Australian National University
National Security College

Future Disruptions for Australian Universities

Prepared for the Universities Accord Review Panel

Dr Ryan Young, NSC Futures Hub

November 2023

NATIONAL SECURITY COLLEGE
FUTURES HUB

Futures Hub
ANU National Security College
futureshub.nsc@anu.edu.au

The Australian National University
Canberra ACT 2601 Australia
www.anu.edu.au

CRICOS Provider No. 00120C

Contents

Change on the horizon

There are a range of broader dynamics, repeated across the globe, that show we are living through a sustained period of change. Technology, economic models, geopolitics and environmental factors are all calling into question many of the assumptions we have built our organisations and systems on. Given these will impact Australian universities more than many other institutions, the long-term focus of the Universities Accord Review is timely.

This report collates a range of important forces and disruptions that will shape the future of universities, based on the insights of leading Australian thinkers from a range of fields. It explores implications for Australian universities but, as a future disruptions report, it does not advocate strong views on the best way forward or an ideal future. These depend on foundational policy and values choices beyond the scope of this work. This report should be used to test design and policy options, add context to decisions and help ensure we can future-ready the Australian university sector.

The first part of this report focuses on the combined impacts and potential disruptions arising from the combination of different factors and forces. The second part covers more specific forces in narrower domains. The majority of expert input was received during a structured roundtable held in September 2023; details and a list of contributors are at Appendix A.

In short, Australian universities, and their current operating models, are likely to be put under significant pressure over the next 10 – 20 years. While "business as usual" may succeed, there is potential for substantial disruption to both individual universities, and the broader sector. Universities have successfully navigated many waves of disruption in the past; the coming changes look to be of a different kind and require new approaches.

Broader forces that will impact universities

Across a range of axes, a number of significant forces are shifting the broader world in which universities operate. For one, the rise of generative AI and associated digital technologies is rapidly shifting how information is generated, collected and communicated. This will change how students and researchers work, what they expect, and the economics of delivering high quality education, while also undermining trusted sources of authority and knowledge. Universities should expect more competition from outside the sector for both education and research, and will face expectations that existing practices change to keep up.

A second force is the shifting political landscape, partly driven by growing geo-political anxieties that have altered government priorities and expectations. For a range of reasons, including global strategic competition, climate action and concerns about domestic resilience, governments are increasingly seeking to manage and direct parts of the economy where previously they adopted a more laissez-faire approach. Universities in Australia are highly government regulated and will be expected to actively support a range of government priorities, from national security and global soft power, to workforce development, social change and environmental action. Clashes with existing notions of academic autonomy are likely to increase.

A third ongoing change is that the demographics of university students will shift and likely fragment further. Australia's population is ageing and the absolute numbers of people at Australia's traditional post-school university age will start declining soon.[1] International student numbers will likely be volatile as geo-political concerns, increasing competition from elsewhere (including universities in developing countries) and global economic factors intersect in complex ways. At the same time, working lives are extending and people will change careers and need retraining more often.[2] This means that life-long continual learning, including

[1] Carwood and Vasques, "Are Universities of the Past Still the Future?"
[2] Halabieh et al., "The Future of Higher Education."

micro-credentials, rather than degrees may be the future focus for people of all ages. Along with heightened expectation of inclusivity for neuro-diverse, people with disability and disadvantaged communities, universities may find themselves with increasingly diverse and disparate cohorts of students, divided by age, experience, location and needs.

One further factor is that the structures and ways of working of all organisations, including businesses, governments and universities, are shifting in response to technological, cultural and demographic drivers. Digital technology is enabling geographically dispersed workforces and this flexibility is often highly valued by workers.[3] Younger workers, to generalise, tend to have different goals, values and consider work-life balance differently to older generations.[4] The adoption of AI promises to streamline administration and enhance the productivity of knowledge workers. Aging populations mean that a quality workforce will be harder to recruit and retain, with greater competition for highly skilled staff.[5] All of these forces will place pressure on the internal processes and ways of working at universities. But they will also change expectations on education practices and outputs as universities train much of the broader workforce.

Finally, many commentators argue that we have moved into a period of 'poly-crisis', where continued and overlapping environmental, health, geo-political and human crises are a permanent feature of the world.[6] Whether or not this is accurate, it describes the mindsets and expectations of influential global governance bodies and much of the public. These, in turn, change how organisations like universities are expected to operate and what they are expected to deliver for society and governments. Careful, disinterested exploration of science and truth is harder to justify in the face of poly-crisis.

Disruptions to universities

These broad changes offer as many opportunities to universities as they do challenges. However, universities are widely seen as heavily regulated, conservative in their practices and with entrenched cultures that are resistant to change. This means that there are numerous areas where universities face particular risks of disruption.

The most commonly identified risk is that existing business models will not be sustainable. Currently, universities operate as conglomerates that bundle a range of different services together that cross-support and cross-subsidise each other. For example, international student fees cross-subsidise research, which ensures better international university rankings that in turn attract more international students. As technology has reduced the barriers to entry into all relevant fields, including tertiary education, there is potential for new players that don't have the overheads of cross-subsidies to offer better quality and cheaper education, or even research, services. These new players could be private sector players in Australia, or international universities, or even global corporations. In the near term, this potential disruption is most likely a greater risk for lower ranked universities as brand reputation matters and changes very slowly in the higher education sector.

A second area of potential disruption is in the delivery of teaching and research itself. University teaching and research practices have, to generalise, largely not changed over generations, despite growing levels of research into how we should teach, how people learn, and how to research better. Most of the research conducted by universities isn't applied to university practices, even where relevant. There is significant potential for other players to take these lessons and deliver higher quality education and research than universities.

A third possible area of disruption is that universities may find their built environment and existing facilities are no longer fit for purpose. Large built facilities may be needed less as

[3] Kossek, Gettings, and Misra, "The Future of Flexibility at Work."
[4] For example, see *Understanding Generation Z*.
[5] Schippers, "What Is Driving Current Labour Market Shortages and How Older Workers Could Help."
[6] Homer-Dixon, "Why so Much Is Going Wrong at the Same Time."

remote study becomes more prevalent or some may be unsuitable due to the effects of climate change. Universities have also traditionally focused on venues, like lecture theatres, that support the transmission of information. As information transmission is increasingly digital, the types of spaces needed to facilitate learning and research will change as there will be less need for lecture theatres and more demand for technology-enabled collaboration and group spaces. This will leave many university buildings underused or requiring significant renovations.

There is one further, albeit less likely, disruption to consider. Now that digital technology and AI have democratised information and can give each of us all the knowledge we could ever need, could universities themselves become superfluous? Might universities, in the face of a different information environment, inevitably go the way of print newspapers and local television stations?

This seems highly unlikely over the next decade or two given the important societal role that universities play in accreditation and certification of knowledge and skills backed by government regulation. However, shifts here are not unthinkable. Various employers are moving away from relying on degrees as entrance requirements for jobs with expanding cadetship and internship programs.[7] There are ongoing pushes, especially in technology industries, to expand talent pipelines away from a reliance on universities.[8]

Notably, the jobs most at risk of automation with AI are largely in white-collar knowledge sectors that have traditionally required a university degree. And while surveys show universities currently have high societal trust, public attitudes towards universities are often ambivalent and are periodically antagonistic.[9] There are clear signs that this trust is fragile and could turn quickly. Within Australia, recent shifts in public perceptions of large businesses like Qantas are an illustrative case study.

Moreover, if others can increasingly provide better or cheaper, quality education and research than universities, the distinct value for society from universities may be in accreditation, rather than education. If so, universities may have to change what they offer and how they operate. Perhaps universities will be seen as more valuable to businesses and the community as testing centres rather than education providers.

Potential university responses

The focus of this report is on the disruptions, rather than actions or responses. Nevertheless, several ideas emerged through the workshop and research that are worth noting. What follows is therefore not a comprehensive list.

While universities often see themselves primarily as research organisations, governments and most of the population see the core business of universities as education. There are, however, ongoing concerns about the quality of university education, especially from employers. Moreover, there are a growing number of private sector providers seeking to compete with existing higher education providers.[10] One useful step would be to tighten the connection between cutting edge research into education, psychology and how humans learn and how universities teach.[11] This would take advantage of the expertise within universities, improve outcomes and student satisfaction, and reduce the impact of competitive disruption from organisations outside the Australian university sector.

The expectations on universities to be engaged in partnerships, commercialisation and cooperative problem solving are also likely to increase in the future, especially if we continue in a ‘poly-crisis mindset’. Failures to do this well so far can be traced, partly, to weaknesses in our

[7] For example, the Australian Public Service has an ongoing cadetship program for school leavers.
[8] A good example is this report sponsored and co-authored by IBM: Bowles and Chey, “Widening the Talent Pipeline: Facilitating STEM Careers in New-Collar Jobs in Australia.”
[9] For a discussion of these dynamics, see Wesley, *Mind of the Nation*. pp. 9-24.
[10] Dellarocas and Hagiu, “How Higher Ed Can Contend with Learning Platforms.”
[11] Lodge, Thompson, and Corrin, “The Concerning Persistence of Weird Ideas about Learning and Educational Technology and Their Influence on the Future Directions of Higher Education.”

frameworks and metrics for thinking about, and capturing, university and research impact. Our approach to measuring, say commercialisation or capturing IP, is better designed for a manufacturing or production heavy economy. Australia is a services economy where value capture and idea dissemination economy-wide work differently. Further work on how to understand, incentivise and report better on research collaboration that benefits the Australian economy as it is seems needed.

In the face of a number of these disruptions, including the likely segmentation of students with different priorities and needs, there is broad recognition that 'one size fits all' models of universities are no longer useful. Regulation, funding and incentives need to encourage experimentation and specialisation within universities and across the sector. Micro-credentials were flagged as one area where experimentation and new ideas are easier to develop. This isn't, however, purely a system level regulation issue as university cultures, norms and internal processes are often as much a barrier to new ideas as government bureaucracy.

Finally, a number of roundtable participants flagged the potential for a reimagined university experience, for both domestic and international students, that incorporates what they identified as more of the 'whole person' experience that young people seem to be looking for. It might leverage the productivity potential of AI and combine skills in critical thinking and how to learn, social intelligence, and wellbeing, on top of traditional subject area depth. This may be an update of older models of university education for the 21st century but there is likely demand, albeit not from all cohorts of students.

Specific Forces and Disruptions

Across the range of ongoing forces that will, together, disrupt Australian universities to some degree, there are a number of strong themes and sources of greater potential disruption. While a number of the relevant domains are well-known, the specific forces and types of disruption are often less obvious. The remainder of the report focuses in on a few specific domains that have been organised alphabetically.

AI and the Digital Environment

Globally, the invention and widespread adoption of digital technologies means we are living through a profound revolution in how knowledge and information is created, stored and accessed. These changes are as significant as the invention and adoption of the printing press in Europe through the 15th and 16th century. The first foundation of this revolution was the digitisation and easy access of information created by the internet and associated technologies. Knowledge is now no longer just accessed in specific buildings, through books and journals or by consulting a limited number of experts. Instead, it has been thoroughly democratised so that anyone, anywhere can rapidly access most of the knowledge and information on any subject in minutes or seconds.[12]

The second foundation of the revolution is the emerging ability of AI to summarise, interpret and produce knowledge. This is rapidly taking the information economy further away from being a purely human enterprise, to becoming a hybrid human-machine activity.

Universities, as knowledge based organisations, are feeling the impacts of this revolution more than many other institutions in society.

The Democratisation of Information

Universities have, for hundreds of years, occupied a privileged position in the information economy. They collected information and knowledge, housed many of the experts who had mastered existing knowledge, and therefore educated the broader population. This privileged position is now under threat as knowledge access, and production, has been significantly democratised.

This means, for a start, that many university functions are now open to much greater competition than in the past. Education and knowledge transfer occurs through widely available (and often popular) videos and blogs. Research can be, and increasingly is, crowd-sourced.[13] The unique convening ability of universities as physical places where great minds congregate is being undermined by remote working technologies.

Universities have historically bundled education in facts, skills development, human capital formation and accreditation within a single geographic location alongside research excellence to create cross-overs and efficiencies. Each of these can now, plausibly, be done more cost-effectively, and perhaps to a higher standard, as discrete products that need not be bundled into a single institution.

A second consequence of the democratisation of information is that traditional patterns of trust, expertise and authority are breaking down. Universities and academics no longer have such privileged access to information as what used to only be available in a university library is now easily available online. This means their expertise and accuracy is more rigorously and commonly challenged.[14] We are seeing growing scepticism in expertise, partly as identified experts have squandered trust in various high profile situations. But it is also because many

[12] Young, *Australian Universities: Thriving in a Changing World?*
[13] Lenart-Gansiniec et al., "Understanding Crowdsourcing in Science."
[14] Young, *Australian Universities: Thriving in a Changing World?*

people, including students, feel empowered by their access to information (of whatever quality) to challenge and question authorities.

Universities and academics, like many other institutions in today's societies, can no longer assume they have authority and trust but have to continually build and establish it. This requires a significant mental and cultural adjustment for individuals and organisations who grew up and developed in the previous era. Absent proactive steps, individual universities and the broader sector can expect their cultural authority to decline and for a range of entities to seek to do traditional university functions outside the academic environment.

AI

New developments in generative AI through 2023 have accelerated a range of trends around the access, production and adoption of knowledge and information. These are further shifting the balance of capabilities away from those with traditional strengths and privileges. Access to knowledge is now even easier as the AI synthesises it, many research processes are easier and faster and education can be increasingly tailored to the individual. In each case, AI has the ability to increase the relevance and importance of universities, but suggests that this can only occur if they adjust how they operate.

Some of the most discussed impacts of generative AI in universities are for education and students. The ability of these programs to produce reasonable quality academic work on any topic challenges traditional approaches to teaching and assessment. More significantly, it has the potential to replace existing teaching. There are many who see potential in AI for education that is fully personalised to an individual's needs, abilities and interests – completely undermining the need for or relevance of school and university in-person education.[15]

Even if the future capabilities of AI are being over-estimated, the current abilities of AI will further disrupt the perceived education needs and methods in universities. To what extent do students need to develop content knowledge versus develop particular skills or become better perhaps at critical thinking? And how do we educate people in an information saturated, digital context? There are likely not easy or universal answers to these questions as they will vary from discipline to discipline and campus to campus. But universities need to be working on answers or they will face significant disruption from outside.

Generative AI will have just as significant an impact on research activities as it will on education. There is emerging research showing that it can be a productivity improvement in knowledge and information work – one Harvard study identified a productivity improvement of 25% combined with a quality improvement of 40% for consultants.[16] The potential for research productivity and building new forms of research infrastructure are huge, especially if different fields build their own generative AI models. Universities have the experience, infrastructure and expertise to lead in these areas.

At the same time, the productivity improvements from AI favour under-performers or those with less background in an area.[17] This extension of the democratisation of information opens up important opportunities for addressing equity issues and spreading the use of important skills across society and the economy. It is likely to be a powerful tool, for schools and universities, to address inequality and narrowing the gap between students from advantaged and disadvantaged communities. This will arise both from expanding the skills individuals have easily but also by better targeting the sources of inequality and tailoring programs to address these.

It should be noted that, as AI narrows capability gaps, it will make it easier for a range of people to compete with existing authorities – including opening universities up to greater competition in research and knowledge production.

---

[15] Gendron, "AI Is Going to Offer Every Student a Personalized Tutor, Founder of Khan Academy Says."
[16] Dell'Acqua et al., "Navigating the Jagged Technological Frontier."
[17] Dell'Acqua et al.

Climate and the Environment

Climate and environmental concerns are at the top of the list of current societal concerns, for good reasons based on the scientific research predicting we are facing dramatic changes in climate over the next decades.

This will have direct impacts on a wide range of organisation but especially universities and other education institutions, as most buildings and built environments have assumed a stable climate in their design and implementation. The physical layout and infrastructure will need to adapt, yet many universities are in inner city, highly built environments. Universities may face requirements to rebuild, or relocate, to enable a continued in-person campus environment.

Alternatively, another solution will be to move to being more of a virtual organisation with people distributed across the country or the world. This would require new ways of doing thing and investment into new systems at many universities to enable an ongoing, high quality of education. This will be especially important for all the necessary human skills around content mastery that universities have traditionally trained, but are harder to develop in a virtual environment.

A move to a virtual organisation also presents risks to both the attractiveness of Australian universities to students and to educational outcomes. If our university experience is entirely online, due to climate or other reasons, students will likely be choosing their institution out of all the educational institutions across the world that offer the same course. Australian universities are likely to lose local students to international or private institutions with a bigger brand.

There will also be significant non-direct impacts of climate change on universities. Given the pace at which change is demanded, universities are naturally expected to be an important part of the solutions both across research and education. Universities will be expected to concentrate research effort on solving immediate, practical problems and ways to avoid or mitigate crises effects – particularly where this requires scientific and technological breakthroughs. However, this is uncomfortable for university practices and cultures which are founded on careful, longer-term research. Growing clashes between the pace and timeframes expected by government and society and what Australian universities can produce are likely.

There are also a fairly clear set of skills and specialities for dealing with climate issues and universities will be expected to play a lead role in producing them. Universities will likely be expected to feed sustainability, adaption and ecology into many or all university courses.[18] They will also be expected to train a range of people with specific qualifications and degrees – even though they have limited means to encourage or force students to choose them.

Demographics and Equity

Broader societal and demographic structures are continuing to change significantly, and these will disrupt universities in different ways. For one, the changing demographics of countries will shift the profile of students and staff. Less obviously, changes the patterns of group identity, expectations and ambitions across our society will challenge how universities operate.

The dominant demographic change, across much of the world and in Australia, is that populations are aging. The most obvious issue for universities is that the number of young people will decline in relative terms and is expected to begin to stagnate or decline in absolute terms. In Australia, the number of 17 and 18 year olds is projected to remain constant from the late 2020s for at least a decade.[19] This lack of growth will challenge for a university sector that

[18] This is already happening in France. See "Higher Education in France Will Have to Integrate the Challenges of the Ecological Transition into Their Syllabus."
[19] See official projections published by the Centre for Population, "2023 Intergenerational Report: Population Projections, Australia, 2022-23 to 2062-63."

has been used to continual enrolment growth for decades, until pandemic related interruptions in 2020-2022.[20]

These demographic changes are accompanied by societal indications that traditional full-time study is becoming less attractive for domestic students.[21] In combination, this means that demand for intensive degree courses from Australian students, around which university education has been structured for generations, will potentially stagnate and may decline. International student flows have significant potential to counter-act this, but they will never be as stable as domestic student intakes. An increasing reliance on international students will also continue to change the character of university life, for better or worse.

There will also be increasing demographic challenges for university workforces. An aging population means that the working age population will shrink (at least in relative terms) and so skills shortages are likely to increase. Universities have always been human intensive organisations built around human interaction and collaboration – and appropriately skilled humans will become harder to find. Universities will face increasing competition for academics and staff, especially when the high performing knowledge sector firms in the private sector are increasingly big tech and other big businesses who can pay far higher salaries.

An important component of the way populations are aging is that life expectancy is rising - and therefore the time spent working or studying is increasing. Younger people are likely to be actively working or studying for over 50 years. Yet every sector built on knowledge work will likely be disrupted and transformed by technology developments every decade or so. So people cannot rely on gaining an education and skills at the start of their working life that will last. Instead there will be an ongoing need to upskill or retrain.

Universities already provide services for this growing market, increasingly through micro-credentials and more flexible degree options. However, it is a far more competitive market than traditional degrees, especially as most professional development training is not accredited and it is not clear that credentials are a high priority for most individuals or employees. This means that universities are competing against a wide range of private sector education providers, many small and large consultancies, and even online forums and video platforms where people conduct self-directed learning. Traditional university offerings are unlikely to be effective for many people seeking to upskill and retrain over a career.

Alongside these demographic changes, our societies are forming different patterns of group association and identity. There is an increased acceptance and celebration of diversity, of all forms, that means that a wide range of groups are conscious of their distinct identity and expect that to be accepted and accommodated. These expectations will increasingly challenge university operating models that rely on a largely uniform pedagogical model to educate tens of thousands of students at once.

The rising acceptance, and celebration, of neurodiversity is a good example of this dynamic. Neurodiversity means that there is a much more diverse set of expectations about how people learn, what enables them to thrive, and the responsibility of a university to provide the right environment for each individual.[22] There are open questions about how universities can embrace diversity, including diversity of thought, while educating large numbers of students. It will likely require significant training for lecturers, tutors and other educators, potential redesign of degree requirements, plus potential funding increases.

The challenges with neurodiversity are one example of a list of factors that includes identity, orientation, gender, mental health, ability or disability and cultural backgrounds. This rapid growth in diverse group identities sits within a broader society that no longer has the shared

[20] Norton, "Mapping Australian Higher Education 2023." pp. 31-32.
[21] Ross, "Australia Recovers with Foreign Students, but Not Domestic."
[22] For one example, see Azevedo et al., "Navigating Academia as Neurodivergent Researchers: Promoting Neurodiversity within Open Scholarship."

narratives and assumptions that used to tie people together. The decline in broad religious affiliation is one important marker of this change.

One traditional role for universities was to help young people find themselves and find meaning in life. This expectation has received as universities and students have become more skills and jobs focussed, but there may be an opportunity for universities to play this formational role more. We want people to have the skills to solve meaningful problems in the world, but it is less clear today where they find them. This vision for universities is a return to some aspects of the past that may, or may not, be widely accessible.

Geopolitics

Globally, we have moved out of a period of geopolitical and strategic stability into one where we can expect geopolitical tensions and rivalries to continue and magnify over the next decades. These aren't just about those rivalries that are front of mind, like the US and China, but extend to a range of players like the recent tensions between India and Canada.[23] Universities, especially those in Australia, have benefited greatly from open and trusted internationalisation, fostering both a lucrative market for international students, and international collaboration on research. Both are likely to be increasingly disrupted by geopolitical tensions.

Universities are, whether they like it or not, part of the terrain of the competition between nations, systems and ideologies. It appears inevitable that geopolitical tensions will increase over the next decade or two.[24] One inevitable consequence of this is that governments will become more deliberate in how they mobilise and manage broader society and the economy for strategic reasons, including universities. Universities will be expected to prioritise the national interest, be part of responses to foreign interference and espionage, and play a role in projecting national influence and prestige. Governments are likely to be more interested in offering university education, scholarships and research partnerships for strategic purposes than academic or research merit. As Australia's relative economic weight and power decreases in our broader region,[25] our governments will likely look more heavily to other forms of influence, like universities.

Universities will also find themselves in the middle of various geopolitical issues and sensitivities. Australian governments will likely want universities to project and promote Australian values. Some foreign governments are likely to be sensitive to, and take offence at, education in or research findings from Australian universities. These will be reflected in the flows of international students, research opportunities or even freedom of movement for academics. Universities will increasingly need formal diplomatic expertise and capabilities as well as clear procedures for managing international sensitivities without sacrificing academic integrity or principles.

To navigate these forces, universities will need to be proactive on a number of these issues and identify clearly what their role, standards and expectations are. Universities have a strong track record in bringing together communities of learners and building their resilience, integrating new knowledge and generating epistemic fluency across people. However, economic, geopolitical and institutional factors will make this more difficult as external pressures and sensitivities grow.

The broader learning context

One ongoing feature of the Australian university sector is that, from the perspective of governments, businesses and families, it is primarily valued as an education sector. On the other hand, universities tend to see themselves primarily as research organisations. This mismatch

[23] For an overview, see Kugelman, "The India-Canada Rift Deepens."
[24] For a summary, see *National Defence: Defence Strategic Review*. pp.5-6
[25] See Moore, *Invested*. pp. 9-10.

leads to difference in emphasis and effort. Put over-simply, universities have put a lot of effort into improving research capabilities while often assuming that teaching should continue as it always has been done. While there are some places that have done it well, the broad lack of focus on improving and updating pedagogical practices at university will likely come under pressure from a few different directions.

The first is that the range and type of education offerings offered by universities will continue to expand. Universities are already catering for more varied cohorts of students, including 'mature-aged', remote and international students. However, as people move towards more life-long learning, and there are a wider range of distinct groups of students with differing needs and ambitions, the diversity of educational offerings will likely need to increase. These needs are expanding at the same time as adult education more broadly continues to trend towards micro-credentials, professional non-accredited training and freely available public information (like podcasts and videos). Despite all this, the demand for intensive, in-person experiences will likely remain strong as the more valued, premium experience.

A second challenge will come from best practice and research into methods and modes of teaching and learning.[26] There are a range of private companies that sell products promoted as adopting the latest science and research into psychology or adult learning. Whether or not these claims are accurate, universities tend to ignore the research – despite much of it being conducted within academia. Thus university education tends to occur on very traditional methods that is at odds with the best academic research. This will become an increasing problem for universities, partly due to the competition but also partly to potential reputational damage. It reflects poorly on academia that it produces cutting edge research on how to learn that it doesn't itself adopt.

A third challenge will come from the rapidly evolving world of technology, especially AI. It is currently still unclear how completely AI will change learning expectations and needs, but universities will need to adapt quickly.

All of these demands will challenge most universities, especially as rules and regulations (both at system and university level) are not set up to accommodate or encourage the flexibility or innovation required to meet these changing expectations.

The institutional momentum of universities

Given the focus of this report, the emphasis has been on the impact of forces outside the university sector. However, universities themselves are a large and powerful factor within the nation who, at any one time, employ around 130,000 people and educate more than 1.5 million students a year.[27] They have significant clout, a long history and their internal momentum matters for understanding future disruptions.

Australian universities have proven highly adept over the last few decades at adapting to, and promoting, change in order to succeed as the world and expectations shift around them. Pivots to international students and the flexibility during the Covid pandemic and lockdowns are very good examples of this. They are also good examples of how university decisions are themselves disrupting the sector.

For example, some Australian universities, especially regional universities, had established an important niche as trusted providers of remote and online learning. However, once all Australian universities went virtual during the pandemic, anecdotal experience indicated that early movers found they were losing students to universities with more prestigious brands – regardless of the quality of the online education being provided.[28]

[26] A good overview of the evidence is in Nugent et al., *Higher Education Learning Framework*.
[27] Universities Australia, "2022 Higher Education Figures."
[28] Up-to-date data to confirm or disprove this observation is not yet available.

At the same time, the Australian university sector, and especially the internal culture and ways of working, has remained stable and slow to change over decades. This has many advantages as it maintains a focus on deeper scholarly pursuits and is less prone to rapid changes in response to the latest fad. It also deeply values the prestige associated with traditional markers of academic quality and rigour: top tier journals, long term ARC grants, promotions to the more prestigious universities and a range of academic prizes.

This deeper stability means that some of the challenges inherent in the Australian university sector are also likely to persist. Governments, in particular, have been trying to encourage Australian universities to be better at partnering and commercialising research for decades, with modest success. Businesses have been complaining about the quality of graduate skills across many areas for a long time. These stem from mismatches between values and priorities within universities compared to outside expectations and are unlikely to change quickly.

However, the combination of factors acting on broader society today, digital, geo-political, societal and environmental, are forcing change across all organisations. Universities will also change. The question is whether they will be proactive in pairing the best of their deep traditions with the new expectations and ways of doing things, or whether they will be disrupted by others.

The challenge for universities is particularly acute as today they are increasingly facing existential questions. In a world with generative AI and technology that can give us all the information we could need almost instantly, why do we still need the university? And, if we do, what role should it play as it may not look like what it did in the past?[29]

We should not expect universities to disappear overnight or for demand to collapse quickly. Universities retain significant social and cultural capital that will not disappear. However, if people from the outside perceive the value of universities as playing social or status functions, rather than their core functions of education and research, then slow decline is likely inevitable.

The overwhelming message from the thinkers consulted for this report is that universities need to be able to think and act differently, experiment and try new things. They need to find ways to lead the disruption rather than be disrupted. However, these are impeded by a range of factors, including overly bureaucratic system regulation, incentives in the education system that support a business-as-usual approach, one size fits all mindsets and established cultures and ways of doing things. The solution to this was not seen as a whole system reform, but rather to create more space for variety, heterogeneity and experimentation – and to reward success in these fields. For that, we need a clear articulation of the value of universities to our society that reflects what people want from universities, not just what universities want for themselves.

[29] For one possible vision of how this might change, see Zyda, "Do We Need Universities Anymore?"

Appendix A: Workshop Details and Participants

On 19 September 2023, the NSC Futures Hub convened an online roundtable that brought together diverse expertise from a range of different organisations. This future focussed event focused on identifying the important trends or drivers that will impact the world, Australia and Australian universities over the next decade. Particular attention was focused on understanding the interactions between trends and drivers and their combined impacts.

This report collates and draws from this roundtable but does not represent the views of any one participant, who are listed in the table below.

Name	Organisation	Role
Kristen Alford	Museum of Design/ University of South Australia	Director
Simon Barrie	Western Sydney University	DVC and Vice President
Michael Brennan	E61	Chief Executive Officer
Miguel Carrasco	Boston Consulting Group	Global Leader for Digital Government
Rob Dunderdale	KPMG	Head of Talent Attraction and People Analytics
Stefan Hajkowicz	CSIRO Data61	Senior Principal Research Consultant
Natalie Heazlewood	Australian Chamber of Commerce and Industry	Associate Director, Skills, Small Business and Innovation
Jason Lodge	The University of Queensland	Deputy Associate Dean (Academic)
Rory Medcalf	Australian National University	Head of National Security College

The roundtable and report were ably supported by Owen Cooper and Rohan Hosking, from the NSC Futures Hub, and the Accord Review Secretariat from the Department of Education.

References

Alexander, Allen, and Constantine Manolchev. “The Future of University or Universities of the Future: A Paradox for Uncertain Times.” *International Journal of Educational Management* 34, no. 7 (March 25, 2020): 1143–53. https://doi.org/10.1108/IJEM-01-2020-0018.

Australian Government. *National Defence: Defence Strategic Review*, 2023. https://www.defence.gov.au/about/reviews-inquiries/defence-strategic-review.

Azevedo, Flavio, Sara Middleton, Jenny Mai Phan, and Steven Kapp. “Navigating Academia as Neurodivergent Researchers: Promoting Neurodiversity within Open Scholarship.” *Association for Psychological Science*, October 31, 2022. https://www.psychologicalscience.org/observer/gs-navigating-academia-as-neurodivergent-researchers.

Bowles, Marcus, and Stephen Chey. “Widening the Talent Pipeline: Facilitating STEM Careers in New-Collar Jobs in Australia.” The Institute for Working Futures and IBM, 2020. https://www.workingfutures.com.au/wp-content/uploads/2020/11/161120_Whitepaper_NewCollarTalentPipelines_Final.pdf.

Carwood, Richard, and Caroline Vasques. “Are Universities of the Past Still the Future?” EYGM Limited, 2022. https://www.ey.com/en_au/education/are-universities-of-the-past-still-the-future.

Centre for Population. “2023 Intergenerational Report: Population Projections, Australia, 2022-23 to 2062-63,” n.d. https://population.gov.au/data-and-forecasts/Projections/IGR-population-projections-2023.

Dell’Acqua, Fabrizio, Edward McFowland, Ethan R. Mollick, Hila Lifshitz-Assaf, Katherine Kellogg, Saran Rajendran, Lisa Krayer, François Candelon, and Karim R. Lakhani. “Navigating the Jagged Technological Frontier: Field Experimental Evidence of the Effects of AI on Knowledge Worker Productivity and Quality.” *SSRN Electronic Journal*, 2023. https://doi.org/10.2139/ssrn.4573321.

Dellarocas, Chrysanthos, and Andrei Hagiu. “How Higher Ed Can Contend with Learning Platforms.” *Harvard Business Review*, December 21, 2022. https://hbr.org/2022/12/how-higher-ed-can-contend-with-learning-platforms.

Energy in Demand. “Higher Education in France Will Have to Integrate the Challenges of the Ecological Transition into Their Syllabus.” January 14, 2023. https://energyindemand.com/2023/01/14/higher-education-in-france-will-have-to-integrate-the-challenges-of-the-ecological-transition-into-their-syllabus/.

Gendron, Will. “AI Is Going to Offer Every Student a Personalized Tutor, Founder of Khan Academy Says.” *Business Insider*, May 5, 2023. https://www.businessinsider.com/ai-will-give-every-student-personalized-tutor-sal-khan-academy-2023-5.

Gering, Zsuzsanna, Gábor Király, Réka Tamássy, Péter Miskolczi, Beatrix Fűzi, and Eszter Szendrei-Pál. “SCENARIOS FOR THE FUTURE OF HIGHER EDUCATION 2022,” 2022. https://doi.org/10.13140/RG.2.2.34975.02727.

Goad, David. “The Future of Higher Education in Australia - Five Predictions as to What the Sector Will Look like in Five Years’ Time.” Linkedin, 2020. https://www.linkedin.com/pulse/future-higher-education-australia-five-predictions-what-david-goad.

Guthrie, Kevin. “Challenges to Higher Education’s Most Essential Purposes.” Ithaka S+R, April 9, 2019. https://doi.org/10.18665/sr.311221.

Halabieh, Haya, Sasha Hawkins, Alexandra E. Bernstein, Sarah Lewkowict, Bukle Unaldi Kamel, Lindsay Fleming, and Daniel Levitin. “The Future of Higher Education: Identifying Current

Educational Problems and Proposed Solutions." *Education Sciences* 12, no. 12 (December 3, 2022): 888. https://doi.org/10.3390/educsci12120888.

Homer-Dixon, Thomas. "Why so Much Is Going Wrong at the Same Time." *Vox*, October 18, 2023. https://www.vox.com/future-perfect/23920997/polycrisis-climate-pandemic-population-connectivity.

Kossek, Ellen Ernst, Patricia Gettings, and Kaumudi Misra. "The Future of Flexibility at Work." *Harvard Business Review*, September 28, 2021. https://hbr.org/2021/09/the-future-of-flexibility-at-work.

Kugelman, Michael. "The India-Canada Rift Deepens." *Foreign Policy*, October 25, 2023. https://foreignpolicy.com/2023/10/25/india-canada-rift-trudeau-modi-sikh-separatists-diplomats/.

Lenart-Gansiniec, Regina, Wojciech Czakon, Łukasz Sułkowski, and Jasna Pocek. "Understanding Crowdsourcing in Science." *Review of Managerial Science* 17, no. 8 (November 2023): 2797–2830. https://doi.org/10.1007/s11846-022-00602-z.

Lodge, Jason M., Kate Thompson, and Linda Corrin. "The Concerning Persistence of Weird Ideas about Learning and Educational Technology and Their Influence on the Future Directions of Higher Education." *Australasian Journal of Educational Technology* 38, no. 3 (August 21, 2022): 1–5. https://doi.org/10.14742/ajet.8226.

Moore, Nicholas. *Invested: Australia's Southeast Asia Economic Strategy to 2040: A Report for the Australian Government*. Barton, ACT: Economic Strategy Section, Southeast Asia Strategy, Communications and Maritime Security Branch, Office of Southeast Asia, Department of Foreign Affairs and Trade, 2023. https://www.dfat.gov.au/sites/default/files/invested-southeast-asia-economic-strategy-2040.pdf.

Neuwirth, Lorenz S, Svetlana Jović, and B Runi Mukherji. "Reimagining Higher Education during and Post-COVID-19: Challenges and Opportunities." *Journal of Adult and Continuing Education* 27, no. 2 (November 2021): 141–56. https://doi.org/10.1177/1477971420947738.

Norton, Andrew. "Mapping Australian Higher Education 2023." (ANU Centre for Social Research and Methods, 2023. https://csrm.cass.anu.edu.au/research/publications/mapping-australian-higher-education-2023.

Nugent, Annita, Jason Lodge, Annemaree Carroll, Rupert Bagraith, Stephanie MacMahon, Kelly E. Matthews, and Pankaj Sah. *Higher Education Learning Framework: An Evidence Informed Model for University Learning*. Brisbane, Australia: The University of Queensland, 2018. https://doi.org/10.14264/348c85f.

Parker, Stephen. "The Future of Higher Education in a Disruptive World." KPMG International, October 2020. https://assets.kpmg.com/content/dam/kpmg/xx/pdf/2020/10/future-of-higher-education.pdf.

Pelletier, Kathe, Jenay Robert, Nicole Muscanell, Mark H. McCormack, Jamie Reeves, Nichole Arbino, and Susan Grajek. *2023 EDUCAUSE Horizon Report: Teaching and Learning Edition*, 2023.

Ross, John. "Australia Recovers with Foreign Students, but Not Domestic." *Inside Higher Ed*, April 12, 2023. https://www.insidehighered.com/news/global/2023/04/13/australia-recovers-foreign-students-not-domestic.

Schippers, Joop. "What Is Driving Current Labour Market Shortages and How Older Workers Could Help." *The Conversation*, March 4, 2023. https://theconversation.com/what-is-driving-current-labour-market-shortages-and-how-older-workers-could-help-200873.

Understanding Generation Z: Recruiting, Training and Leading the next Generation. Norwest, NSW: McCrindle Research, 2019.

Universities Australia. “2022 Higher Education Figures,” May 6, 2022. https://universitiesaustralia.edu.au/wp-content/uploads/2022/09/220207-HE-Facts-and-Figures-2022_2.0.pdf.

Veiga, Amélia, and Tim Seidenschnur. *The Role of European Universities in an Age of Pandemic*. 1st ed. Centre for Higher Education Futures, 2022. https://dpu.au.dk/fileadmin/edu/Forskning/CHEF/Publications/CHEF_Working_paper_Pandemic_study_2023_Final_Version.pdf.

Wesley, Michael. *Mind of the Nation: Universities in Australian Life*. Collingwood, VIC: Schwartz Books, 2023.

Young, Ryan. *Australian Universities: Thriving in a Changing World?* Canberra: National Security College, 2020. https://nsc.crawford.anu.edu.au/publication/18199/australian-universities-thriving-changing-world.

Zyda, Michael. “Do We Need Universities Anymore?” *Computer* 56, no. 5 (May 2023): 145–50. https://doi.org/10.1109/MC.2023.3247239.