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24 January 2018

Select Committee on the Future of Work and Workers
Department of the Senate
Parliament House
Canberra

Email: futureofwork.sen@aph.gov.au

Re: Submission to inquiry on impact of technological and other change on the future of work and workers in Australia

Queensland University of Technology is a major Australian university with current enrolment of 48,833 and an accumulated alumnus of 245,000. As such it has helped develop the skills and careers that have sustained tens of thousands of families and workplaces. As a university of technology, it operates at the cutting edge of technologies that are rapidly changing the nature of all personal interactions particularly the nature of work.

The University is heavily invested in the future of work and its impact on all of our stakeholders.

The ability to both prepare students for the "real world" and to conduct research and engagement activity which informs the "real world" has been at the heart of QUT's mission since it was formed in 1989. It is positioned to continue to do so.

Every career we educate for is changing. Every discipline we research is changing. This has its sharpest impact in workplaces where owners, managers and employees are managing change like never before.

The University has paid close attention to the emerging analysis of future workplaces and its effect on the skills we educate for and the careers we help launch and has played some role in both surfacing the issues this raises and trying to more deeply understand the macro impact.

The 2013 Oxford-Martin School estimate of the impact of technology on employment (The Future of Employment: How susceptible are jobs to computerisation) cited 47% of jobs as at risk from disruption. This figure has since been replicated by Australian research (Australia's future workforce CEDA, 2015) but some analysis suggests a lower impact. AlphaBeta (The Automation Advantage, 2017) in 2017 focusses on the reduced amount of time many workers will spend on repetitive tasks and asserts that investment in automation can boost economic activity and employment.

More recently, UK research involving two of the Oxford Martin researchers, Prof. Karl Frey and A/Prof. Michael Osborne (The Future of Skills: Employment in 2030) has suggested the impact may not be as severe as feared because of the likelihood of new employment emerging that may require more human input.

They cite the need to retrofit premises for climate change, the growing demand for aged care in the western world and the construction activity that would arise from continued urbanisation as among factors that will require stronger human intervention.

Their analysis of future occupations puts high value on tactile skills that cannot be replicated by machines and on complex problem solving skills which require the human attributes of empathy and creativity in the workforce of the future. **Of greatest value is adaptability and the skill to learn new knowledge and practice as it emerges.**

In short, some jobs will be lost to technology and new business models. Some jobs will change through augmentation by technology. And new technology, in combination with other economic and social factors will create many new jobs. This represents an evolution of the workforce and the need to both plan for structural and individual change.

This accords with the view of QUT and matches the direction we have taken as we prepare for a rapidly changing environment.

The university has recognised this through its strategy as expressed in QUT Blueprint 5 (September 2016): *"Significant change is taking place globally and the Blueprint's role is to anticipate the nature and impact of change, to ensure that QUT remains at the forefront of development, enabling the University to be agile and prosper in ways that are distinctive and to make certain that we continue to meet the needs of students and serve the professions, industry and the wider community effectively."*

Almost every university activity is influenced by the need and desire to develop new skills that will equip our graduates well into the mid-century. The continued advance of technology through the marriage of robotics, artificial intelligence, big data is inevitable and largely welcome. The issue we all face (whether as a university or a business or a community or a government) is how this complements, rather than supersedes, human activity in the workplace.

This submission highlights just six strands of activity (both curricular and extra-curricular) designed to equip our community for change and addresses some of the specific issues raised in the inquiry's terms of reference.

1. **Emphasis on active, work integrated learning and quality teaching with the objective of developing the skill of lifelong learning within our graduates.**
   Our Real World Learning 2020 Vision outlines clear aspirations to support our graduates to thrive in volatile environments over the long term, contribute productively as individuals and in teams and combine depth in professional knowledge with broad perspectives based on exposure to new ideas and cultures. Important elements of making our graduates curious, agile and resilient learners include an emphasis on authentic learning and assessment in all units and work integrated learning in all courses. We have invested in curriculum and learning transformation through using the five-year accreditation cycle to strengthen courses and provided the strategic support and resources to curriculum leaders and teams. We have invested to build staff capability to imagine and create engaging real-world experiences in online, blended and face-to-face learning. This has been supported by "cross-boundary" collaboration within and beyond QUT and investing in and rewarding innovation to encourage and enable new ways of thinking and working.

The university also has developed its capacity to offer lifelong learning through its Graduate and Professional Education programs, being delivered under the QUT-X brand managed through the Graduate School of Business. This recognises the demand for new skills as professionals progress through less linear careers. It is supported by a strategy to offer Massive Open Online Courses (MOOCs) in areas where new technologies create the risk of being disrupted or the opportunity to disrupt. These include robotics and robotic vision, big data and social media which QUT offers internationally through FutureLearn.

2. **The development of high-level STEM skills from pre-entry through to doctoral level.** The university recognises that STEM capability will be a key contributor to success in all professions of the future. As a university of technology, it hosts high-level STEM capability but also runs programs to ensure STEM abilities can be developed by all students, regardless of their discipline. For instance, the QUT STIMulate program runs both scheduled and drop-in programs for students seeking support in science, mathematics and IT. It is used most by students enrolled in Creative Industries, Law, Education and Health who are grappling with STEM learning within their various disciplines.
   It also recognises the value in encouragement of STEM skills at a pre-entry level. The Vice-Chancellor's STEM Camp every September hosts up to 160 Year 11 students, selected because of their STEM skills. The live-in camp exposes the school students to university professors, immerses them in projects and allows them to develop skills where they already show promise.

3. **Research focusing on the digital economy.**
   The PWC Chair in the Digital Economy based at QUT is a thought leader on the business and work practices of the digital economy. Its research informs major corporations on investment decisions and business processes that will sustain them and their workforces through disruption. Clients to date include the Queensland Government, Qld Urban Utilities, the Australian Government, Suncorp Ltd and the Bank of Queensland. It matches its research with public outreach and the operation of innovation sprints designed to help established businesses maintain revenue resilience in a changing environment.

4. **Increased attention to the value of entrepreneurship and intrapreneurship as work skills.**
   The QUT Blueprint 5 cites the creation of founders as a key tactic. The target of 200 founders by 2019 recognises that entrepreneurship is a valuable skill for graduates pursuing alternatives other than traditional work. Development of these skills is supported by the university's commercialisation businesses, QUT Bluebox and QUT Creative Enterprise Australia (CEA).
   The university also offers support for student entrepreneurship through its Foundry startup spaces which serve as a link between starters and the entrepreneurial ecosystem. It has broadened its partnerships in this area to include annual hosting of the MIT Global Entrepreneurship Bootcamp on campus. It also recognises that many of the entrepreneurial skills that are exhibited in business founders are increasingly valuable to employees in the form of intrapreneurship within established corporations seeking ways to meet challenges from innovators.

5. **Greater public engagement and research to forecast how work will change and what it will mean to the community.**

The QUT Work Industry Futures Research Program is a team of researchers and academics centered in the QUT Business School with a focus on the "profound social implications arising from a globalised collaborative economy characterised by rapid and extensive social change. It has three areas of inter-disciplinary focus – sustainable governance, employability and learning and "just work". The program has submitted in detail in its own right to this committee.

The QUT Real World Futures program has focussed on the future of work through its public forums since 2015. Through this it has showcased emerging thinking from both within and beyond the university in an effort to draw more public attention to the issues the committee is investigating. Participants have included international academics with expertise on these issues (A/Prof. Michael Osborne of the UK's Oxford-Martin school, Prof. Thomas Davenport of MIT and Harvard), QUT's own expertise (Distinguished Professor Stuart Cunningham, A/Prof Ruth Bridgstock), Data 61's Dr Stefan Hajkowicz, the Foundation for Younger Australians' Jan Owen and many industry participants dealing with change. The program is ongoing. Its next public forum on future-of-work issues will be in Brisbane on March 13.

6. **Development of creative skills that will feed both creative and traditional industries.**
The University created Australia's first Creative Industries faculty, recognising the growth in both the creative economy and the increased need for creative skills. This view is borne out by the recent research conducted in the United Kingdom. Research by QUT's Distinguished Professor Stuart Cunningham shows 5.3% of total employment is within the creative economy, 1.6% of it in cultural production (film, TV, radio, publishing, music, performing and visual arts) and 3.7% of it in creative services (architecture and design, advertising, marketing and digital software). Overall annual employment growth rates across to 2006-11 Census for the creative economy were 2.8% compared with 2% for the rest of the economy. It is intended to update this study, using 2016 Census data. The influence of creativity and innovation is mapped by Prof. Cunningham in his report for the Australian Council of Learned Academies (Skills and capabilities for Australian enterprise innovation, 2016) which examines the characteristics of businesses regarded as among Australia's most innovative. The common element is the blending of technical and creative skills to create innovation.

The university notes two other issues relevant to this inquiry.

1. If the labour market contracts as a result of technological changes, and unemployment and socioeconomic disadvantage increase, one policy initiative being trialled in Finland is a universal basic income guarantee; that is, 'an unconditional grant that is paid by the government to all permanent residents at regular intervals' (Mays et al., 2016; BIGA, 2013). The introduction of a universal basic income would replace many existing complex and costly welfare and social service schemes, and offer a level of financial security in conditions of growing uncertainty in the job market. It is asserted to be an affordable option in wealthy countries such as New Zealand and Australia (Mays et al., 2016), and investigation of the feasibility of this approach in Australia could be warranted as evidence from the international trials becomes available. The university neither advocates nor opposes this measure but raises it as an issue worthy of better understanding.

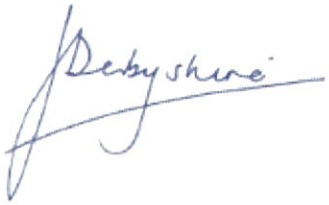
2. The QUT Health Faculty observes one direct impact on an important part of the workforce. Workplace health and safety professionals are currently seeing significant changes in the requirements of their roles. As technology replaces and supersedes traditionally more hazardous jobs, the need to manage these risks is being replaced by an increased emphasis on the management of psychological and social factors in the workplace. This is reflected in the certification requirements of health and safety professionals (Safety Institute of Australia, 2017), and includes an increased focus on supporting the wellbeing of those who continue working in an increasingly insecure employment environment. The Faculty highlights the need to address the psychological and public health impacts of advancing technology as part of future workforce policy measures.

In addition, we draw your attention to two submissions from university faculty: (a) Submission from the QUT Work Industry Futures Research Program and (b) Submission from Adjunct Professor George Cairns.

These are complex issues that require consideration at both national and international level. The impacts of technology on work will take many years, perhaps decades, to become apparent. We understand this deeply as a home for leading researchers on many of these technologies. The university welcomes more public focus on the issues you raise which are vital to the development of graduates with knowledge to function through coming decades. This is the university's mission.

QUT puts great value on this role and the accompanying role of being an agent for economic development of the nation. Central to the university's ability to achieve this is the need for ongoing funding certainty and policy settings that encourage economic development at all levels. The University urges the committee to consider this as an important part of the context in reaching a view on the future of work and the positive role education at all levels can play in securing a future for workers of all categories.

Yours Sincerely



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