flows of students, Australian universities have secured steady increases in the numbers of students undertaking international study experiences (14.8 per cent of domestic undergraduate completions in 2013, up from 8.8 per cent in 2009), now surpassing the US in the proportion of outbound mobility from their campuses.³¹⁹ Australian academic staff are also committed to international research collaboration, with analysis of bibliometric data indicating that 45.3 per cent of publications between 2011-2015 (all disciplines combined) were co-authored with institutions in other countries.³²⁰ Further evidence of Australia's success in internationalisation can be seen in the regional outreach initiatives of universities. For example, 13 Australian campuses now host Confucius Institutes as part of their broader strategies for engagement with China

In support of institutional approaches to internationalisation, Australia has a strong framework of government support at both federal and state/territory levels. The national *Education Services for Overseas Students (ESOS) Act 2000* sets out the legislative framework for the delivery of international education in Australia, with a strong focus on consumer protection. Beyond legislation, the Commonwealth Government adopted a National Strategy for International Education 2025 in 2016. Other recent federal government initiatives include the New Colombo Plan (an outbound mobility program designed to foster knowledge of the Indo Pacific in Australia), Austrade's long-term market development roadmap (AIE2025),³²¹ and the Australia Global Alumni Engagement Strategy.³²² At the subnational level, each of the states and territories has a strategy or action plan for international education, with staff and resources in support. In Victoria, for example, where international education has been the largest services export industry for over a decade,³²³ specialist staff and initiatives are in place within both the Department of Education and Training, and the Department of Economic Development, Jobs, Transport and Resources. The State of Victoria also employs eight Education Services Managers in its overseas network of Government Business Offices, a 'Global Education Network' with nodes in Latin America, the Middle East/Africa, South Asia, South East Asia and North Asia.³²⁴

Beyond government support, a range of professional associations in Australia has grown to support the interests of different stakeholders, from the Council of International Students Australia (CISA) to the International Education Association of Australia (IEAA) and ISANA International Education Association, which represent professionals and academics working in international education. These organisations

³¹⁸ W. Lawton and A. Katsomitros, *International Branch Campuses: Data and Developments*, (London: Observatory on Borderless Higher Education, 2012), 3.

³¹⁹ A. Olsen, "2014 Research Agenda: Australian Universities International Directors' Forum," Strategy Policy and Research in Education, October 2014.

³²⁰ Scopus data up to 12 September 2016 drawn from www.scival.com, © 2016 Elsevier B.V.

³²¹ www.austrade.gov.au/Australian/Education/Services/Australian-International-Education-2025

³²² <http://dfat.gov.au/people-to-people/global-alumni/Pages/global-alumni.aspx>

³²³ "Victoria's Future Industries: International Education Discussion Paper," Victorian Government, March 2016, http://www.business.vic.gov.au/__data/assets/pdf_file/0010/1275499/International-Education-Strategy-web-version-20160308.PDF.

³²⁴ "International Education Sector Strategy: Victoria's Future Industries," Victorian Government, July 2015, www.business.vic.gov.au/futureindustries.

hold large scale annual conferences and host regular forums by special interest groups, thereby providing multiple opportunities for Australians to access professional development in relation to key aspects of internationalisation.

In many ways, therefore, internationalisation and international education are now core business for all Australian universities, complete with professional support from a range of government department and non-government agencies.

RHETORIC VERSUS REALITY – A CASE OF OVERSELL?

For Australian universities, as well as for governments and non-government organisations, internationalisation is clearly understood to be a holistic phenomenon, integrating inbound and outbound student mobility with international research collaboration and a clear push to internationalise the operations and activities of the institution.³²⁵ Accordingly, in formal strategies and plans, internationalisation in Australia is not only described in terms of economic benefits (derived from international student tuition fees), but also in terms of the social, cultural and intellectual benefits to individual universities, their communities and broader society.³²⁶ Some Australian universities have even openly expressed their commitment to ‘comprehensive internationalisation’, defined as a whole-of-institution commitment to infuse international and comparative perspectives throughout the teaching, research, and service missions of higher education.³²⁷

Yet, in spite of these holistic or comprehensive aspirations, questions remain as to the scope of institutional strategies in relation to internationalisation. Increased commercialism and the growing predominance of economic rationales for internationalisation, over socio-political or academic concerns, have been identified as challenges in the longer term.³²⁸ Indeed, in countries such as the UK, concerns have been raised about institutions having a far stronger focus on international students than on the broader aspects of internationalisation.³²⁹ In a similar fashion, in Australia questions have been raised as to whether Australian universities have as strong a commitment to their broader internationalisation strategies as they do to the recruitment and management of international students.³³⁰ While little empirical evidence is available to support this claim, it is clear that the history of internationalisation in Australia has been strongly shaped by the inbound mobility of international students. Moreover, the conflation of the terms ‘international education’ and ‘internationalisation’ is commonplace. Whilst Australia’s transition from an aid-focused approach to international education to a view of international student mobility as an export industry³³¹ has no doubt promoted the development of institutional international strategies, it has perhaps also served to skew Australian approaches to internationalisation towards the more student-focused aspects of international education.

³²⁵ M. Chaney, *Discussion Paper for the Development of an International Education Strategy for Australia*, International Education Advisory Council, April 2012.

³²⁶ “National Strategy for International Education 2025,” Australian Government, April 2016, <https://nsie.education.gov.au>

³²⁷ J. Hudzik, *Comprehensive Internationalization: Institutional Pathways to Success*. (London: Routledge, 2015): 34.

³²⁸ E. Jones and H. De Wit, “Globalized Internationalization: Implications for Policy and Practice”. *IIE Networker*, March 2014; S. Marginson, “International Education in Australia: Riding the Roller Coaster,” *International Higher Education*, Boston College Center for International Higher Education, 68, (2012): 11.

³²⁹ J. Lunn, “Global Perspectives in Higher Education: Taking the Agenda Forward in the United Kingdom,” *Journal of Studies in International Education* 12, no. 3 (2008): 235.

³³⁰ A. Stella, and Liston, C. “Internationalisation of Australian Universities: Learning From Cycle 1 Audits” *AUQA Occasional Publications*. (Melbourne: AUQA, 2008): 11.

³³¹ E. Meadows, “From Aid to Industry: A History of International Education in Australia,” in *Making a Difference: Australian International Education*, eds. Davis, D. and Mackintosh, B., (Sydney: UNSW Press, 2011): 54.

In many ways, therefore, the internationalisation of Australian higher education can be seen to have contributed more readily to institutional gain than to the achievement of more wide-reaching goals, such as the improvement of society or of the individual students and staff on each campus. This assertion is supported from a number of angles: international student enrolments have boosted discretionary revenue and support institutional viability in times of decreasing national funding; partnerships and collaboration with Asia have reinforced Australia's regional positioning and support international student recruitment, and international research collaboration (with its particular focus on North America and Europe) has served to boost reputation whilst simultaneously contributing to success in global rankings. Even outbound student mobility can be painted as an attractive experiential drawcard for domestic student recruitment, with the possible bonus of enhanced employability.

Meanwhile, other aspects of internationalisation in Australia appear to be less prominent, particularly those which are focused more on personal or societal transformation than they are on institutional gain. In this light, while Australia has played a leading role in stimulating academic discussions about the internationalisation of the curriculum and the place of global citizenship and global skills in teaching and learning,³³² there is little hard evidence of outcomes in either area.³³³ These aspects of internationalisation are harder to measure which may help to explain why they have received less attention.³³⁴ Similarly, in their outreach and engagement, Australian universities have been slow to focus attention on developing and maintaining connections with their global alumni (be they domestic or international graduates), partially as a result of cost, but also due to the developing status of alumni and philanthropic engagement within Australian higher education. This places Australia at a disadvantage in relation to its public diplomacy vis-à-vis countries such as the USA, UK and Canada.³³⁵ Similarly, despite some excellent initiatives in capacity-building and development, performance incentives for Australian academic staff are predominantly focused on research output and therefore do little to directly encourage involvement with development work abroad.³³⁶ Naturally, those Australian universities with campuses abroad can mount a stronger argument about outreach and engagement with the local communities in their host countries. However, following the fairly rapid rise and fall of UNSW Singapore, doubts remain as to the viability of Australian transnational ventures without significant student enrolments.

THE END OF INTERNATIONALISATION?

Despite the earlier ubiquity of international strategies and plans, many Australian institutions now appear to be moving away from using the term 'internationalisation' in their formal planning documents. In its place, they now refer to aspirations in regards to 'international engagement', 'global education' or 'world-class university' status.

³³² B. Leask, *Internationalizing the Curriculum* (London: Routledge, 2015); Arkoudis et al., *Internationalising the Student Experience in Australian Tertiary Education: Developing Criteria and Indicators* (Melbourne: Centre for the Study of Higher Education, 2012).

³³³ W. Green, and P. Mertova. "Enthusiasts, Fence-Sitters and Sceptics: Faculty Perspectives on Study Abroad in Australia and the Czech Republic," *Higher Education Research and Development*, 2013: 678.

³³⁴ Y. Gao, "Constructing Internationalisation in Flagship Universities from the Policy-Maker's Perspective" *Higher Education*, (2014): 5.

³³⁵ C. Byrne and R. Hall, "International Education as Public Diplomacy", *Research Digest. International Education Association of Australia*, June 2014. <http://www.ieaa.org.au/documents/item/258>.

³³⁶ E. Bexley, R. James, and S. Arkoudis, *The Australian Academic Profession in Transition*, (Melbourne, Centre for the Study of Higher Education, September 2011).

A review of the current strategic plans of the Group of Eight universities highlights this point, with only three separate references to internationalisation identified.³³⁷ Amongst the Group of Eight, the University of Melbourne has certainly shifted the language it uses to describe its international activities. Whilst its 2011-2014 strategic plan contained a full-page statement on internationalisation detailing the University's international vision³³⁸, the current University of Melbourne strategic plan 2015-2020 makes no mention of the term, but outlines the institution's aspirations in terms of its 'international engagement.'³³⁹

These variations in terminology are not merely semantic. In some cases, they arise out of seeming confusion and misunderstanding about the meaning of internationalisation amongst different groups of campus stakeholders.³⁴⁰ In these cases, alternative descriptions have been sought which chime more readily with students and staff. However, another interpretation of this shift in language could be that Australian universities have reached the end of their process of internationalisation, at which point they no longer need to reference it in their planning.

Perhaps, at this point, it is useful to revisit the various definitions of internationalisation to serve as a reminder of just what institutions have been seeking to achieve. In this context, it is useful to note that the working definition developed iteratively by Knight and De Wit³⁴¹ has received broad acceptance within both scholarly and practitioner groups,³⁴² despite its various critics. Their view of internationalisation as a process which seeks to integrate international, intercultural and global dimensions across all aspects of the purpose, functions and delivery of higher education has frequently been adopted as a foundational definition in the international strategies put forward by individual institutions. In 2015 De Wit et al. proposed a new definition of the internationalisation of higher education, as follows:

the intentional process of integrating an international, intercultural or global dimension into the purpose, functions and delivery of post-secondary education, in order to enhance the quality of education and research for all students and staff, and to make a meaningful contribution to society.³⁴³

This revised definition seeks to clarify that internationalisation is an intentional process, implemented throughout the academic and management functions of an institution, and intended to make a contribution within and beyond the institution.

³³⁷ The University of Queensland (UQ) commits to internationalisation experiences for all students, whilst the University of New South Wales (UNSW) indicates that faculties and schools will develop internationalisation plans to support the international experiences of students. Whilst the Australian National University (ANU)'s current strategic plan references an active commitment to internationalisation, this plan was developed under the leadership of the former Vice-Chancellor. No reference to internationalisation is made in the summary of strategic priorities issued by the new Vice-Chancellor ahead of the next round of strategic planning.

³³⁸ "The University Plan 2011-2014", The University of Melbourne, last modified June 2010, http://about.unimelb.edu.au/_data/assets/pdf_file/0007/768805/universityplan2011-2014.pdf

³³⁹ "The University of Melbourne Strategic Plan 2015-2020: Growing Esteem", last modified September 2014, http://about.unimelb.edu.au/_data/assets/pdf_file/0006/1462065/11364-GROWING-ESTEEM-2015-FA-WEB.pdf

³⁴⁰ C. Whitsed, and W. Green, "What's in a Name? A Theoretical Exploration of the Proliferation of Labels for International Education Across the Higher Education Sector," *Journal of Studies in International Education* 18, 2 (2014): 105–19.

³⁴¹ J. Knight, *Higher Education in Turmoil: The Changing World of Internationalisation*, (Rotterdam, The Netherlands: Sense Publishers, 2008): 12-15.

³⁴² Maringe, F. "The Meanings of Globalization and Internationalization in HE: Findings from a World Survey", in *Globalization and Internationalization in Higher Education: Theoretical, Strategic and Management Perspectives*, eds F. Maringe and N. Foskett, (London: Continuum International Publishing Group, 2010).

³⁴³ H. De Wit, "What Is an International University?" *University World News*, 20 March 2015.

According to this new definition, it is perhaps harder to claim that the Australian higher education sector has been successful in its internationalisation. While institutions have clearly displayed intent here since at least 1995, it is unclear as to whether internationalisation has been widely implemented across all management functions, let alone throughout academic structures.³⁴⁴ The recent findings of the lead author (unpublished PhD thesis³⁴⁵) certainly support the claim that internationalisation has not had a significant effect on the work of academic staff. Many would also argue that the principal contribution of internationalisation to Australian higher education has been economic, rather than a broader and more meaningful contribution to Australian or global society.³⁴⁶

As highlighted above, internationalisation has certainly delivered gains for Australian institutions in terms of financial security, greater student diversity on-campus, and success in global rankings. But is it really the case that Australian universities have integrated international, intercultural and global dimensions across all aspects of their activities? Does Australia now have a fundamentally internationalised sector, one where the process of internationalisation has truly run its course?

Few would dare to claim that internationalisation is over, particularly in relation to the revised definition put forward in 2015. Indeed, there remain significant gaps in Australia's achievements to date, including an identified need for the following:

- A stronger focus on the internationalisation of the student experience for domestic and international students (beyond the promotion of outbound mobility and the integration of global citizenship into the curriculum)
- A targeted approach to securing an equitable student experience for international students (through closer links with local communities and active assistance in the development of networks to support post-study employment)
- Convincing internal and external communities of the educational value of inbound international education (not just its economic value)
- Maximizing the potential of cultural diversity in the Australian community to support internationalisation at home
- Developing and championing effective measures of campus internationalisation focused on outcomes rather than outputs
- Encouraging a more balanced approach to international engagement by academic staff in terms of type of activity, including a stronger focus on international business/industry and alumni engagement, as well as development and capacity-building work
- Challenging existing geographic paradigms in international engagement, whereby international research collaboration is predominantly Western-centric whilst international student recruitment is largely dominated by Asia.

³⁴⁴ B. Leask and J. Beelen, "Enhancing the Engagement of Academic Staff in International Education", in *Proceedings of a Joint IEAA-EAIE Symposium. Melbourne: International Education Association of Australia*, (Melbourne: IEAA, 2010): 34.

³⁴⁵ D. Proctor, "Academic Staff and International Engagement: Motivations and Drivers in Australian Higher Education", unpublished PhD, University of Melbourne.

³⁴⁶ H. Cook, "Catalina from Colombia Happy to Be Part of Student Body Worth \$5.8b to Victoria". *The Age*. 14 September 2016; C. Whitsed, and W. Green, "An International Education Strategy with No Vision," *University World News*, 13 May 2016; S. Marginson, "International Education in Australia: Riding the Roller Coaster"β.

Perhaps to become truly international or global institutions, Australian universities will need to re-assess their progress with internationalisation in light of the revised 2015 definition and in relation to the gaps listed above. In doing so, they might question what value is derived from international activities and international engagement, not just for the institution, but for its staff and students, the local community and the range of external communities which the university serves. These reflections might also lead them to reassess their broader ties to Australia and to the Australian community. In spite of significant programs of international engagement in some areas, it appears that Australian higher education institutions still generally perceive themselves as domestic institutions.

It remains unclear whether the Australian higher education sector will choose to revisit internationalisation, particularly given its success in those dimensions of internationalisation which are more readily measurable and actively contribute to institutional viability and prestige. Furthermore, the Australian higher education sector generally adopts a self-congratulatory tone in relation to its international achievements. To do otherwise might send the wrong message to the international student market and put at risk the significant revenue streams on which Australian universities now depend.

Given these constraints, the authors propose that Australia should move the discussion of internationalisation forward by focusing on the sustainability of international activities into the future. Can continued growth in international enrolments be sustained without a more significant focus on the social aspects and benefits of internationalisation? What steps are necessary to ensure that the next phase of internationalisation in Australia includes all students and staff? How will Australian institutions show that their internationalisation is about more than institutional gain, but about a broader contribution to their external communities and to society in general? These questions, amongst others, will be crucial to the next phase of the internationalisation of Australian higher education.

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REDESIGNING THE HIGHER EDUCATION WORKFORCE: A NEW ARCHITECTURE

ELIZABETH BARÉ & EMMALINE BEXLEY

ABSTRACT

Australian universities are being enjoined to do more for the nation in terms of social development, adapting to the shift from primary production to a service economy, and for national income generation. Not only do universities have a mission to educate future Australians, but they are also a key component of Australia's trade in goods and services, and now must be a core driver of innovation. The question is whether the current way in which the higher education workforce is organised is sufficiently robust to meet these challenges.

INTRODUCTION

The profound shifts that have shaped Australian higher education over the past two decades are well documented. At the heart of these has been the rapid increase in participation, both in terms of a greater number and diversity of Australian students, and the remarkable rise in international student numbers: from just over 40 thousand in the mid 1990s, to over 350 thousand today, or around one quarter of total university enrolments.³⁴⁷ The increased size and diversity of the student cohort has required more sophisticated approaches to teaching and learning, including advances in various forms of e-learning, while the market effects of competition between institutions for both domestic and international students has created a service orientation in the way institutions are managed and in the amenities and co-curricula activities provided. Despite this growth and added complexity, staffing structures have changed little. Indeed, raw numbers of 'tenured' academic staff have barely shifted. Increased student load, uncertain funding streams based heavily on fee-paying international (and domestic postgraduate) students, and a more complex operating environment have instead been managed with academic classification and reward structures little changed since the 1950s when higher education was elite, student numbers were small, intakes and funding were predictable and administration based on a clerical support workforce.

³⁴⁷ Australian Bureau of Statistics, *Australian social trends* (Canberra: ABS, 1995); Department of Education and Training, *Higher Education Student Statistics, Full Year* (Canberra: DET, 2014).

Academic structures now encompass very high numbers of casual teaching staff and a large, highly professionalised non-academic staff. We suggest it is time to question whether the current structures are able to support the new work environment in a way that is fit for purpose. In this chapter, we describe how the present workforce architecture has come to be, look at emerging work roles for academic and professional staff and ask, 'If a new workforce architecture were designed from scratch to fit the emerging landscape, what would it look like?' And more importantly, 'What do we need to do to get there?'

Ideally, the 21st century requires a university workforce that is highly adaptable, supported by work-role structures that are flexible, and that enable rapid responses to change, both in knowledge and the nature of the disciplines, and to broader societal requirements. These needs are well recognised. The recent study of the Australian higher education workforce of the future, undertaken for the Australian Higher Education Industrial Association by Price Waterhouse Coopers (PWC) states, "We identified ...the three key future workforce attributes - agility and flexibility, professionalisation and specialisation - that we believe all university workforces will need to exhibit."³⁴⁸ PWC recommends building on the current architecture by: equipping staff for the digital age; improving and measuring teaching; placing greater emphasis on leadership; designing new more flexible roles; better recognising vocational experience; and, eliminating some of the demarcation of duties and rewards between academic and professional roles.

Yet while there has been much written on the impact of the current architecture on the Australian university workforce, especially in relation to the impact of casualisation,³⁴⁹ the gendered nature of senior academic roles,³⁵⁰ the fragile employment status of early career academics and the implications of this for the future of the academic workforce,³⁵¹ little has been written on the industrial architecture itself.

PROFESSIONAL STAFF ARCHITECTURE

The current core architecture for non-academic staff in Australian universities is the 10 level Higher Education Worker (HEW) / Higher Education Officer (HEO) classification structure. This was designed in 1991 to replace the plethora of job classifications reflecting different occupational groups working in universities, as part of a national requirement to standardise and simplify industrial awards.³⁵² The new classifications were ultimately incorporated into a single federal award, the Higher Education General Staff Salaries and Classification Award 2002, which provided a generic classification and career structure for all Australian universities. The design of the HEW/HEO structure was based on detailed investigation of work being done and work required, driven in part by university human resources directors, and extensive testing of the classification structures was carried out before work value levels and corresponding

³⁴⁸ PricewaterhouseCoopers (PWC), *Australian higher education workforce of the future* (Melbourne: Australian Higher Education Industrial Association, 2016), 32.

³⁴⁹ E. Bexley and C. Baik, "Casual academics: Australia's hidden workforce," *Higher Education Forum* (2014).

³⁵⁰ J. Blackmore, "Wasting talent? Gender and the problematics of academic disenchantment and disengagement with leadership," *Higher Education Research & Development* 33, no. 1 (2014): 86-99.

³⁵¹ E. Bexley, S. Arkoudis, and R. James, "The motivations, values and future plans of Australian academics," *Higher Education* 65, no. 3 (2013): 385-400.

³⁵² "5.40.03 Evaluation and Classification of Positions," *University of Queensland, UQ Policy and Procedures Library*, 2009, <https://ppl.app.uq.edu.au/content/5.40.03-evaluation-and-classification-positions>.

salary levels were determined.³⁵³ Pay points in the HEW /HEO structure were set to recognise the increased complexity and responsibility of each level.

This structure remains standard across Australian universities. The wording of the descriptors reflects work as it was in the 1990s when professional staff normally had supporting administrative roles (for example, data entry), technical or managerial roles and many such staff were not tertiary qualified. The HEW/HEO structure was designed to recognise the value of work undertaken, rather than performance. Classifications were based on tasks performed, therefore, promotion in that structure depended on the staff member applying for a vacant role at a higher (more complex) level. A few universities have broad banded levels in the classification structure where staff can move to the next grade in the same role based on increased complexity or responsibility of task and excellent performance. Initiatives to review the descriptors based on changes in the types of work undertaken, the impact of technology on work and the overlap between academic and professional roles have been considered but not advanced at a national level

ACADEMIC STAFF ARCHITECTURE

The academic staff architecture is more complex. In addition to a rigid demarcation from professional staff duties (discussed in detail below), academic work is currently divided into three (partially overlapping) streams of Teaching and Research, Research only and Teaching only.³⁵⁴ While broadly reflecting the structures in the Australian Universities Academic and Related Staff Salaries Award, 1987, amendments to that award implemented in line with the requirement to simplify awards in 1991 eliminated the previous extended fixed term classification for tutors used to develop early career academics as teachers, and introduced a range of conditions designed to review and manage performance, accompanied by a significant pay increase.

In 2002, to align university employment with national standards, Minimum Standards for Academic Levels (MSALs) were developed for Teaching and Research, and Research Only categories and were incorporated into the Higher Education Academic Salaries Award. While the MSALs describe the work of Teaching and Research and Research Only staff differently, the pay structure is the same for both. There was no examination of the work to be done or a work value case made. The Group of Eight (Go8) universities were reluctant to develop these standards as technically this would enable reclassification based on the work required to be done, and would impact on peer moderated promotion processes that are well-entrenched and based on the scope, quality and value of individual output, rather than the requirements of the position that they fill. For these reasons, the MSALs as agreed were generic and the work value distinctions between levels minimal. Academic promotion, therefore, generally depends on peer assessment of the quality of work undertaken and is not directly linked to the MSALs. Many universities exclude grant funded Research Only staff from their promotion processes unless funding from the granting body is available.³⁵⁵

³⁵³ DWM Consulting, *Higher Education General and Salaries Staff Review. Final Report*, (November 1991).

³⁵⁴ We assume that the distinct structures reflect mandatory government reporting requirements.

³⁵⁵ "Promotions Procedure (Academic Staff and Titleholders)," *The University of Adelaide Human Resources – Performance, Development and Promotion Handbook*: 3 March 2016, <http://www.adelaide.edu.au/policies/3583?dsn=policy.document;field=data;id=6363;m=view> ; and "5.80.12 Promotion of Academic Staff Levels A – D," *University of Queensland UQ Policy and Procedures Library*, 2009, <https://ppl.app.uq.edu.au/content/5.80.12-promotion-academic-staff-levels-d>.

This academic employment architecture is formalised by government reporting requirements that require universities to file annual staffing returns by category of academic employment. While these returns include Teaching Only staff, the classification is not recognised in the award.³⁵⁶ For many years, the National Tertiary Education Industrial Union (NTEU) resisted the introduction of a teaching-only category,³⁵⁷ on the philosophical principle that all teaching staff should be actively involved in research. Yet increased student participation, coupled with limited external funding for research and stagnant per-student funding that has been insufficient to support the traditional ‘forty per cent of time teaching, forty per cent researching and twenty per cent in service’ across required teaching loads, has meant that the historical reluctance to support Teaching Only positions has shifted much teaching to casual or sessional forms of employment. This aspect of the structure is further complicated by decisions of the Australian Industrial Relations Commission (AIRC), in particular the Higher Education Contract of Employment Award (HECE, 1998), that determined the categories of work for which staff could be employed on fixed term contracts. The most significant impact was to exclude the use of fixed term contracts for roles that primarily involve teaching.

The NTEU has recently recognised the problem of insecure work for teaching focussed staff and has supported a defined number of Teaching Only roles in the enterprise bargaining process, with eligibility limited to persons previously employed as fixed term or sessional academic staff. Despite this initiative, the large legacy workforce of casual teaching staff remains. Current estimates are that up to 50 per cent of undergraduate teaching is undertaken by casual staff. However, a simplistic correlation cannot be drawn between the HECE Award and failure to negotiate large numbers of Teaching Only positions, and the increase in the number of casual or sessional staff. Other factors, such as the volatility of the student market and decisions of universities to devolve hiring decisions to small budget units, drive risk-averse behaviour and affect the apparent safety of short term or casual contracts.

The academic workforce architecture is also overlaid by employment practices of granting bodies, particularly the National Health and Medical Research Centre (NHMRC), where funding for personnel support packages for staff on grants, may be reviewed and determined separately from the rates applied in a university. In 2014, 29 per cent of all academic staff in Australian universities were employed as Research Only staff.³⁵⁸ In 2012, 85 per cent of research only staff were employed on fixed term contracts³⁵⁹ and of those a substantial proportion were employed on the basis of research grants. Typically employment of Research Only staff is bound to the length of the research grant or contract that supports the research.

³⁵⁶ The numbers of full or part time teaching only staff increased by 250% between 2010 and 2016 in part as a result of the Excellence for Research in Australia funding processes which creates an incentive for identifying and separately counting non-research active academic staff.

³⁵⁷ S. Andrews et al., *Contingent academic employment in Australian universities*, (Melbourne: LH Martin Institute & Australian Higher Education Industrial Association, 2016).

³⁵⁸ “Selected Higher Education Statistics – 2015 Student Data,” *Australian Government Department of Education and Training*, 2015, <https://docs.education.gov.au/node/38395>.

³⁵⁹ Andrews et al., “Contingent employment in Australian universities.”

POWER AND STATUS

The rigid demarcation between academic and professional staff roles is reflected in differentiation in power and status. The professoriate, or their representatives as constituted in academic boards or senates, have a key role to play in establishing and protecting academic standards but also report directly to the governing body or council, in a separate and direct line of responsibility to that of the Vice Chancellor. Similarly, until recently, in the enabling legislation of some of the older universities, academic staff are ‘members’ of the University while professional staff are employees or are not mentioned.³⁶⁰ Although power and status differences between core service delivery staff and support staff are common to many organisations, the independence and reporting relationships of academic staff drives a level of tension in some universities, especially as many senior professional staff actively seek to implement modern public sector management principles of measurement and individual accountability for achieving corporate goals, which are frequently at odds with traditional collegial models of academic governance. The result is, in effect, two separate but parallel management structures – a collegial academic structure that acts as the quality assurance arm of the core educational mission, and a managerial arm, that seeks to shape the industrial practices that are themselves the architecture on which the educational mission hangs.

Within the academic community, other power and status structures are at play. For example, despite Teaching Only positions having been included in many enterprise agreements for some years, and while technically it is possible at many universities to progress all the way to professor in a Teaching Only role, in practice it is in research that academic status lies. While the bias against Teaching Only work is rarely stated explicitly, it is deeply held and means that in practice progression depends on research quality and output.

At the bottom of the chain is the large sessional workforce. Recent studies suggest that very large proportions of sessional academic staff hold doctoral level qualifications, have been in their roles over a long series of casual contracts for a number of years, and are undertaking sessional work simply because no ‘traditional’ academic positions are available.³⁶¹ The low status of this work is played out in a lack of supports available to sessional staff compared to ‘traditional’ staff – fixed office space, support to attend and present at conferences, time to undertake preparation of publications, etc.³⁶² The effect is to limit opportunities for these staff to move to more secure traditional positions, for publications and an international research profile are common requirements for these positions.

THIRD SPACE WORK

These legacy effects of current work structures are compounded by new and emerging roles that have developed in line with increased participation and technological advances. These new roles tend to be ‘neither fish nor fowl’ – they have traits associated with both academic work (requirements for a higher degree, heavily

³⁶⁰ *University of Melbourne Act 1958* (VIC) (replaced by a new Act in 2009); *University of Sydney Act 1989* (NSW).

³⁶¹ E. Bexley, R. James & S. Arkoudis, S., *The Australian academic profession in transition: Addressing the challenge of reconceptualising academic work and regenerating the academic workforce*, (Canberra: Department of Education, Employment and Workplace Relations, Commonwealth of Australia, 2011).

³⁶² Bexley, James, Arkoudis, *The Australian academic profession in transition*.

intellectual components, autonomy) as well as professional work (technical capability, supportive outputs, administrative elements). Examples include online curriculum development, research librarianship, industry engagement facilitators and large research facility managers. These 'third space' roles are typically treated in industrial terms as professional staff roles, and as a consequence generally do not have the flexibility, professional development and reward opportunities available to academic staff.

There is a view that these roles will drive significant change in universities, as Carter and Veles observe:

The significance of the *third space* is that it creates new identities (*third space* professional) and new possibilities for innovative practices that could extend organisational capacity and develop staff capabilities. We may assume that the *third space* work will present various opportunities for staff to demonstrate their innovation and create innovative solutions to the challenges that their projects may present or solutions to large-scale organisational or even global challenges.³⁶³

In practice, many staff who work in third space roles meet the minimum qualification for an academic appointment, and hold a research higher degree.

CURRENT TRENDS

Against this background, we assessed the current architecture via an investigation of advertisements for professional and academic positions in a broad range of Australian universities. We tested the following four assumptions:

- 1 That technology has had a big impact on the higher education workforce and that a significant number of new third space roles related to technology are emerging;
- 2 That universities are responding to the changing environment by designing new kinds of academic roles;
- 3 That a large number of casual staff has resulted in increased management and quality assurance workloads for middle level academics; and,
- 4 That academic staff roles are becoming increasingly flexible in terms of classification.

An environmental scan of all advertised positions from nine universities over a two week period in September 2016 yielded 362 job descriptions. Our observations and analysis of the scan in relation to the current workforce architecture is provided below.

PROFESSIONAL STAFF JOBS

The nature and variety of roles for professional staff is growing. These are not only, as we expected, in the areas of planning, marketing, student recruitment and alumni, but in engagement and the increasingly professionalised space of research management. Importantly, we found that the number of third space partnership roles is increasing.

³⁶³ M.A. Carter and N. Veles, "Imagining a possible future for third space professionals in Australian universities," *LH Martin Insights*, (blog), September 19, 2016, <http://www.lhmartininstitute.edu.au/insights-blog/2016/09/239-imagining-a-possible-future-for-third-space-professionals-in-australian-universities>.

As expected, their emergence seems to be either dictated or facilitated by technology, the exploitation of data and industry partnerships. These include instructional designers, research librarians who scan the literature with the aim of identifying research trends and the staff who support academic staff in the development of MOOCs and other forms of online learning. Other advertised roles included research administrators and a group of roles based on either managing the commercialisation of university research or identifying industry partners and brokering relationships between university research groups and those partners. One commercialisation role was advertised as *either* a professional or academic role. Selection requirements for these roles require high levels of qualifications and experience.

While these types of roles are not reflected in the occupational equivalents of the ‘old’ industrial landscape, they still appear to be defined in a classification sense by the HEW/HEO structure. In some cases, however, the remuneration and level was not advised, which may suggest that universities were not using the enterprise agreement pay scales attached to the structure for remuneration.

ACADEMIC STAFF JOBS

For academic roles, our scan confirmed a more traditional pattern of employment. The standard advertisement for a Teaching and Research staff member requires a PhD qualification as a minimum, a research track record and teaching experience. Duties are generic and require teaching and research and at times the time split between teaching, research and service is specified. With the exception of Head of School roles, few identify significant management responsibilities or require such experience. In a small number of “high tech” areas, such as cyber security, industry experience was mandated at the expense of a research record, but the mandated PhD remained a minimum qualification requirement. Research only roles required a similar level of qualification, together with research experience or clinical trial experience. Differences in criteria emerged for universities with extensive on-line or blended programs offerings requiring some competence in development of on-line teaching programs.

Unsurprisingly, given industrial restrictions, very few Teaching Only roles were advertised, outside of those which were subject to industrial agreements, for example where the candidate had previously worked as a casual or sessional. Very rarely (indeed in only one instance) did we see a job that could be filled by a professional staff member advertised as an academic position.

Given the extent of demands on academic staff it is surprising how little deviation from the current architecture is reflected in the organisation of work as evidenced by a scan of recent job advertisements. This could be because the current core structure is working well and meets current needs. On the other hand it may be that the structure is so entrenched in higher education practices that it restricts future-facing workforce design. Looking through this lens, it could be argued that tradition, research funding programs, government reporting requirements and industrial constraints on what an academic staff member does informs the design of jobs and organisational structures, and means that innovation and change in roles and work patterns that cross these constraints will be difficult.³⁶⁴

³⁶⁴ The most obvious constraint is the limitation on the use of fixed term contracts for jobs that concentrate mainly on undergraduate teaching.

ACHIEVING GREATER FLEXIBILITY

In their 2011 study of the Australian academic workforce, Bexley, James and Arkoudis track the fragmentation and diversification in academic work roles described above, arguing that these shifts in the range of contributions need to be better recognised within both the policies and cultures of universities.³⁶⁵ Similarly, Coates and Goedegebuure argue for flexible structures which would allow academic staff to concentrate on and be rewarded for different aspects of work across a career, resulting in greater work satisfaction and reflecting the reality of staff capabilities.³⁶⁶

As noted above, our scan suggests that despite the fact that universities are able to work within the current structures, this legacy architecture may be limiting or directing the forms of work role envisaged in ways that artificially constrain the capacity of universities to meet present realities and work creatively to fill future needs. For example, we do not know whether the way that an academic job is advertised actually reflects what is required, or whether it is advertised in such a way as to meet external constraints. Importantly, we do not know if the way a work role is classified affects the kind of work actually undertaken. The preliminary work done by Dekeyser *et al*³⁶⁷ suggests that there is a great divergence between and within universities to time allocated by workload models to the same task, but it is not clear if that allocation is aligned to the actual time spent by an individual academic staff member on that task.

Building on the previous studies discussed above, we argue that a first step to ensuring greater flexibility would be to eliminate the current academic work categories (Teaching Only, Research Only and Teaching and Research). Universities would be better served by the establishment of a single academic career classification. This would allow for greater flexibility in allocation of duties, more concentrated duties at specific stages of a career than that required by a broad spectrum of duties in any one year, and a greater ability to move within and across roles and institutions, over the course of a career. A single career stream has the potential to facilitate the development of a core staff concentrating on teaching, scholarship and industry engagement. Similarly, greater flexibility in this area could ease the burden of casual academic teaching, allowing individuals to work a cross a punctuated set of roles over the course of the academic calendar.

But for this to occur, we suggest that there needs to be a better understanding of the current work that academic staff are required to do. Any single structure needs to reflect current requirements, and to be flexible and responsive to emerging needs. Such a detailed examination of the work done in universities should be a precursor to any change, as there would be the need to recast some current industrial and policy settings. For example, academic workloads and reward systems would need to be aligned to any new structure. A difficult but important step would also be to align changes to the traditional values of academics, for neglecting these traditions has been a major hurdle for previous attempts to enact change.

³⁶⁵ Bexley, James, Arkoudis, *The Australian academic profession in transition*.

³⁶⁶ H.B. Coates and L. Goedegebuure, *The real academic revolution: Why we need to reconceptualise Australia's future workforce, and eight possible strategies for how to go about this*, (Melbourne: LH Martin Institute, 2010).

³⁶⁷ S. Dekeyser, R. Watson, and E. Baré, "Comparing academic workload models: how Australian universities resource teaching activities," Tertiary Education Management Conference 2016 (Auckland, TEMC, 2016).

It is significant that although the HEW/HEO structure was developed over 25 years ago, in a world only marginally impacted by big data and technology, it has not limited the development of new roles and new ways of working. Third space roles currently appear to fit into the current professional staff architecture. However, over time consideration may need to be given to how these blend with academic roles, and whether those staff who meet the requirement for academic appointment (such as a research higher degree and a track record of research) should be appointed as academic staff or have analogous conditions to those of academic staff, or whether a new and separate architecture should be developed to allow those staff to continue a career crossing research and administration.

CONCLUSION

Even those not well versed in the detail of the current academic architecture would be cognisant of the difficulties of changing the current structure. Not only would it form a substantial break with the traditional structures, but a revision of the existing architecture would need to be underpinned by a revamped academic career structure with consequential changes in recruitment, appointment and promotion processes. On the other hand, change undertaken now has the potential to open the way to a future of more responsive and flexible academic careers with fewer barriers to innovation, with a greater potential to respond to as yet unknown challenges. Any changes, however, must, be aligned with the essential tenets of academic work, namely peer evaluation and academic freedom.

We do not advocate that this change be embarked on without an in depth study of academic work as it is now, and with careful thought given to the demands of the future. We now need to test the variety of theoretical models put forward against a background of data-driven evidence, noting (following Bexley, James and Arkoudis) that institutional innovation and diversity in approaches to work roles must be retained, or even strengthened, and that for this reason it would be inappropriate to introduce a national typography of academic work. Rather, work needs to be done to gather information on the breadth of roles undertaken by Australian academic staff – and professional and ‘third space’ staff – as well as the extent to which future workforce needs can be met under the current structures, before a renewed industrial architecture can be constructed that supports innovation and flexibility without abandoning security and ‘planability.’

Finally, new roles need to be supported by corresponding shifts in prevailing management approaches, including supporting risk well above the unit level so that new approaches can be tested with confidence. Similarly, professional reconfigurations cannot be sustained in a sector so often subject to sudden policy and funding changes at the government level. In many ways, the present out-dated structures are the result of a lack of confidence caused by long-term uncertainty about just what the future may hold for higher education in its most fundamental sense.

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