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Speaking notes for Vice-Chancellor, Professor Linda Kristjanson AO

Acknowledgement of country

I respectfully acknowledge the Traditional Owners of the land on which we gather, the Wurundjeri and Boonwurrung peoples of the Kulin Nation. I also pay respects to all Aboriginal Community Elders, past, present, and emerging - who have resided in the area and have been an integral part of the history of this region.

Today, we sit on the cusp of an astonishing new world.

The hyper-connectivity of our individual lives with our digital devices (smartphone, laptop, GPS and Google Home) are small reflections of the technical and digital revolution taking hold around the globe.

Known as the fourth industrial revolution, or Industry 4.0, this is a revolution like none we have seen before - where disruptive technologies and trends such as the Internet of Things, robotics, virtual reality and artificial intelligence are profoundly changing the way we live.

Previous industrial revolutions have ushered in the eras of mechanization, electricity and mass production, and the digital age.

This wave is different. The fourth industrial revolution is the bringing together of digital, technological, physical and biological breakthroughs at a speed never experienced by humankind.

Unique systems are being established – systems for which most of us, including our regulators and lawmakers, are not yet ready.

To give an example of the mind-boggling speed with which digitization is occurring, it took 100 million people less than a month to access the popular gaming app 'Pokemon Go.' It took 75 years for the same number of people to access the telephone. (SCHULTZE 2019).

Through the fourth industrial revolution, cyber-physical systems – perhaps including Pokemon Go – are being introduced with unprecedented potential for both machine and human.

So far, Industry 4.0 has bought us genome editing, machine intelligence, nanotechnology, quantum computing, 3D printing, bio molecular breakthroughs, smart materials and highly secure cryptographic methods such as blockchain.

Yuval Noah Harari writes that we are facing the 'paradox of historical knowledge'. 'Today, our knowledge is increasing at breakneck speed,' he says. '. . . theoretically we should understand the world better and better. But the opposite is happening. Our newfound knowledge leads to faster economic, social and political changes. In an attempt to understand what is happening, we accelerate the accumulation of knowledge, which leads only to faster and greater upheavals. Consequently, we are less and less able to make sense of the present or forecast the future". (HARARI 2016)

Is this revolution changing who we are, the way we see the world around us, our identity, our priorities and importantly, how we relate to each other?

Professor Klaus Schwab, head of the World Economic Forum and the man who coined the phrase 'the fourth industrial revolution', warned: 'There has never been a time of greater promise, or one of greater potential peril. The fourth industrial revolution, finally, will change not only what we do, but also who we are.'

He stated: 'It will affect our identity and all the issues associated with it: our sense of privacy, our notions of ownership, our consumption patterns, the time we devote to work and leisure, and how we develop our careers, cultivate our skills, meet people and nurture relationships. It is already changing our health and leading to a "quantified" self, and sooner than we think it may lead to human augmentation (example – Fitbit). The list is endless because it is bound only by our imagination.' (SCHWAB 2017)

The emergence of the quantified self has benefits – but is also now without controversy – as we consider the ways that our personal data is captured, stored and used – and the impact of measuring every aspect of our behaviours and biological responses may alter how we see ourselves.

The fourth industrial revolution is reshaping government, education, healthcare, and commerce; every aspect of our society. And so, what is the shape of Society 4.0?

Techno-anthropologist and Director of the 3A Institute at ANU, Professor Genevieve Bell, explores our critical opportunity to bring the knowledge of our history to create a better future. (BELL 2017)

She calls on us, as we write the algorithms of the future, to address inequality based on gender, race and age, growing disparity between rich and poor, and conflict.

We have promising opportunities to bring our humanity to the new world we are forging.   As Klaus Schwab says:

"The fourth industrial revolution can compromise humanity's traditional sources of meaning - work, community, family, and identity - or it can lift humanity into a new collective and moral consciousness based on a sense of shared destiny. The choice is ours." (SCHWAB 2017)

An example of the importance of human choice and the interface with technology comes from the Lindt Street Café incident. The taxi

booking firm Uber's 'surge pricing' algorithm automatically raised fares by as much as four times its normal rate when demand shot up during the Lindt Café siege in 2014. The firm apologised and eventually interceded and started offering free rides out of the city – because this was the ethical and humane thing to do. The algorithm made a mistake - context, compassion and common sense were needed. (GALLAGHER 2018)

Let's talk now about the world where we spend our time – the university sector. The needs and expectations of the next generation are being defined by the hyper-connectivity of this revolution. How will we, in the university sector, then help shape the future?

Our students – the young and the not so young – are the next generation of leaders. What can we do to support and meet their needs, and those of the generations to come?

We know our students are the most technically-literate and digitally-intuitive in the history of humankind.

They are socially-minded, easily mobilized and radically inclusive. They are also globally connected, with fluid distinctions between friends online and friends in the physical world. For example, Extinction Rebellion activists have connected rapidly across cities and across the globe to make their voices heard in creative ways.

They can be pragmatic and analytical about their decisions because of the vast amount of information at their fingertips and they should be very comfortable collecting and cross referencing many sources of information.

Like generations before them, they can develop points of view quickly and stridently and are not afraid to challenge authority.

Many are fortunate to be well-educated and well-travelled, self-confident and masters of their domain. They hope to enjoy full lives

and when it comes to the working world, we see many of them making decisions based on work/life balance rather than economics.

Their working life will be one of continual learning and invention, as they navigate five career changes and an average of 17 jobs in their lifetime. (FYA 2015)

Although a world of automation is making many jobs redundant, a new world of work is being shaped, opening up new opportunities every day.

In facing the uncertainty of a rapidly evolving future, our human attributes of creativity, innovation and ethical reasoning are more important than ever before.

To navigate our future, we must take leaps of imagination and twists of perspective to find new approaches, ask new questions and ensure what we value as human is treasured and intrinsic to our thinking.

In this task, our universities are ideally placed to provide environments for the innovation, ethical reasoning, creativity and critical thinking that are so essential to our future.

The innovation journey has no end. It is a continuous process of growth, assessment, reflection and investment. I am sure that you have experienced this in your own workplace and feel the pressures of change.

Innovation is about coming up with new ways of doing things, of changing processes to establish more effective methods and improve output and value. It's also about ideas, creativity, imagination and risk taking.

To remain relevant and adapt to an emerging '4.0' world, the tertiary sector must continue to innovate.

To ensure we have a hand in shaping our humanity for generations to come, we must be prepared to adapt and meet the needs of tomorrow.

Our students want and need flexibility, authenticity, communication and an understanding of how their world – both physical and virtual – is changing.

They want to demonstrate how well they have learned something, not necessarily what they have learned.

They need to get their hands on the latest digital technologies, to stay connected to the vast potential of Industry and Society 4.0.

Across the education sector, we remain dedicated to our students - to shaping a positive future for the next generation.

In our academic programs and in the services we provide, we are cognizant of our students' challenges and opportunities.

At Swinburne, we are proud of our uncompromising focus on employment and business creation. From their first contact with Swinburne, students are encouraged to develop a clear sense of professional purpose.

We are teaching to the graduate attributes that are needed for the future of work. This sees students in all disciplines developing professional skills such as communications, teamwork and digital literacy. We are ensuring they are self-directed learners who can reflect, be self-aware, adaptable and take initiative, and that they have future ready skills of complex problem solving, judgement for decision-making, cultural competence and management skills.

We aim to foster more self- and socially-aware students, ready for the changing nature of work and prepared for the adventure of life. Through their experiences of university, our students will become future ready learners able to shape their impact on the world.

Let's be honest, this is no easy task.

These times of rapid change and uncertainty impact and challenge us to do things differently.

Developing and implementing a transformation of education takes a holistic approach. Being an agile and innovative institution ourselves takes energy and effort. More than ever before, it is critical that we collaborate across boundaries to work in new ways.

Some of this requires coloration across portfolio areas, departments and facilities. But it is more than that. We must cross the barriers of race, culture, gender and age. The diversity of our students and staff, and our global connections, are critical to driving new knowledge.

Studies have shown how workplace diversity is critical to a company's success, but my call to foster diversity goes beyond that. We must also consider the importance of cognitive diversity – something that is invisible – but a powerful hedge in a complex, fast

changing world as we harness different ways of thinking, problem solving and seeking solutions.

I am calling for us to open our minds to new modes of knowledge – ancient as well as future. Through the Reconciliation journey shared by non-Indigenous and Indigenous Australians, we know there is much to learn from each other.

We are opening our eyes to new ways of seeing and a new sense of place. How fortunate we are to have such rich opportunities to develop new knowledge that helps us shape our future.

We must also cross the barriers between universities and other institutions. We must let the outside in and partner with industry to develop and implement research and academic programs.

At Swinburne, industry engagement is a core focus, and we have doubled our efforts in recent years to build ever deeper partnerships.

We work with industry to design courses, to design and implement research programs and to innovate for the future.

Deep partnerships based on mutual respect for expertise must be built within our universities as well as with the outside world. We cannot be limited by the silos of departments and functions.

Let me share a Swinburne example of how to shape a whole-of-university approach.

This year, we launched the Data for Social Good Cloud Innovation Centre, powered by Amazon Web Services. The Centre uses innovative cloud technologies and intelligent data analytics to solve real-world health, wellbeing and social challenges affecting Australians. It is the first of its kind in the Southern Hemisphere.

I am very excited by the work already underway, developing intelligent, data-driven digital health systems to improve health care and health literacy and to develop personalised health-care

solutions. Examples include diabetic management device in partnership with Epworth and the detection of aortic value disease and cardia calcification in partnership with the Baker HDI.

Importantly, this work sees researchers, students and professional staff from Swinburne and industry working hand-in-hand.

Students - from vocational education to PhD research students – have opportunities to work in the centre as full-time, paid employees as part of their studies. They bring fresh thinking to the challenges we seek to address.

Professional staff from Swinburne, Amazon and client organisations act as student mentors and provide technical and industry expertise on research projects. They provide speed to scale – connecting research outcomes with industry in real time.

More than ever, the knowledge of multiple disciplines is required to solve complex problems. And our professional staff bring expertise

in best-practice business and innovation as well as experiences from outside the world of academia. When we harness the diverse skills of the whole university, there are exciting opportunities to explore.

I have spoken with some optimism today, of the opportunities created by the fourth industrial revolution. But we know in our hearts there is an incredible sense of disruption and, at times despair among humans.

Geo-political unrest, economic disparity, and attacks on evidence-based truth has triggered unease, anxiety and distrust between neighbours, friends and nations.
In this uncertain world, trust in our institutions has declined.
Research reveals a general sense among Australians that we are not well-served by our leaders and institutions.

Banking and finance, followed by government and religious organisations, are the least trusted institutions.

The education sector is among the most trusted institutions in Australia. (ALI 2019)

The tertiary education sector carries much responsibility for shaping the future – and our community trusts us to carry that mantle.

Each of us has a role to play in creating humanity in the midst of change and the intrusion of a cyberphysical world. Within the tertiary education sector, we are fortunate to be at the front line of this task. Each of us is working directly with the next generation, or is supporting someone who does. Whoever you are, whatever you do, if you work in tertiary education you play a role in shaping the future. I encourage you to bring your whole selves to work. Bring your life experience and your compassion. Be part of building a culture that helps us maintain our humanity. Let us step up together, show leadership in challenging times.

Our daily dedication to the next generation gives us many incredible opportunities to understand what matters to them, to share their burdens, and to support them as they take on the adventure of life.

The fourth industrial revolution is underway across our nation, and across the globe. It is our responsibility – and our privilege - to shape the future, for and with the next generation.

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