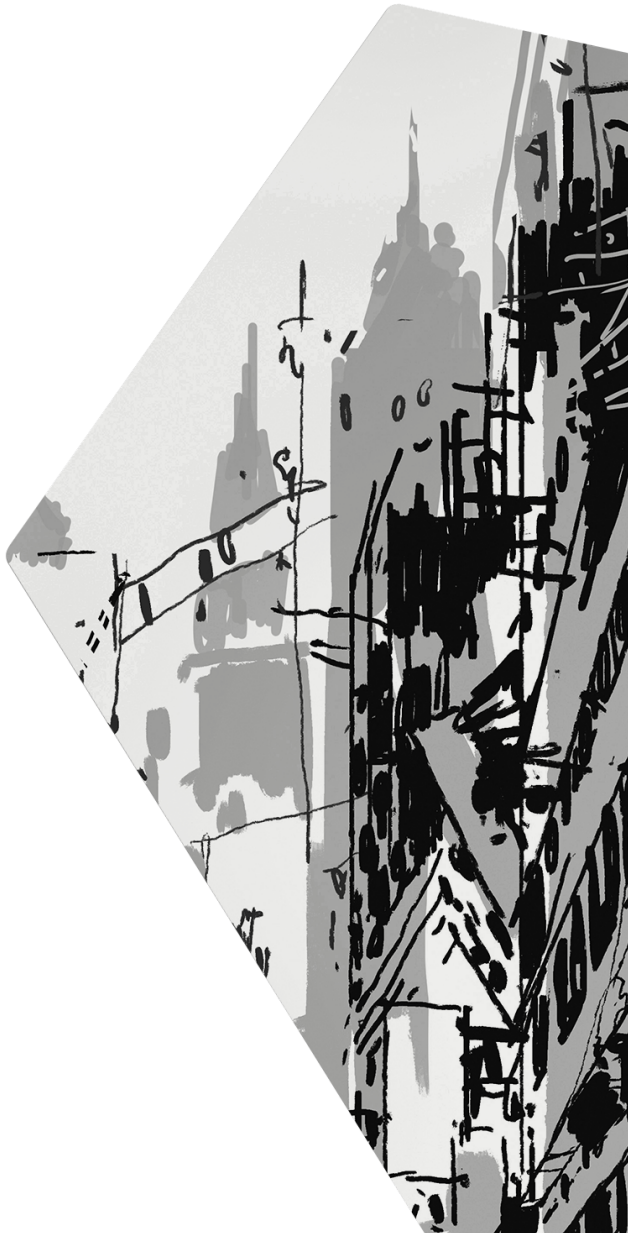
45 PERSPECTIVES ON HOW ENGAGED AND ENTREPRENEURIAL UNIVERSITIES WILL DRIVE GROWTH AND SHAPE OUR KNOWLEDGE-DRIVEN FUTURE



THE FUTURE OF UNIVERSITIES THOUGHTBOOK

Universities During Times of Crisis

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The future of universities thoughtbook
Universities during times of crisis

45 perspectives on how engaged and entrepreneurial universities will drive growth and shape our knowledge-driven future

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PREFACE

With the COVID-19 crisis, we have entered drastic times that require innovative and radical solutions. While taking up this challenge, higher education institutions and their partners across the globe have been breaking barriers and adjusting themselves and their operations to a new and uncertain reality. This may very well be the ultimate transformation and disruption of the higher education sector and their regional innovation ecosystems. But what does this mean for universities going forward?

Predicting the future is an impossible and futile exercise, hence effective ways of anticipating future events are few and far between. Well intended future predictions often become amusing quotes in presentations many years later. Such as the advice from a president of the Michigan Savings Bank given to Henry Ford's lawyer Horace Rackham not to invest in the Ford Motor Co: “The horse is here to stay, but the automobile is only a novelty – a fad.”

Nevertheless, the exercise of estimating or predicting the future triggers (1) simultaneous consideration of the events of the past, (2) estimation of the present situation, the most important forces affecting it and factors for success as well as (3) brainstorming and analysing the likely future development possibilities. These aspects are the key elements of strategy development. Yes, the future may be impossible to predict, but by working together to envisage a course for a desirable ‘tomorrow’, it is possible to embrace adaptability and innovativeness and ultimately turn uncertainty into opportunity.

Given this highly complex activity and the high likelihood of error, the approach taken in this Thoughtbook was to gather **perspectives of leaders and champions at the forefront on how universities can shape the world during times of crisis.** We really wanted to challenge the thinking about the university by selecting authors who:

- are already challenging and shaping the development of universities,
- are present or future ‘game-changers’ and ‘thought-leaders’,
- potentially already have a prominent position of power with respect to universities globally,
- together can provide a 360-degree view of universities from the vantage of different stakeholder groups.

In doing so, **a range of ‘possible futures’** emerge, from more conservative estimations predicting ‘business as usual’ for universities ‘hoping to go back to normal’, to situations whereby universities are superseded by technology and/or new

market-facing competitors. These 'possible futures' then provide a basis for the better establishment of university and industry strategies, which enable more efficient investment of resources and more productive outcomes, ultimately leading to much more meaningful impact on society.

When reading the contributions, a general consensus around the **opportunities and threats** facing universities emerge. With respect to the future of the university, like our experts' contributions, you will undoubtedly lurch from optimism to doom and back again. If this is the case, then we have achieved our major ambition with the Thoughtbook! … to take your thinking about the university of the future to pieces, and then offer insights into how you can piece a realistic future view back together.

Considering this, **the Future of Universities Thoughtbook (FUT_) | Universities during Times of Crisis becomes a manifesto for the development of the Future-Oriented University.** A vision for the university of the future whereby academics and students work in real-time symbiotic partnerships with industry, government and societal stakeholders to simultaneously create and implement new knowledge and solutions to address business and social issues. Those universities that drive change hard within their institutions will get a head start on the rest by embracing crises, uncertainty and a more innovative evolution whilst, if some of the contributions are precise, having a better chance of surviving.

Why now?

The world is in the middle of one of the most serious global crises in living history, which is presenting **extraordinarily complex problems and demanding unprecedented responses.** Beyond the health crisis, the COVID-19 pandemic is causing unique economic and social challenges.

As a result, the crisis has spurred universities, industry and societal stakeholders across the globe into closer working relationships at unprecedented levels. More than any time in recent history, **universities are offering solutions, guidance, stability and reassurance to society.**

Some of these actions include conducting research across multiple domains to better understand the pandemic and its effects, collaborating with the private sector to rapidly translate research into value, offering practical advice to policy makers and society, offering free online education modules to the recently unemployed, etc.

Whilst this crisis is providing countless new challenges, it is also a **unique opportunity to observe, learn and get inspiration** from the actions taken by universities. Considering its often-untapped potential to impact the economy and society, this is a critical opportunity to **rethink and reimagine the future role of the university during times of crisis.**

Vision

The Future of Universities Thoughtbook (FUT_) | Universities during Times of Crisis complements the inaugural international Future of Universities Thoughtbook as well as the Australian and North American editions.

Building on the **45 perspectives of international thought and practice leaders,** this edition creates a vision for the future of higher education institutions and how they will impact their communities during times of crisis.

IMAGINE

THE FUTURE ROLES OF UNIVERSITIES

"A University is a place … whither students come from every quarter for every kind of knowledge; … a place for the communication and circulation of thought, by means of personal intercourse. … It is the place to which a thousand schools make contributions; in which the intellect may safely range and speculate. It is a place where inquiry is pushed forward, … discoveries verified and perfected, and … error exposed, by the collision of mind with mind, and knowledge with knowledge. … Mutual education, in a large sense of the word, is one of the great and incessant occupations of human society. … One generation forms another."

A description by John Henry Newman in 'The Idea of a University' in 1852, as to what universities are here for.

But what are the future roles of the universities? What should universities be accountable for to remain relevant in tomorrow's society?

Talent Engine

Todd Davey

Situated in a rapidly changing, connected planet, and facing wide-ranging and complex challenges, the jobs of the future are expected to be highly mobile, flexible and insecure. Whilst digital, technology, innovation and transversal skills are expected to be necessary for future work. Moreover, the ability to employ yourself and work in ever-changing constellations of teams rather than for one employer are increasingly expected to be the work-life for millions globally.

Let's **IMAGINE…**

… a university whose role is to validate learning as well as skills and competency development rather than deliver content.

… a learning programme delivered without timetables, lectures (or lecturers), cramming or exams… your students sure can!

… sophisticated course design and technological evolution that makes 'mass education' the exception rather than the rule.

… keystone and capstone projects providing the challenge-based and practical learning around which everything else is built.

… an expanded set of learning modes making self-learning, peer learning, guided learning, applied learning and blended learning become the modus operandi, which

places self- and shared responsibility at its heart.

… a facilitator experienced in bridging academic and practice as programme lead, supported by material developed by relevant academics and practitioners supplemented by online learning and alternative credentials. The learning journey supported by a mentor and an AI robot available to support mundane tasks.

… (much like innovation is now 'open') an organisation that embraces 'open' educational model delivered by many relevant suppliers from industry and consultancies to deliver the skills of tomorrow.

… start-up methods and team experience entrenched in the programme design to more rapidly develop skills (in rapid learning cycles) to prepare for an uncertain career path.

… a university of the future.

Discovery

Carolin Plewa

Discovery is the foundation of advancement; it is the seed that drives innovation and creates the opportunity for a better future. As we push the boundaries of knowledge, we not only enable, but also drive, positive social and economic, cultural and environmental change.

When talking about discovery, universities often come to mind. After all, discovery is part of their identity; part of their DNA. But where lies the future role of universities in regard to discovery?

Let's **IMAGINE…**

… discovery being the lifeblood of society, embedded in all of us; in an integrated system of learning, innovation and positive change, without organisa¬tional, industry, sector or societal boundaries.

… discovery thriving on a true appreciation and encouragement of diversity and strengths, bringing together different people, cultures, backgrounds, beliefs, knowledge and perspectives.

… discovery in a global system, as part of a global agenda, built on common purpose and enabled by true collaboration.

Imagine therefore the university's future discovery role. It is not only one of doer, trainer and thought leader. It is also one of facilitator, connector, partner and coach. And, of course – as is true for all of us – an ongoing learner and changemaker.

And it is this role that will enable us to shape the future we imagine. Discovery is everywhere; it just needs to be nurtured, connected, embraced and used as a foundation for positive change. What an opportunity we have to make this happen: As our status quo is interrupted now, we feel much freer to **rethink.** So, let's use the rethink to **redo.**

Life Partner

Victoria Galan-Muros

The university as a life-partner is focused on increasing and improving the skills of individuals throughout their lives so that they can successfully meet the personal and professional challenges of a changing world. But how can the university expand the notion of 'students' from those who enter the university directly after high school and before having work experience to learners at all stages of their lives?

Let's **IMAGINE…**

… universities that interact with young people in earlier stages of education to advise, encourage, inspire or inform them. These universities also embrace the over 60 silver surfers who want either to continue their education or to further contribute to society, through mentoring or entrepreneurship programmes.

… universities that specifically address companies to support their internal training and adults who seek to upskill or reskill themselves in order to find or stay in a job, get a promotion, change sector, or reinvent themselves in any other way in the world work. These universities also serve those adults who simply have an intellectual interest in a specific topic.

… universities that adapt its educational offer by modularizing it with

IMAGINE

short courses (e.g. micro-credentials) that are stackable and become higher ranking credentials and by increasing its professional, executive and multidisciplinary programmes often in collaboration with other stakeholders.

… universities flexible enough to facilitate that learners start, leave and resume their studies at any time, integrate external educational experiences, organize their own learning pathways and decide their time, place and pace of studying.

The concept of alumni is gone because 'students' are always potential learners, and it is time for universities to use their knowledge and teaching capabilities to reinvent themselves into society's life companion.

Home-Base

Balzhan Orazbayeva

University as a home-base refers to more than just a physical place. It is a co-creation space that remains fully committed to the scientific discovery, value creation, learning and re-learning, public service and collaborative innovation. University in that sense is more than just a campus – it is more than just 'walls' – it is a home-base for creative and curious minds, a safe space for creating the knowledge and driving technological advancements.

Thoughtfully-designed university campuses have always been considered a home for students and academics. But the question is how they should evolve to remain relevant in the rapidly changing world. What is the future role of universities as a home-base?

Let's **IMAGINE...**

... universities as power-engines of problem-solving and co-creation platforms in their region where all stakeholders collectively co-design effective and innovative solutions to the challenges they face.

... universities as hybrid, fluid and highly digitalised spaces with capabilities to connect people from around the world and fully equipped to educate beyond place and time.

... universities as flexible smart homes with the ability to be rapidly transformed to cater to the needs of their 'tenants' – learners, scientists, entrepreneurs and innovators, companies and other organisations.

... universities that act as hubs for tech-based entrepreneurs who stay connected and contribute to their local and regional economies by collaborating with their home-base 'neighbors'.

Such a future requires us to re-think how universities can become truly community-centered and how they engage with the society and interact with the learners and academics. It requires breaking free from the constraints of traditional place-based logic.

Launchpad

Arno Meerman

Universities are the home of new knowledge, research and technologies; with the right ingredients in place they form the ideal environment to launch innovative businesses and creative opportunities for students, academics and entrepreneurs. Whereas research and discovery have already for long been part of the university's DNA, the Launchpad role is part of its evolution. But how can we transform these institutions to launchpads of some of their prime research, talent and local enterprises?

Let's **IMAGINE…**

… universities better utilising their access to a network of entrepreneurs, investors, venture capitalists, (former) business owners in combination with the domain experts in their own academic community.

… open co-working places, incubators, makerspaces at the heart of these knowledge creating institutions, providing a place where its students and academics can safely start, test and grow their business and to display their talent to innovate.

… small, medium and large enterprises having an institution to turn to in order to get access to inventions, and support, learn from, collaborate with, and acquire student and academic led start-ups.

… therefore the university's future Launchpad role, which provides an entrepreneurial base for students, academics and business alike. An environment where today's cutting-edge research can be turned into a market-ready concept, tested, validated and marketed with the support of all stakeholders. A place where validated business concepts led by global talent provide added value to our regional communities, national context and international sustainable development goals.

For a long time, universities have been considered to be ivory towers, institutions that cannot change – it is time to prove them wrong and shift into a more entrepreneurial gear and lead the way in business development.

The roles of the future university capture the five primary responsibilities that will define the future university, how it will operate, interact with its environment and provide sustainable value. The roles were identified through a comprehensive analysis of the contributions to the four editions of the Future Universities Thoughtbook - capturing the essence of the leaders invited to contribute.

They expand on the traditional notion of the first two missions of the university, education and research; embracing new, more active roles that the university of the future will need to take, and in the process also providing a significant twist on those original roles. The future university may embrace all of these roles or choose to focus on one or more of the roles in order to secure a sustainable position in the marketplace and provide value to society.

The universities that consider, plan, fund and create structures for these future roles will have a strategic advantage in serving its stakeholders and communities.

SUMMARY OF SECTIONS

Contributions are captured in six sections, each with a common theme. The editors summarised each section to provide an overview of the book.

IMAGINE A UNIVERSITY...

Eight contributions imagine a university and a higher education sector, envisioning and inspiring the path forward. By asking 'what if …?', **Peter Wells** instigates critical questions of universities and their facets - the old, the new and the potential, as we build the 'future university we need and deserve'. **Alan Barrell** re-imagines universities central to an intellectually connected world that is characterised by people who imagine what could be, focusing on 'WHY NOT' rather than 'yes but'. Building on the achievements of universities to date, **Christer Windeløv-Lidzélius** outlines the conversation we should facilitate regarding the university's future role, responsibility and relevance to society. **Shigeo Katsu** imagines the evolution of different types of universities and their missions, as they continue to nurture and develop citizens into the future. **Roberta Malee Bassett** envisions the emergence of the omniversity, an education empire that is 'in all ways or places', taking away borders and limits and instead emerging as 'more agile, more accessible, and more meaningful'. Reminding us of the core purpose of universities, **Larry Marshall** imagines greater specialisation and differentiation across institutions, with role clarity building the foundation to more extensive collaboration across a well-connected ecosystem. **Mariya Gabriel's** contribution focuses on the transformation of the higher education sector to become even more 'inter-connected, innovative, inclusive and digital', offering clear examples of European developments. **Pascale Quester** imagines the future making university that is 'universally recognised as valued and indispensable parts of society', as it draws on its unique ability to combine 'nation-building blocks of innovation, entrepreneurship and human skills' to positively shape the future. Finally, **Cameron McCoy** states it is in our hands to build from our factor endowments and reshape a regenerative, equitable, learner-oriented university, which can serve as a lifelong service platform.

Collectively, these contributions create a vivid picture as they offer diverse perspectives and shine the light on different facets of a university of the future. Envisioning a significant role of universities and higher education for future societies, they call for designing an agile, innovative and highly interconnected future. Importantly, beyond paving the way, these contributions encourage and inspire us all to continue to imagine, inspire and transform.

CRISIS AS A DRIVING FORCE

The section 'Crisis as a driving force' comprises seven forward-thinking contributions that are diverse in their messages yet with common threads. **Amanda Crawfoot** highlights the role of COVID-19 in reflecting on what constitutes as good higher education and how to deliver it, as well as the consequences of the recent changes on a policy making level. **Catriona Jackson** reminds us of the importance of university's in the past and present, highlighting that universities will remain active players of the future. **Fadlo Khuri** focusses on the role of universities in defining the future of the Middle East, and dreams of a more diverse, inclusive and equitable world that academics are capable of creating. Discussing the common good and the need for collective efforts, **Ignacio Sánchez** imagines what the future may look like post-COVID, debating a more supportive and austere society, and the need for fields such as science, economy, urban design, medicine and others to consider the needs of people for a better quality of life. Focusing on how universities have changed over time, **Vicki Thomson** promotes the need for society to change and universities and research funding mechanisms to change with it. **Pierre Tapie** shifts the focus of our thinking towards pre-COVID megatrends, such as digitalization, demographic shifts, life-long learning and geopolitical shifts, and the effect of the pandemic on how universities will respond to them and invent the best future for society. Finally, **Heinz Fassman** reminds us of the agility and resilience of universities, as institutions of research, knowledge exchange and advancement and problem solvers they are making a huge contribution to creating a more resilient society.

Several common threads emerge from the contributions of this section. In particular, the important role universities play in our society, and the need for collaboration rather than competition. For example, collaboration between policymakers and university leaders to drive change in the funding mechanisms of universities and the emphasis on the mission and responsibilities of universities towards society. In addition, university collaboration with industry and society to focus on some of the world's grand challenges and the effect COVID has on them. Finally and foremost, the contributions highlight the need for universities and the higher education system to remain agile and resilient, to continue to lead our society in research and education.

DISRUPTING TEACHING AND LEARNING

The section 'Disrupting Teaching and Learning' comprises seven forward-thinking contributions that describe the future of higher education in terms teaching and learning. **Courtney Brown** highlights the role of higher education in creating more equitable world, where 'one's skin colour or income doesn't define our success in education, or in life'. **Andrew Kuchins** foresees that whilst some universities may not survive the financial implications of the pandemic, many institutions will unite their forces in this globalized world to embrace collaborative teaching and learning. A significant shift is also predicated by **Manuel Tunon de Lara**, who explains that universities will need to rethink and optimise their core 'business' and invest in disruption. **Marina Bulova** focuses on universities as 'skills farms' that should not only develop the relevant workforce, but mainly target their activities on the learners and society at large. **N.V. Varghese** emphasises the need for the future universities to develop the capacity to offer flexible pathways to learning that are modular and tailored to learners' needs. Focusing on the 'liquid learning' model, **Santiago Iniguez** explains the need for optimising the hybrid forms of education not as necessity caused by the pandemic, but as a permanent improved and more effective way of teaching and learning. Finally, **Simona Kustec** discusses what will matter in the future, anticipating that universities will remain the strong pillars of knowledge in society, with institutions finding the balance in providing relevant learning opportunities to their students.

Several common threads emerge from the contributions of this section. In particular, a truly learner-centered design of future higher education shines through all the contributions, may it be in the reconstruction of learning offerings and assessments, the broadening of credentialing options or optimisation of diverse hybrid modes of learning delivery, the focus remains squarely on the learner. Similarly, contributions share a strong message regarding the need to collaborate and partner with a range of stakeholders that enrich a global and experiential, learner-centric learning experience. Finally, the contributions seem to indicate that, in the future education landscape, universities will accelerate new paths to inclusivity and thus become key in creating more equitable world.

COLLISION OF TECHNOLOGY AND HUMANITY

The seven contributions contribute to the section 'Collision of Technology and Humanity'. **David Garza** emphasises that there will be a growth of the free-flow student-centered learning options based on micro-credentials and stackable programs supported through high technologies. **Matías Rodriguez** Inciarte imagines the university that is fully digital in its nature and provides ultimate access to upskilling and reskilling opportunities. **Rey Fleming** points out that the wealth of data about the online learning should effectively lead to the positive changes and improvement of every learner's experience. In his thought piece, **Stephen Parker** foresees that the optimal mix of humans and machines will prevent the collision of technology and humanity with creativity and inspiration being our main competitive advantage. **Andreas Schleicher** also confirms that universities will have to reinvent learning environments without losing the human touch and the focus on the relationship between learners with teachers. In his vision, **Furqan Qamar** shifts the focus of our thinking from the traditional degrees and modes of teaching delivery to the alternative credentials and virtual learning formats. Lastly, **Jamil Salmi** invites the readers to join him on a tour around the Museum of 20th Century Universities through a flashback from the future.

The contributors collectively paint a vivid picture of the future of universities at the intersection of humans and technology. Highlighting an increased role of digitalisation, they explore how universities can effectively utilise tech to prepare learners for a digital future. They furthermore challenge the universities' respond to the current crisis and describe the urgent need to capitalise on the recent changes in learning delivery and, thus, focus on upskilling, reskilling or cross-skilling of students and citizens. The contributors also fired a warning shot to universities that the hybrid formats will remain reality. They emphasise that in the future the higher education institutions across the globe will have to embrace technology even more to innovate learning and remain relevant.

SOCIALLY ENGAGED UNIVERSITY

The section on 'Socially Engaged Universities' comprises seven forward-thinking contributions that altogether highlight the role of the university within our future society. **Tuula Teeri** envisions a new beginning toward a sustainable future with universities and stakeholders developing meaningful and inclusive collaborative innovations benefiting societies across the globe. **Dhanjay Jhurry** envisions universities leading the way in digitalisation and implementation of social development goals and getting our society closer to achieving the 2030 Agenda. Universities should connect better with society and depart from their departmentalization, **Michinari Hamaguchi** describes a world where universities serve their local communities and are core elements in unique innovation ecosystems rooted in regional characteristics. **Phil Baty**, envisions a world where universities are open to talent, fully appreciated and valued by policymakers and truly connected to their local communities, thus having a powerful impact on the society at large. **Santa Ono** describes how a global network of universities will partner to collectively solve global challenges through education and research, embracing values such as integrity, openness, tolerance and global citizenship. Reflecting on how different countries are handling the pandemic, **Simon Marginson** explains how higher education should contribute to solidaristic social relations with policies supporting them in a socially responsible manner. Lastly, from a different perspective on an engaged university, **Rune Dahl Fitjar** describes how universities should embrace a connector role and help restructure their regions through cooperation and meaningful engagement with society.

These contributions suggest that universities will need to become more open to the world, ultimately target the wider society and aim at impacting it in a more meaningful way. Contributors agree that the university carries a social responsibility in our society through educating our talent, researching new knowledge and addressing global challenges in collaboration with external stakeholders. Through anchoring universities in the regions, they become ideally positioned to function as local problem-solvers and value creators. In light of the current crisis, universities need to ensure they are ready to re- and upskill their regional community to prepare them for economic shifts.

ENTREPRENEURSHIP AND UNIVERSITY–INDUSTRY INTERACTION

The section titled 'Entrepreneurship and university-industry interaction' comprises eight thought-provoking contributions. **Erik Stam** describes principles that universities might adopt as they drive the identification and pursuit of new opportunities for value creation, supporting bottom-up initiatives to train students to create value in organization, the economy and society. The contribution of **Fredrik Hörstedt**, discusses the need for entrepreneurial competence amongst both faculty and students, to ensure universities go from providing input to impact. **Martin Kern** emphasizes the need for more entrepreneurial education to create a greener, healthier and sustainable future, and the potential of blended education to share resources, enhance retention and facilitate lifelong. In re-defining university-industry partnerships, **Arianne Bijma** outlines that we need to networks of organizations to face the challenges ahead and that these multi-dimensional partnerships require an alignment of long term. **Giancarlo Caratti** discusses shared common indicators to track progress in knowledge transfer that will allow institutions to benchmark themselves against their peers. Focusing on the future need of skills, **Janis Vitenbergs** envisions universities providing interdisciplinary learning opportunities working in collaboration with a variety of industry sectors. **Rebecca Allinson** describes the balance in higher education between innovators and entrepreneurs and the old guard, whilst adapting to changing circumstances, also preserving quality, rigour, inspiration and excellence in teach and research as some of the core values of universities. Finally, **Francis Petersen** emphasizes that universities should redefine their traditional narrative of degrees being a guarantee for employment and they should strive towards more inclusive and flexible curricula that reflects the reality of the future world of work.

Collectively, these contributions point towards the future needs in terms of skills. These contributions highlight the need for more entrepreneurial thinking and acting, resilience, agility and the ability to adapt. In particular, they also envision a need for other modes and types of learning, more lifelong learning, blended learning and curriculum provided in collaboration with industry. All contributors agreed that it we require entrepreneurs both in our academic community as well as society to develop a better and more prosperous future. In addition, some authors have highlighted the need to create networks of universities and industry, with the same goals in mind, yet interdisciplinary or multi-dimensional of nature.

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‘ROADS? WHERE WE'RE GOING, WE DON'T NEED ROADS.’

– Dr. Emmett Brown,
‘Back to the Future’

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IMAGINE A UNIVERSITY...

What If...?

Peter Wells

Higher Education Chief at UNESCO

If you can make one heap
of all your winnings,
And lose, and start again
at your beginnings.
If you can force your heart
and nerve and sinew,
Yours is the Earth and
everything that's in it.

"If-", Rudyard Kipling

What if what was once considered inconceivable in higher education is now a reality?

What if the future of higher education is already being written?

What if all learners and teachers were equal partners in a future vision of higher education?

What if outdated structures of academic learning and design were replaced?

What if there was no such thing as the academic year?

What if learners could join/pause their higher learning when it was convenient to them?

What if there were no final university testing and exit exams?

What if assessment of knowledge, skills and competences was on-going and applied?

What if practical work-based learning for credit was required for all study programmes?

What if cultural intelligence was as equally valued as emotional and cognitive intelligences?

What if character building and global citizenship education was a priority?

What if both teaching and research-intensive institutions were held in equal esteem?

What if higher education institutions offered more than degree level education?

What if there were more standalone courses and modules for life-long learners?

What if technology-enhanced learning was the norm?

What if on-line and on-campus learning were considered equals?

What if the digital divide worked in favour of those who cannot learn remotely?

What if both on-line and on-campus learners were seen as 'traditional students'?

What if all study programmes were designed together by teachers and employers?

What if universities look for talent in learner diversity?

What if there was gender equality on campus?

What if women were equally represented in university leadership?

What if all universities eliminated discrimination on race, socio-economic background, religion, gender or sexual identity?

What if the potential to succeed was considered equally with prior learning attainment?

What if universities embraced alternative learning pathways for access to higher learning?

What if TVET and higher education saw themselves as equals in tertiary learning?

What if quality assurance was not an act but a habit?

What if learners, teachers and communities defined quality higher education?

What if universities were free to be flexible, agile and reactive?

What if higher learning cooperated with secondary and primary learning institutions?

What if universities worked together to solve the issues enshrined in the SDGs?

What if recognition of prior learning for access to university were the international norm?

What if universities recognized that teachers and faculty are lifelong learners too?

What if continual professional development were an obligation for all university staff?

What if tenure valued community engagement and research output equally?

What if academic integrity and values were safeguarded in all universities?

What if all forms of academic fraud were eliminated?

What if academic freedom, free speech and institutional autonomy were universal?

What if universities strived to be unique rather than to compete?

What if globally all universities cooperated on their teaching, learning and research?

What if universities were to change in step with changing times and needs?

What if everyone in a university believed this?

What if everyone had the courage to make this happen?

Then what?

The parallax of the pandemic for higher education is that whilst it has created heartbreaking misery for millions, it has also revolutionized higher education. It has created hitherto unimagined opportunities, access, hope and courage to try something new and to test the future of higher learning. 2020 may very well turn out to be year 1 of finally addressing, in a truly meaningful way, the manifesto of the future university we need and deserve.

> **There can be no if, or when. We now know all too well that anything can happen and anything is possible.**

Peter Wells is the Higher Education Chief at UNESCO and co-leads the UNESCO Qualifications Passport for Refugees and Vulnerable Migrants. Prior, Peter was a Higher Education Specialist and Director of the UNESCO's European Centre for Higher Education. He is author of strategy papers and monographs on higher education reforms, quality assurance, and inclusion in national HE systems. Peter has taught at the HE and TVET levels in several countries. He holds a MA International Relations and a PhD Quality Enhancement of Higher Education Systems

RE-IMAGINING Universities

Alan Barrell

Professor (DBA, FRSA) at Cambridge Worldwide Associates

IMAGINE that the present crisis generated by the disruption caused by COVID-19 resulted not simply in more creative and imaginative use of communications technology and distance learning, but stimulated thoughts on "what universities should really be there for in tomorrow's world". IMAGINE it also led to a radical re-focus and re-organisation, which handed responsibility and accountability to universities for the preparation of young people for a lifetime of work, rather than preparing them to gain grades in examinations and assessments. IMAGINE it extended university activities to support more mature 'students' professionally, supporting them to revitalise themselves for a new life – a second professional life. IMAGINE at the same time, that the time, energy and budgets currently spent on research contributing more to the generation of new knowledge of real value to humankind, rather than for the professional progress of academics recorded in published papers that nobody reads, as a means to climb the greasy pole of academic career progression.

IMAGINE universities with fewer Deans and smaller, less hierarchical management structures and with more power and influence delegated to students and alumni. Also IMAGINE the engagement of many more practitioners – "pracademics" – those mature individuals with achievements and practical experience – sharing knowledge with the next generation of citizens of the world. IMAGINE more students undertaking foreign semesters and internships and participating in curriculum development. IMAGINE an acceleration in "the curricularisation of new knowledge" – at a time when technological progress outstrips the ability for university teaching to stay current – e.g. digital progress through artificial intelligence and machine learning.

> **IMAGINE real and continuous progress in the commercialisation of research and increased effectiveness in the connectedness of universities to the real world where things happen.**

Einstein proposed – "IMAGINATION IS MORE IMPORTANT THAN KNOWLEDGE" – "Knowledge is limited", he said – "Imagination encircles the world". He also strongly advised –"Learn from yesterday, live for today and hope for tomorrow – but never stop asking the questions". I don't know of any university that offers graduate courses in imagination – although more and more are focussing on innovation – which is encouraging. Continue to IMAGINE then that more universities become established based on models similar to the Aalto experiment (now much more than experimental) successfully implemented in Finland, which broke down barriers between Arts, Humanities and Science and Technology.

IMAGINE a greater acceptance and understanding of the importance, for example of design and design thinking – transcending barriers between faculties and functions and benefitting subjects and interests diverse and varied.

IMAGINATION requires divesting convention, structure and comfort. Bringing the profound changes possible to the future role, purpose and success of universities requires the particularly difficult conversion of those with policy, decision and financial power in governments to sanction and support disruptive change. This remains a huge challenge indeed considering just how many governments have failed to cope with the COVID-19 crisis at all adequately. And yet – universities are in a potentially powerful position. They are ideally positioned to lead imaginative change and, through practice, articulate reporting and presentation, show what energy and power may be released and channelled to accelerate the development and empowerment of next generations of world citizens.

I am indeed a dreamer – and will not give up the vision of a world emerging devoid of borders in terms of intellectual connectedness and "brain circulation" – knowledge transfer on a grand scale. I have before me – on the wall and framed, the words spoken by George Bernard Shaw to the young man who was assailing him with vacuous questions. "Stop young man" it is reported he said – "You look at things and ask why? But I dream of things that never were – and ask WHY NOT"

Put crudely – to enable my IMAGINE piece to become reality – a large number of those with "yes but…" mindsets will need to be replaced by 'WHY NOT' people. Food for thought I hope!

Professor Alan Barrell (DBA., FRSA.) has worked in Health Care and Medical Research, as Chairman and CEO of large multi-national companies and smaller technology start-ups. He has Professorships in European and Chinese Universities, has raised and managed a Venture Capital Fund, is a Business Angel Investor and Trustee of charities. He has been honoured with The Queen's Award for Enterprise Promotion in the UK and with membership as Knight First Class of the Order of the White Rose of Finland for services to Education.

Traces Towards the Future

Christer Windeløv-Lidzélius

Principal at Kaospilot

The pursuit of understanding and unfolding the human experience must continue to flow, in order for it to flourish.

As we are in the midst of COVID-19 and the subsequent changes it has enforced upon higher education, we are reminded that 'only that which is lost remains eternal' (Ibsen, 1868). Crises and challenges also spur new ways and new truths.

Casting our eyes towards the future, we acknowledge how immensely successful the university model has been for many centuries. Since they came about in the 12th century, over the Humboldtian ideal to the more market orientation in the last century, universities have proven to be both resilient and adaptable.

When Clark Kerr in 1963 talked about the 'knowledge industry' as the 'focal point for national growth' and 'universities at the centre of the knowledge process', he made a prediction about the nature of the future, but also indirectly set an ambition for universities. Here, 50+ years down the line, we can see how the predictions came true in that data, with information and knowledge now being recognised as the driving output of the work done (at least in the more affluent parts of the world). We can also see that universities may be at the centre of the knowledge process but they are certainly not alone. Depending on the view of knowledge, corporations, private research institutes, media and so forth claim command, relevance and respect.

The basic ideas of educating people and generating and disseminating knowledge, seem to be landmarks towards the future. However, what that entails, how that is done and for what reasons, are likely to be a dance between the pursuit of universality and relativism.

There are voices saying that universities are becoming archaic, becoming obsolete and indeed may cease to exist. That may be an overstatement as they do not factor in that we do not really have any alternatives in place and assume that universities will not be able to accommodate to new technology and shifting preferences. What is quite true though is that universities may lose prominence and significance over time for individuals, organisations and society as a whole. Questions around inclusion and diversity, global challenges, well-being and empathy quickly come to mind.

> **"The path to happiness and success may not require a university degree. And this points to a central theme of challenges ahead: How to cater for and cultivate the human experience?**

The qualities of the knowledge society – such as know-how, analytical and logical skills – will still be important, but qualities such as creativity,

courage, compassion, collaboration and character will be indispensable in a creative and human society. In such a society – paraphrasing Cark Kerr – universities can be at the centre of the human experience process. It will require an approach that goes beyond focusing on activities such as research, teaching, testing and grading. There will be a need for a greater sensibility and sensitivity towards the world, towards the 'weness' and the person.

Ultimately, the challenge in the future for universities will be how we as a society view the university, its role, responsibility and relevance. At the core lies our common human, ever-evolving experience. It will be our job to facilitate that conversation.

Christer Windeløv-Lidzélius (PhD / MBA / Kaospilot) is the principal at Kaospilot, a frontrunner in the educational landscape, recognised in terms of its innovative educational design for fostering leadership and entrepreneurship. His area of expertise centres on strategy, leadership and innovation. Amongst other things he is a guest professor at Saint Paul Business School in Sao Paolo.

Quo Vadis, Universities?

Shigeo Katsu

Founding President
of Nazarbayev University

"Ev'ry time I see your face, it reminds me of the places we used to go. But all I got is a photograph, and I realize you're not coming back anymore." These are the opening lines of a song called "Photograph" by Ringo Starr (The Beatles).

What do these lyrics have to do with spelling out my vision of the post-COVID higher education landscape?

Let's reflect on what COVID-19 has wrought upon universities:

- Digitalization and online delivery of courses has been forced upon a system is notoriously resistant to change. Universities are profoundly conservative institutions that occasionally have radical ideas.
- The imperatives of physical distancing (during stressful times, social connectivity is what we need, not "social distancing"), testing and contact tracing have led to empty campuses, radically transforming student experience, and complicating the building of lasting bonds. Will students fill campuses again? "Photograph", anyone?
- Research, especially laboratory-based research has skidded to a sudden standstill, impacting the wider scientific, industrial, and even national security environment.
- The sudden arrest of cross-border travel has impacted deeply on international student mobility, endangering open exchange of young talented minds.
- Online course offerings from dedicated online providers have become more credible alternatives to traditional classroom-based instruction.
- Universities that have grown dependent on revenues from international students, and championed the advantages of face-to-face student engagement to justify high tuition fees, are suffering.
- And it may, just may, have rekindled more trust in science as the implications of an anti-science stance towards COVID-19 has proven to be rather devastating.

Many more COVID-19 related effects will emerge over time; after all we are barely half a year into the current public health cum economic crisis. While much has been learned about COVID-19, much remains a mystery. Post-COVID will not simply be a return to the world at the start of 2020. The above seven effects will serve as good signposts for the directions higher education might take.

So how do I imagine universities will evolve in the future:

- We see a further bifurcation between universities with top reputation in research and innovation, and less reputed universities. Elite universities hog both talent and financial resources. They are, however, also the ones that lose out the most, should cross-border flows of talent be restricted.
- Top research universities navigate the sheer impossible – closely collaborate with government while keeping an arms-length relationship, develop ever closer symbiotic partnerships with industry, and foster strong sup-

port by the citizenry, provided they adhere to strong values of academic freedom and independent thought (admittedly a big if), and reflect on their value proposition for society.

• Universities balance between fundamental research – the quest for new knowledge in science, and applied research that promotes the economic well-being of communities and countries.

• To survive, universities form international alliances where students are anchored at their home institution while attending courses offered by partners, receive degrees from multiple universities, and participate in research led by professors from alliance institutions. Distance hardly matters.

• Universities that primarily prepare graduates for the job market introduce "stackable" degrees aggregating certificate-courses, internships, and core subject matter courses. Skills development dominates in order to respond to labor market demands. Faculty are facilitators on the students' learning journey.

• Universities continue to foster economic mobility and development of a stabilizing middle class, yet access and financial affordability constitute big issues.

• Combining face-to-face and online learning, universities serve as locus for civic debate and intellectual exploration, setting themselves apart from pure online providers.

"The vocation of universities to not just focus on skills development, but to educate and nurture citizen in a holistic way will remain – otherwise they will fade into photographs themselves.

A Japanese Citizen, Shigeo Katsu is the founding President of 10-year old Nazarbayev University. He also serves as Chairman of two Boards, one a secondary school system (an NU sister organization), and another, an NU-affiliated financial services company. Prior to coming to Kazakhstan, he worked for over thirty years at the World Bank with assignments in Africa, East Asia (China), and Europe and Central Asia (retired in 2009 as Regional Vice President). He continues to be active in international development issues.

The Future of Universities—The Emergence of the Omniversity[1]

Roberta Malee Bassett

Global Lead for Tertiary Education at the World Bank

Omni: in all ways or places; Omniverse: a universe that is spacio-temporally four-dimensional.

When Clark Kerr coined the term 'multiversity' in 1963, he provided a dynamic proposition for the expanded purpose and value of higher education institutions *"New knowledge is the most important factor in economic and social growth… What the railroads did for the second half of the last [19th] century, and the automobile for the first half of this [20th] century, may be done for the second half of this century by the knowledge industry: that is, to serve as the focal point for national growth."* Kerr foretold the knowledge economy that was and was to come—that the real growth in economic development would not come through manufacturing or expanded industrialization but, instead, from knowledge and information—and argued that universities would be the engines of that growth: the 'multiversity,' serving as a center for teaching and learning, of course, but also for research and engagement beyond the classroom.

Kerr, utilizing William James' work on the multiverse, compared the multiversity to the university as being like a federal republic to a kingdom, where each component part is both separate and integrated versus where the disparate pieces of the realm merge into one unified whole. And yet, this federated institution was still based on an identity tied specifically to location, mission, and the historic population of that campus (staff and students): an institution in three dimensions (teaching, research, and engagement with the community).

Imagine the future omniversity as a multiversity in four-dimensions, without borders to its campus or limits to its academic mission, taking the convening power of the university truly global, creating hubs for teaching, research, innovation, entrepreneurship, and more beyond those previously anchored in local, regional, and national communities, to create a span of impact and influence across the entire globe. The omniversity is a place where location—the institutions', students', and academic staff's—is almost irrelevant. Core functions are delivered in blended formats, engaging an institutional community not bound together via the physical plant of a campus but by a shared institutional mission and outcome orientation. The omniversity will be a major piece in the dynamic puzzle that is the future of the university.

In this rethinking of the constituent parts of a university, the omniversity is an institution that not only capitalizes on the concentration of talent, resources, reputation, and reach under its unified organizational umbrella to drive knowledge creation and dissemination as a broad scale global enterprise, it also has the capacity and agility to innovate and expand its sphere of influence. The omniversity will be a transcendent enterprise of global education reach and impact.

[1] This piece builds on work completed for the International Association of Universities' Future of Higher Education initiative

As the definition of omni above attests—an omniversity will be a university that is "in all ways or places." And, indeed, such institutions are destined to expand in number and impact, to drive global higher education in the future.

The omniversity, then, will emerge as a kind of education empire. The inevitable globalization of higher education requires adaptation, however, and universities must continue to evolve to be more: more useful, more agile, more accessible, and more meaningful. If the omniversity emerges as an institution that provides education in formats that span from the most applied short course to the most advanced doctoral program, with multiple modes of delivery and agile pathways for student achievement and research excellence, then the future of the university will be as exciting as its past.

Roberta Malee Bassett is Global Lead for Tertiary Education at the World Bank. Prior, Dr Bassett served as Lecturer in the Centre for Higher Education Management and Policy, University of Southampton, UK. Her experience in university administration includes posts as Assistant Dean at Stanford University and Managing Editor of The Review of Higher Education. She has authored/edited numerous publications related to international higher education. Roberta received her Ph.D. from the Center for International Higher Education, Boston College; M.A. from Stanford University; and B.A. from Columbia University.

Collaboration, Specialisation and a Focus on Fewer, Bigger Things Will Be Key to Success

Larry Marshall

Chief Executive of CSIRO

Universities are among the strongest brands in the world, and I believe this will remain true in the future. However, for many to remain viable in a post-COVID, resource constrained context, we're going to see them return to their education roots, specialise more, and collaborate more.

This is being driven by three major trends: (1) recession – leading to a scarcity of funding and resources; (2) travel restrictions – which has disrupted international student mobility and the associated revenue; and (3) differentiation – previously driven by academic rankings, this will increasingly become driven by specialisation.

Australia has seen international education become by far our most valuable services export, and our fourth largest export sector overall behind iron ore, coal and gas. For many Australian universities, the profit from international students has also allowed significant investment in research and infrastructure that has led to some highly successful research programs.

COVID-19 and international travel restrictions have cut that revenue and derailed the funding model, causing universities to reset.

It is an important time to remember the core purpose of our universities, which is to deliver an outstanding education to the future leaders of the world and create the skills that will underpin our future industries, jobs and prosperity.

I believe universities will focus on the critical role they play in delivering the highest quality teaching available, be that via remote learning, in person or a hybrid version of the two. Research will remain important, but funding will scale back as the global economy cools – those that focus and specialise on fewer but bigger things, will stand out.

We are also going to see more specialisation and differentiation between universities, and clarity on the role each plays in the innovation system. James Cook University in Queensland, for instance, leads on research areas of relevance to the tropics.

Globally, we are going to see more collaboration between universities and their national science agencies, both to pool resources for impact and to create channels to industry to commercialise research. Canada, Singapore, and Germany have done this well.

As Australia's national science agency, CSIRO collaborates with most Australian universities through research and co-publication, postgraduate student supervision, Cooperative Research Centres and through our ON accelerator program and venture fund.

Role clarity is the key to collaboration. Universities teach our next generation, and leverage the profits (alongside government funding) to create Australia's world-class research.

There is a myth that Australian universities are no good at commercialisation, but globally commercialisation revenue is low for universities. Australian universities do what universities around the world do, and do it better than most – their role is not to create industry, but to mould the minds of those that will.

We need to support university researchers with a well-connected ecosystem that includes channels to industry, working collaboratively with applied agencies like the CSIRO.

On the funding side, we will also need to undergo a shift in mindset, from competing for shrinking pots of funding to collaborating on projects that get funded because they have *impact*.

If we are coordinated and collaborative in our efforts, with clear roles and specialist expertise, we can achieve so much more. Our civilisation is faced with some big challenges – how do we feed 3 billion more people with half as much water? How do we address climate change?

There's no shortage of things to do, but we need to decide where we are going to focus and concentrate our efforts collectively.

COVID-19 showed us what we can achieve when we work together. In a resource constrained world, collaborating with defined roles and clarity of purpose will both preserve the university sector and further mankind.

Dr Larry Marshall is Chief Executive of CSIRO, Australia's national science agency and innovation catalyst. CSIRO solves the greatest challenges through innovative science and technology. Larry is a scientist, technology innovator and business leader with a wealth of experience in creating new value and impact with science. He has a PhD in Physics and became a global leader in laser research, for which he was honoured as a Federation Fellow and later as an ATSE (Australian Academy of Technology and Engineering) Fellow

The Universities of the Future

Mariya Gabriel

European Commissioner for Innovation, Research, Culture, Education and Youth

IMAGINE the University of the Future: a place where teaching, research and innovation equally contribute to a brighter future for students, graduates, researchers and the wider community; where inclusion and excellence are equally important; where we apply the lessons learned from the COVID-19 pandemic to move towards deeper cooperation, and where pooling resources, courses, data and infrastructure is the new norm and where we share the same goal: a sustainable planet.

At the outbreak of the pandemic, higher education institutions showed their flexibility and how much they could contribute. Not only did they switch to online provision almost overnight, but they joined forces in fighting COVID-19: through research on vaccines; through civic engagement by students and staff; and by providing support for students.

Once we had moved beyond the first emergency response phase, we focused on the transformation of our higher education institutions. COVID-19 has both speeded up digital transformation within higher education and highlighted an urgent need for deeper cooperation between higher education institutions, as well as between them and their surrounding innovation ecosystems. We need to do more to invest in the "knowledge square", linking the knowledge triangle - education, research and innovation - with the service mission to society that universities have. The potential is there to do more, to make the changes that will further improve learning, teaching, research and innovation, increase their impact and empower future generations to build resilient, inclusive and sustainable societies.

The European Commission is supporting higher education systems across Europe to come out of the crisis stronger and more connected than ever before. Together with the wider higher education and research communities, we are shaping a vision for the universities of the future. For this, we will build on the Erasmus+ European Universities, which are testbeds for the universities of the future. Our objective is to support the higher education sector in becoming inter-connected, innovative, inclusive and digital. For this, we will encourage deeper and inter-disciplinary cooperation between universities across the EU, with more and better mobility, quality assurance, governance and financing.

Linked to this, we will co-develop a European degree and work on the modernisation of quality assurance systems. And we will examine the feasibility of a European statute for European Universities. For all this to become possible, we need the commitment of Member States to remove the last barriers that still prevent deeper cooperation for European Universities and equivalent alliances.

Europe's universities should not only become more interconnected geographically; they should also

embrace the idea of intergenerational campuses. In today's rapidly changing society, providing an attractive offer for lifelong learning at all ages should become an essential task of higher education. It must take shape through a variety of educational modalities, including a greater uptake of micro-credentials for which we are developing a European approach.

Micro-credentials are awarded after the completion of short courses or modules and proper assessment of the competences acquired. They can help people at any stage of their careers to gain knowledge, skills and competences in all fields.

To help prepare our education systems for the digital age, we have also launched an open public consultation on the renewed Digital Education Action Plan. The Action Plan will be adopted in September. While much has been achieved over the last decade, we can and must do even more over the next one to keep people at the heart of digital transformation and deliver more opportunities for all. The new Action Plan will be a key instrument in the COVID-19 recovery process, taking into consideration the lessons learnt from the crisis and reflecting the long-term vision for European digital education.

The crisis presents many challenges, but it also creates opportunities for us to cast a critical eye over how higher education is now and how we would like it to be in the future. I look forward to working with all of our higher education community as we work together to imagine – and create - the Universities of the future.

Mariya Gabriel is the European Commissioner for innovation, research, culture, education and youth. She is responsible for key EU programmes as Horizon Europe, Erasmus+, European Solidarity Corps and Creative Europe. She was Commissioner for Digital Economy and Society from 2017 to 2019. Under her leadership, the Digital Single Market has become a reality. She has been elected to the European Parliament in 2009, 2014 and 2019. Mariya Gabriel is Vice-President of the European People's Party and Vice-President of EPP Women.

IMAGINE the Indispensable University

Pascale Quester

Vice-Chancellor and President of Swinburne University of Technology

For centuries, universities have been the hallmark of civilized societies. Places of learning, hives of research, the proud culmination of the age of enlightenment, the undeniable proof of the merit of intellectual pursuit, and the collective endeavor of generations of scholars who have exercise well-honed critical skills to offer comments on decisions made by others, government or industry. Institutions for the people, certainly, but not much of the people. Learned commentators rather than actively engaged players. As revered as such bastions of knowledge have come to be, universities are increasingly expected to be accountable for their activities. Yet, as holders of discipline content, they underperform when compared to the plethora of information now available to all - and immediately- online. As sources of innovation, they struggle when compared to freer forming enterprise organized in fluid ecosystems that can assemble or disperse at will according to market needs. As educators, they fail when promulgating a didactic form of teaching that is not only overly prescriptive, but also bereft of learner centricity and hesitate to deliver 'just-in-time-education' to the growing cohort of learners seeking to customize their education journey.

Is this, then, an existential moment for universities? Could any society evolve further without them? Could advanced economies contemplate their complete abandon? Paradoxically, the answer probably rests with universities themselves.

> **Should they continue to define their role through the prism of nostalgia and reminiscence, they are surely destined to self-inflicted obsolescence.**

But there is an alternative path. Universities could and should become catalysts of innovation and effective builders of the human capital needed for Industry 4.0. They should combine, as no other institution ever could, the nation-building blocks of innovation, entrepreneurship and human skills. They should do so by co-creating with learners and industry the sort of curriculum and research projects that speak to the future rather than the past. Universities are indeed quite uniquely poised to become genuine future makers, and should be universally recognized as valued and indispensable parts of society. Only universities can truly unlock the full potential of combining technology, based on strong fundamental and often STEM-related knowledge, with practical applications and skills. And it is precisely because universities are best placed to marry knowledge with know-how, to overlay the digital with the human and weave the interface between people and machine, that they can harvest the power of technology for the betterment of mankind.

In order to claim the status of indispensable contributors to society,

however, universities must first earn the social license many of them have long taken for granted. To wit, the recent pandemic: Universities have offered science and empirical findings and those governments that listened to the advice did immeasurably better than those who chose to ignore it. But universities need to do more than give advice on a problem, they must play an active part in implementing solutions. In addition to treatments or vaccine developed in their labs, they must offer online professional developments for the unprecedented number of jobless individuals whose livelihood now depends on acquiring new skills in a world irremediably changed. And beyond the advice offered during the pandemic, as valuable as it has been, it is the willingness of universities to engage actively in the recovery, their unique capacity to assist in the reconstruction of a new digital economy and society that will be the test of universities, and the undeniable proof of their lasting relevance.

It is, therefore, precisely because universities can influence and improve the future that they should be cherished by their communities. The indispensable university is one without which no society could flourish.

Professor Pascale Quester is Vice-Chancellor and President of Swinburne University of Technology. A respected leader in the Australian Higher Education sector for over 2 decades, she holds degrees from her native France, the USA and New Zealand and is a highly cited researcher in consumer behaviour (H-index 43). A knight of the French National Order of Mérite and a Professeur des Universités, she is also Professor Emerita from the University of Adelaide, a distinguished Fellow of the Australian New Zealand Marketing Academy and the 2020 recipient of a career award by the American Marketing Association.

IMAGINE Higher Education as a Lifelong Service Platform

Cameron J. McCoy

Vice President and Vice Provost for Strategic Initiatives at Lehigh University

Dear Higher Education,

We stand at the precipice of significant transformation in higher education as we weather an unprecedented collision of crises that have laid bare many of our systemic issues and unearthed new challenges. I believe must choose between boldly resetting the definition of quality and lifelong learner success through collective leadership, intentional community action, and transparent, data-enabled sensemaking; or retreating to the familiarity of what is and hope that "everything will be fine." For the sake of learners across the globe, I pray you'll join me in choosing the former.

Recently, I read a collection of essays that positioned the pandemic as the accelerant to change in higher education. Filled with imagination and a critical assessment of the post-pandemic college, some of the leading thinkers in our sector identified how the pandemic might pressure leaders in higher education to address our systemic structural issues.

If this collection of essays suggests anything, it's that the present higher education construct is at odds with the future. For decades we've competently navigated around a growing set of pressures and challenges and held on to normalcy in reverence to the "college experience." Today's college experience is less nostalgia and more sorting, with laser-focused on a select group of 18 to 22-year-olds. From admissions, to matriculation and majors, to graduation and donation, everything is a sorting process. This process is still doing the job it is designed to do; it just isn't necessarily the job to be done.

Ever the optimist, I believe we can build from our factor endowments and reshape a regenerative, equitable, learner-oriented university.

Let's imagine for a moment that we've genuinely centered equity in our system. Doing so would require a distinct shift from our existing college-as-a-process approach towards the idea of college-as-a-platform. A modernized higher education platform demands we prepare for a present where the left-to-right nature of a degree must be less linear and learner engagement is perpetual. This line of thinking opens possibilities that lead to a level of institutional agility necessary to address sovereign identity, learner mobility, and evolving workforce demands. In my view, this requires the intentional integration of knowledge (curricular, co-curricular, and experiential), placing a high value on 21st-century human skills and moments of distinction for all learners.

Imagine a university without a series of stage gates and entry barriers. Admissions is immediate and designed around intent to learn and a matched assessment of potentials: learner potential in life and institution-

al potential to unlock it, regardless of age or pedigree. This is enrollment by design, its default proactive, and it sets the stage for intentional and continuous engagement in perpetuity. What is it we need to know to get here?

Imagine a university that recognizes learning where learning occurs. Matriculation becomes periods of anchoring, where we earn learner commitment and become "educator of choice" throughout a lifetime. Built on a platform of agency around distinctive learning experiences, this university offers digitally verifiable and stackable credentials for human skills gained from all experiences. It demands proficiency in creating comprehensive, mission-driven partnerships across university, business, government, and community in order to personalize and credit experiential learning that occurs outside the classroom. It furthers its position of first choice by empowering faculty to create flexible, digitally enabled, market aligned, competency rich pathways. How might we intentionally curate these robust learner-centric experiences? What data might we need to disrupt or modularize the concept of the major? How might we aggressively promote equitable opportunity for all learners, faculty, staff, and those in our community?

Imagine a university where the college experience is a lifelong experience. Success is a constant engagement, marked by proactive outreach at career pivots when there may be a renewed intention to learn rather than a primarily philanthropic outreach. It's the place that continues to offer the complete collegiate experience without regard to where your pillow is or your stage of life. How might we shape a trusted and meaningful brand that is empowered by the talent we certify?

That's the university I imagine, and to be honest, I don't think we need more crises to get there – we need creativity and commitment, something a university has in spades. So, let's evolve it together.

Cameron J. McCoy, Ph.D., is Vice President and Vice Provost for Strategic Initiatives at Lehigh University. He leads enterprise-wide external engagements, aligning careers and economic development, and institutional change. Dr. McCoy is a graduate the University of Oklahoma (M.A., Ph.D.) and Washington State University (B.A., B.A., B.S). His research interests combine economics and educational administration in evaluating university organizational approaches. McCoy served as a fellow of the Academy for Innovative Higher Education Leadership in 2016 and the American Council on Education in 2018.

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‘IT IS LITERALLY TRUE THAT YOU CAN SUCCEED BEST AND QUICKEST BY HELPING OTHERS TO SUCCEED.’

– Napolean Hill

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CRISIS AS A DRIVING FORCE

COVID-19 and Universities: Embracing the Moment as a Catalyst for Positive Change

Amanda Crowfoot

Secretary General at EUA

Universities have, without doubt, risen to the immediate challenge of responding to COVID-19. They are at the forefront of research efforts to discover vaccines and treatments, while also providing healthcare, training, and community support. They have re-purposed their laboratories to make essential equipment and their buildings to house healthcare workers, whilst at the same time providing the expertise and evidence that has proven essential in supporting government decision making.

Universities are more than a collection of buildings, and so whilst campuses have been largely closed, universities have remained very much open as seats of learning and teaching, research and innovation, and societal engagement. Necessity is the mother of invention, and the COVID-19 pandemic has forced universities to find new ways to do things at an unprecedented speed. Many have reported doing, in a matter of days or weeks, what would usually have taken months or even years. In addition to innovations in digital learning and teaching, we have seen new ways of keeping students and staff connected, and of working collaboratively.

What comes next must be a reflection on how to capitalise on the changes that have taken place in recent months. Take digitally enhanced learning and teaching, for example, which has undoubtedly been accelerated by the crisis. Of course, many of the actions taken were emergency measures: a quick shift to remote teaching, rather than a considered transition to new methodologies, backed up with training and investment in digital infrastructure. However, the fact remains that it has shown possibilities and developed understanding to an extraordinary degree. Similarly, take student mobility. No one would suggest that a virtual experience is the same as a physical one, but the thought of how to maintain international opportunities when travel is not an option could offer new perspectives for internationalisation. In short, the measures taken in response to COVID-19 can assist universities in reflecting on what constitutes good higher education and how best to deliver it.

What also comes out of this pandemic is the recognition that we will need to be ready for the next global crisis. At an institutional level, this means evaluating the crisis management mechanisms in place and strengthening them if necessary. At a political level, it means cementing the principle of evidence-based policy making, following the advice given by universities and others to both predict and plan for future emergencies and to respond when they happen. It also means continued and substantial investment in education, research and innovation. Research investment cannot just be problem-oriented, important though this is, but also has to be curiosity-driven, to increase the sum of human knowledge.

We do not know what the next crisis will be, but the more we know about the world we live in, the better we will be able to deal with it.

Make no mistake, the university sector will have serious challenges to meet and therefore we cannot look at the future through rose-tinted glasses. In the short-term, there are the logistics of how to physically re-open campuses and keep staff and students safe. There are significant financial risks, be it in terms of loss of fees income, student finances, or longer-term consequences as the inevitable economic downturn starts to bite. There is a risk to internationalisation, at a time when it is evident that challenges must be tackled collectively. Furthermore, the current crisis has served to increase inequality in wealth and access, and to highlight the digital divide.

Universities will not, and should not, go back to how they were before the pandemic, but should embrace this moment as a catalyst for positive change.

Amanda Crowfoot joined EUA as Secretary General in January 2020. She is responsible for co-developing and implementing the Association's strategic plan and is an ambassador for all members, presenting a collective vision of strong universities in Europe and leading a team of 40 staff members in offices in Brussels and Geneva. Amanda previously served as Director of Science Europe, and from 2001 to 2012, Amanda worked at the UK Research Office first as a European Advisor, and then as Director of the Office.

Don't Dream; It's Real

Catriona Jackson

Chief Executive of Universities Australia

We get blasé about the power of ideas and knowledge, the power to understand what is going on around us, to see and shape our role in the good and the bad of what's ahead. Likewise, we get blasé about the power of universities — the institutions designed expressly to harness that power, to nurture the growth of understanding in students and scholars, to embed the love of an expanding mind, and the expanding world view that so often goes with it.

We forget sometimes that universities are home to the big ideas, the breakthroughs, the sometimes revolutionary thinking that shapes our lives. I hardly need to start the roll call, but I will. Universities are where Isaac Newton developed the laws of motion and the general theory of gravity, where Marie Curie discovered radium and its therapeutic properties, where Ian Frazer found a vaccine for cervical cancer, where Frank Fenner did the work that meant he could tell the world Small Pox was eradicated.

I don't need to 'dream up' a future for universities post COVID-19, I see the now, and the now is extraordinary.

While most of us are utterly consumed by the blunt and relentless trauma imposed by the virus, university scholars and students are doing what they do best — attacking it from every angle.

Right now, teams of Australian university researchers are united in pursuit of one goal: the defeat of COVID-19.

Scholars are identifying candidates for a vaccine; investigating the body's immune response to the virus and new ways test for it; finding new treatments while we wait for a vaccine and identifying those most vulnerable.

Researchers are working with city authorities to monitor outbreaks by studying wastewater, improving the effectiveness of personal protective equipment, digging into what makes us follow social distancing guidelines, or not.

Researchers are searching for answers to important social questions: how do people cope with the loss of a loved one when so many are dying, what can we do to stem increasing rates of domestic violence?

On the ground, universities have deployed researchers and students into local health services wrestling with the surge in demand and opened university accommodation for nurses and doctors who need it.

Universities have set to work designing, testing and manufacturing face shields and ventilators. Fashion design students have made more wearable face masks, that are more comfortable for longer.

The only way to win is to fight on every front and that's exactly what

university staff and students are doing.

Researchers from all disciplines — philosophy to political science, economics to agriculture — have directed all their expertise, all their decades of accumulated experience, to the fight of our lives.

Economists are building models to protect us from the worst of the recession, artificial intelligence experts are building new industries and new jobs.

Universities are deeply embedded parts of the communities we serve. Right now, we are all struggling to do our best in a world that is difficult to comprehend.

> **We all have a duty to harness all our resources — intellectual, economic and emotional — and put them to best use.**

Working together, drawing together all our strengths, has seldom been more important.

Of course, the virus will leave us in a different place — universities and the communities we serve will all be changed. The way we conduct research, the way we teach, the funding policy landscape will all be different. But the fundamental objective of the university won't. To the take the extraordinary power of the human mind, our insatiable curiosity, and use it to ensure we are active players in our future. That's what I like to dream about.

Catriona Jackson is Chief Executive of Universities Australia, the peak body representing Australia's comprehensive universities. She joined the organisation in 2016. Her 34-year career includes roles as Chief Executive Officer of Science and Technology Australia, senior adviser to a federal government cabinet minister, director of government relations and communications at the Australian National University and a journalist. Ms Jackson chairs the Advisory Board for the ARC Centre of Excellence for Nanoscale BioPhotonics and is a member of various government committees.

AUB Helped Spark an Arab Renaissance – and Must Do So Again

Fadlo R. Khuri

President of the American University of Beirut

IMAGINE the Middle East decades from now. Do you picture a family of prosperous, enlightened states living in freedom, happiness, and peace; or a barren wasteland, bereft of community, culture, and hope? Most of us, given our innate cognitive biases, will envision a higher-tech but depressingly similar version of the circumstances we see today—a continuation of unfulfilled potential among our youth; lives blighted by wars and chronic insecurity, environmental degradation, government corruption, inequality, and poor health. This middle-lane vision of a future Middle East actually represents to me the most unlikely possibility of the aforementioned three. If we continue along this path, repeating the same mistakes, I believe this region is heading to a much bleaker scenario.

The COVID-19 outbreak has sounded a global alarm bell that we are running out of road to avert catastrophe, not just in our region, but globally. The speed and pathology of the pandemic has taken even advanced societies by surprise, exposing the fragility of economic and educational systems and our ill-preparedness to safeguard the health and futures of the most vulnerable. In Lebanon, home of the American University of Beirut (AUB), the impact of coronavirus is just one of a succession of body blows, the appalling August 4 explosion in the port Beirut being just the latest, albeit the most catastrophic. We were already in the existential post-COVID headspace, knowing what it is like to inhabit a world turned upside-down.

Set against these vicissitudes, AUB has always devoted itself to the long-term development, improvement, and lifting up of society, through excellence in education and nurturing leadership. AUB's founding president, Reverend Daniel Bliss, encapsulated our ethos when he said, "We were not anxious to appear great, but we were anxious to lay foundations upon which greatness could be built". I could write at length about our 19th century American founders who came to a neglected Mediterranean as Protestant missionaries, but went on to espouse evidence-based inquiry and—perhaps America's greatest invention—liberal arts education. In doing so, they ushered in a broader transformation, rippling out from the intellectual and scientific center that Beirut became in AUB's shadow to reach the entire Arab world and beyond.

> **If we discuss humanity's need to wake up to the lessons of COVID-19, AUB's history of impact also validates our right to dream of a more diverse, inclusive, and equitable world that the academy is capable of creating.**

Every university sends out waves of fresh graduates who are enriched through professional qualifications and the life lessons learnt from

other students and professors. Few outside AUB can boast an experience that also includes meeting and befriending peers whose parents may have stood on opposite sides in a brutal, sectarian civil war. As we consider ways to keep alive the student experience while protecting against the coronavirus, we remain acutely aware it is on our campus, not Zoom, where students lose their fear of the other, where they become emancipated from the dead hand of entrenched sectarian politics still gripping this nation and causing most of its miseries.

AUB is the microcosm that shows Lebanon can cast off the yoke of corrupt, sectarian rule. The tragedy of August 4 shows emancipation must come soon. And if Lebanon can make that change, so can every country ruled by an unaccountable elite that trades transparent governance for the public good with personal venality and embezzlement. Do prosperity, happiness, and peace lie around the corner in the Middle East? No, but today and every day we lay the foundations for such a transformation and therefore—even in the most desperate times—we arm ourselves with faith and hope for a better tomorrow.

Dr. Fadlo R. Khuri is the 16th president of the American University of Beirut (AUB) and professor of medicine at the Faculty of Medicine and Medical Center. Khuri is an accomplished molecular and translational oncologist, having authored over 750 publications, he serves as Editor in Chief of the journal Cancer. Khuri has helped obtain grants and donations for underprivileged students and patients for over $250 million. Under Khuri's leadership, AUB has reintroduced academic tenure and initiated several new PhD programs.

IMAGINE a More Humane Society

Ignacio Sánchez

President of the Pontificia Universidad Católica de Chile

IMAGINE a more humane society. The COVID-19 pandemic has seriously affected health and economy worldwide; and Chile has been no exception. Higher education institutions have made huge efforts to handle the emergency in the most appropriate and effective manner, while at the time caring for their community members – students, faculty and staff.

We have witnessed how, during the progression of the pandemic, concerns and questions arise. We ask ourselves about the future and how we will relate both personally and as a community. Many questions arise about what the future will look like. On the one hand, there are those who affirm that we will be supportive, austere and concerned with the needs of the most vulnerable population. Others believe that this will only be a parenthesis and that at the end of the pandemic consumerism and individualism will reemerge.

A possible answer to these questions lies in observing how we have responded to past situations, such as wars, institutional breakdowns and natural disasters. Unfortunately, no fundamental changes occurred, at least in regards to increasing solidarity or valuing human dignity. Nonetheless, it is impressive how this pandemic has brought a different perspective; it has pushed us to assess deep aspects of our existence. The pandemic has provoked a strong feeling of uncertainty and now we must recognize that we do not know what will happen in the future.

What we indeed know today is that our personal attitude will be the foundation for building this new global community we are a part of. We have been forced to be physically separated with the consequential feeling of vulnerability that distancing entails. This time has been an invitation to reflection and personal change. Whether we accept the invitation or not, our future depends on it.

What will our post-pandemic life be like? It is not an easy question. The answer lies in how we relate to each other, how we solve our conflicts and how we handle social demands. Universities and higher education institutions have much to say in this respect, as a university community is built on personal encounter, the valuation of diversity and the free exchange of ideas. We thus expect dignity and respect to guide our actions. This pandemic has stressed the relevance of teaching, developing new knowledge, doing research and carrying outreach programs.

This global crisis has given us all an opportunity to reflect on what is essential and this reflection must be put into action in our daily chores as faculty members, researchers, students and staff. Our knowledge and capabilities must focus on valuing people above other things. Fields such as science, economy, urban design, medicine, and many others must consider the needs of people for a better quality of life. Universities can contribute greatly in the challenge this pandemic has posed.

We are to guide our students and researchers into new routes to develop better, healthier and kinder living conditions. It is this message that we must transmit to our students and our communities.

These collective efforts must be put at the service of common good. It is possible to imagine a more humane society.

Ignacio Sánchez is a Full Professor at the School of Medicine of the Pontificia Universidad Católica de Chile. He is part of the Council of Rectors of Chilean Universities and of the Coalition of Traditional Non State Chilean Universities. He is Chair of the Chilean Chapter of Catholic Universities of the International Federation of Catholic Universities, and Vice-President for the South Region of the Organization of Catholic Universities of Latin America and the Caribbean - ODUCAL.

Universities – Integral to Reshaping Society

Vicki Thomson

Chief Executive of the Group of Eight (Go8)

Sitting in locked down Australia, I am imagining a university beyond space and time. An unprecedented global crisis makes you acutely aware of what the future could look like… but at the same time I find myself asking: is it really possible to imagine universities that are too altered from the fabric that has remained so substantial, so fundamental to the world for so long?

For me, this exercise is about how golden an age it could be if universities were accepted as the assets we are rather than as burdens of cost. What could our society achieve if we were positioned to deliver the best research for the world unhindered by policy vagaries.

So to me, in Australia, with our university sector teetering on a financial precipice, and as Chief Executive of the Group of Eight (Go8), our nation's leading research universities, never has the question "how universities in the future will shape crises and will be shaped by potential future crises" been more relevant. The resilience universities have shown since the University of Bologna in 1088 already provides the answer. Universities will be reshaped because we are not ivory towers; we are an integral part of society and society must reshape too.

Facing the realities of a post-COVID world means working with the Australian Government to design a new future in teaching and research. Together we must reshape an architecture able to withstand three current crises: COVID-19, a changed geopolitical reality, and Australia's first recession in almost 30 years.

It is inarguable that Australia's leading research-intensive universities have been the most exposed. While seven Go8 members are ranked in the world's top 100 universities, this has largely been funded by international student fees.

And let's be clear: it is the high quality of this research that Australia is relying on now. That has led to the University of Queensland being selected by the Coalition for Global Preparedness Innovations to develop a potential vaccine; attracted philanthropic funding for trials for a potential COVID treatment at the University of Melbourne, and allowed researchers at Monash University to identify a potential antiviral drug that could be administered via an inhaler.

But COVID-19 has laid bare Australia's unsustainable university funding model.

This does not happen in competitor nations. We are called public universities, but we have not been able to rely on public support for too many years. The Go8's average Government funding (excluding domestic student contributions) sits at just over 30 per cent. It is now highly questionable whether the pipeline of international student fees – dollars the Australian Government has relied on to fund us on its behalf – will return.

The only way forward is to change.

The Go8 does not agree with everything the Government is suggesting. We are far more than degree factories or just 'impatient' research. But we do have to find common ground. That is how universities stay nimble and survive. More sensible research funding - through better funded but fewer research grants - is a possibility, as is a pivot to a higher percentage of research for the immediate needs of our community that still allows room for the fundamental research that has driven the massive "finds" of world's advances. That is reshaping.

Our universities have already shown that we can adapt quickly in the short term.

Australia is changing and changing fast. It has no choice. And neither do we.

Ms Vicki Thomson is the Chief Executive of the Group of Eight (Go8) – Australia's eight leading research-intensive universities. She took up her role in January 2015. Prior to this, she was Executive Director of the Australian Technology Network of Universities (ATN). Ms Thomson's diverse background covers print and electronic journalism, politics, issues management and the higher education sector. She has an extensive media, political and policy background and was Chief of Staff to a South Australian Premier. She is a Board member of the European Australian Business Council and is a member of the Australian Government's New Colombo Plan Reference Group.

Fostered by Crisis, How to Imagine the Future of the Universities within Societies and What Should It Be?

Pierre Tapie

Chairman and Co-founder of PAXTER

Before the COVID-19 crisis, world universities were seriously impacted by several global trends:

1. Digitalization and its consequences – as knowledge is more available everywhere for free, legitimacy to demand high tuition fees is increasingly challenged. New entrants (GAFAs, MOOCs, EdTech...) are pressuring universities to become more unique and relevant, as places for socialization and competence integration.

2. Vast demographic shifts – up to 2035, local populations of young students will decrease in Europe and the Americas, while increasing in the Middle East and Asia, and dramatically in Africa. New students to educate will NOT be in traditional academic countries, they will locally vanish in the best equipped academic locations.

3. Education is increasingly lifelong, whatever the country – the balance of academic efforts between initial education and adult education will evolve to be different from today.

4. Investments in science and research present a major geopolitical shift – Depending on the ability of governments to think long term and decide accordingly, some nations are becoming key scientific actors; others historically advanced are lagging behind. The EU decisions last week to cut 15% of the future Research EU policy to ease the collective investment to relaunch economy was a spectacularly negative gesture.

Paradoxically speaking, the COVID-19 crisis' main impact will just be to accelerate these four megatrends, requiring better answers from academic actors, but not changing them. The primary change will most likely be restrictions on students' physical mobility, which will impact severely some academic models largely based on international students.

A key uncertainty between scenarios will revolve around international openness versus international closure. Depending on the scenario, these trends will affect universities in the world with opposite effects, depending what the universities are already.

• The so-called "global universities" sitting in the top 50 in global rankings, will have to transform their models by learning how to operate more frugally, as the best students will increasingly originate from financially-challenged countries. They will face the choice of recruiting elite students from these regions, or recruiting average students from rich countries. Further lockdowns will force them to recruit locally or dare to invest massively in developing a presence in growth countries

• Depending on their capabilities and willingness to invest in knowledge, emerging countries, will be the hottest places for higher education.

- The less advanced ones will face demographic tsunamis of potential numbers of new stu-

dents of + 200, up to + 700%, but capabilities will be insufficient. There, only digitalization will enable to cope with massive numbers.

- New intellectual giants, as China, will appear among the middle-income countries.

• Between these actors, many universities, especially in Europe, will have huge opportunities to reinvent how to implement their competences. They are not too rich and their value for money is much better than more prestigious universities. These ones can grasp the demographic, digital, and life-long education shifts as opportunities to reinvent themselves. Neither INSEAD in France, nor many universities now increasingly prestigious, existed 60 years ago.

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In every time of history, universities have been spaces active in inventing the best future for society. They can be vivid actors to pressure politicians, governments and lobbies acting for an open world.

Their ability to do so will depend on the public perception of their willingness to serve society at large, not to work for their own benefit. Academics must find the narrow path where battling for additional credits does not jeopardize their legitimacy to speak with a loud voice, with independence and judgment, fostering collective wisdom.

Some will, some won’t. Scenarios are pretty open, for better or worse.

Pierre Tapie built his career holding together academic and economic universes, graduated as an Engineer from Ecole Polytechnique (Paris), with a PhD in Biophysics (University Paris-Saclay) and an MBA (INSEAD). After 10 years as a scientist at SANOFI, he was Dean of Purpan Graduate School of Engineering for 11 years, then Dean and President of ESSEC Business school, leading its global outreach. In 2013, he created Paxter, a consulting firm focused on academic institutional strategy, serving universities, governments and companies worldwide.

IMAGINE an Agile and Resilient University

Heinz Fassmann

Minister of Education, Science and Research, Austria

Imagine finding yourself in the middle of a wide-ranging, almost holistic societal shock. One that has an impact on all aspects of life: politics, economies, culture, society and consequently all Higher Education Institutions around the globe. A crisis so far-reaching that for a moment of time it even overshadowed the most pressing 21st century challenges like climate change, demography, urbanization, economic growth, energy consumption, hyper-connectivity and shifting geopolitics.

As Peter Scott argued in 1999, that universities might be ill-adapted to future shocks, he was engaged in deep reflections on conceptualizing the knowledge economy: Will the university decline or transform? He stated, in a post-modern world, society as such might be different from all we have witnessed before. While in modern industrial society, the university has become overwhelmingly an institution of "movement", in the society to come, it might simultaneously also be an institution of powerful "stabilization". Because change will be happening rapidly as never seen before, both qualities will be needed for the modern university.

From my own observations as a student, scholar, vice-rector and now minister, I have seen both qualities in universities: profound movement, which I call **agility** and stability, which I call **resilience**. I would like to share a few of those observations:

First, in the profound changes in the knowledge society, and further in the transformed innovation system, universities have kept their distinct form of knowledge production where basic research and applied research at a broad range of disciplines still define the strength of this institution. Also, in an organizational context, the university has always claimed to belong to a world-wide community of institutions where scientists have the right of circulation regardless of nation borders while at the same time being strongly rooted in the local context.

Second, from the early beginnings, universities have been spaces where scholars and students meet to exchange and advance ideas. This unique function of intertwined research and teaching has persisted and will persist, albeit in a rather adjusted, more hybrid mode. The advancement of digital learning technologies is transforming the way of learning and teaching. We all witnessed the rapid movement into solely distance learning in the last months. Out of this unique experience, we are obliged to reflect on how to integrate these new insights in the overall university experience, while comply with the claim of sparking critical thinking, reflexivity and scientific dialogue as goals of higher education.

Third, the contribution of universities to the good of society has probably never been as visible as in the last view months. Scientists from diverse fields of expertise contributed intensively to evidence-informed decision-making; not only in health

and medical issues. Already now, we see an immense creative potential for solving current issues with the knowledge from past and current research. At the same time, the limitations of science became obvious: in a strong democracy, decision-making still needs to be taken in the political arena.

Drawing from history and my own observations, I argue, that universities have been in a continuous transformation. I value their uniqueness and their ability of simultaneously being agile and resilient.

With the synergy of these two qualities, I deeply trust that universities will shape current and future challenges and thus taking their role in making a huge contribution to a resilient society.

Federal Minister Heinz Fassmann was reappointed as Minister of Education, Science and Research, Austria in January 2020. Before he was Professor of Applied Geography, Spatial Research and Regional Planning at the University of Vienna and Vice Rector for Research and International Affairs. Additionally, he served as chairman of the expert board for integration in the Austrian Federal Ministry for Europe, Integration and Foreign Affairs. Heinz Fassmann is a full member of the Austrian Academy of Sciences and of the Academia Europa.

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‘HUMAN HISTORY BECOMES MORE AND MORE A RACE BETWEEN EDUCATION AND CATASTROPHE.’

– Herbert George Wells
(H.G. Wells)

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DISRUPTING TEACHING AND LEARNING

Higher Education Is Key to Imagining a More Equitable World

Courtney Brown

Vice-President of Strategic Impact at Lumina Foundation

Imagine a world where opportunities aren't tied to the color of your skin, your place of birth, or the size of your bank account. If you are finding it difficult to picture, it is because today the opposite is true, and becoming more so every day.

Particularly in the United States, inequality is growing and social mobility is falling. COVID-19, severe job losses, and racial injustice simply magnified these trends, widening unfair gaps and exposing the daunting challenges we face. We see the increasingly dire effects of inequality on millions of people and the economies that depend on their talents.

Change is urgently needed – and higher education is the key.

We know that people with post-high school degrees or credentials are more likely to have good jobs and lead healthier, more fulfilled lives. They're also more likely to emerge successfully from economic downturns. After the Great Recession hit in 2008, many lower-skilled jobs never came back. We see echoes today as hospitality, leisure and retail jobs are lost or at risk. In the struggle to keep earning and learning, many racial and ethnic minorities are being left behind.

Profound changes caused by the pandemic and the accompanying economic crisis worsened existing challenges in the U.S. for minority, low-income, and adult learners. For those already struggling academically and financially, the pandemic added potentially insurmountable obstacles. For instance, health concerns, lack of broadband access, and loss of income restricts access and the ability for many students to enroll in college or complete a degree.

While COVID-19 widened equity gaps, these gaps have persisted for years. The latest data on people earning college degrees in the United States show a stubborn 20-percentage-point gap between Asian Americans and Whites on one hand, and Hispanics and Blacks on the other.

> **The fact that not all have access to high-quality learning – and that race, ethnicity, income, and immigration status, among other factors, determine who does – is intolerable.**

This trend will continue if we don't act quickly and intentionally. It's our job to reach these students and help them develop and deploy their talents. The pandemic has created a unique moment where colleges and communities are quickly adapting to better serve students. Changes made now can have significant lasting effects. If we want those changes to be positive and ensure all students are successful, we need more than band-aid solutions.

We need sustained, scalable efforts – and we are seeing encouraging

signs across the globe. For example, American universities are opening access and increasing support for their students. They have abandoned required entry testing, provided more faculty and administrators for student advising and counseling, changed residency requirements, and focused on student needs beyond the classroom such as food insecurities and mental health.

We have an opportunity, then, to build something better – and get back on our feet with a more effective, equitable, and efficient system of education. As demands for social justice grow, the time is right to break down barriers to learning and accelerate new paths to equity.

The university of the future will serve today's and tomorrow's students, who are older, more racially diverse, and face all of life's complex issues. It will make student success – not institutional success – its main mission. It will commit to racial equity and justice. It will partner with employers to ensure that its offerings meet changing workforce needs. And it will ensure affordability without compromising quality.

Today's crises demand that we not only imagine a better world, but create one – a future where one's skin color or income doesn't define our success in education, or in life.

Dr. Courtney Brown is the Vice President of Strategic Impact at Lumina Foundation, the nation's largest private foundation focused on increasing Americans' postsecondary success. She oversees the Foundation's efforts in strategic planning, research, evaluation, data, and learning. She also leads Lumina's international engagement efforts. Dr. Brown works to ensure Lumina uses data and research to inform and apply lessons to work across the Foundation. Dr. Brown received her B.A. from James Madison University and M.A. and Ph.D. from the University of Virginia.

COVID and the Globalization of Higher Education

Andrew Kuchins

President of the American University of Central Asia

The emergence of the COVID pandemic was and remains a crisis for higher education institutions around the world. What is absolutely clear is that the existing trend to use more tools of online learning or distance learning had been growing before COVID, but now it has exploded, and higher education will not likely ever look quite the same. As in many sectors of business, institutions of higher education are very rapidly learning of the growing utilities as well as the drawbacks of online learning that will certainly outlast the COVID pandemic.

Unfortunately, a lot of institutions will not make it financially in these challenging times. That was already increasingly the case for many US state and private colleges and universities facing financial problems before COVID. But now it feels that we are in the midst of a revolution of how higher education will be organized nationally and globally. And that actually is a good thing. The operational and financial model in many places must adapt to rapidly changing educational markets and job market outcomes. In the United States for the past several decades, skyrocketing tuition and massive debt amongst students already did not seem like a sustainable proposition. Anybody who thinks we will return to "normal" after COVID is reasonably under control is wrong, and who would really want to go back to "normal" anyway?

There is always opportunity in crisis, and it is the most innovative and creative institutions that are likely to make the transition, if not transformation of higher education most effectively. National and international networking of university resources will be far more prevalent. We have learned, for example, that we can run really interesting, world class lectures series without having to fly speakers from around the world to Bishkek or anywhere else. That seems pretty obvious, but it was not something we often thought of doing because we did not have to. For my institution, the American University of Central Asia (AUCA), these virtual lectures are especially valuable because it is challenging to get top speakers to make such a long trip to a relatively remote place.

Collaborative teaching and research across institutions will also be facilitated by technologies helpful for online learning. AUCA and Bard College faculty had partnered to co-teach a number of courses in recent years. Visiting faculty do not necessarily need to physically visit to teach. Gaps in institutional faculty resources can thus be more easily filled. I expect to see increasing networking of multiple institutions to make use of complementarities and synergies. This is a major goal of the Open Society University Network (OSUN) initiated at the start of 2020 in which AUCA is a founding member along with institutions from North America, Europe, Africa, South Asia, and Latin America.

Although "globalization" has experienced a number of setbacks in recent years and especially this year with the COVID pandemic, the globalization of higher education will continue to broaden and deepen.

The importance of the brick and mortar campus, so to speak, will not go away, but it will be augmented by a proliferation of new online opportunities where I think the battle for the future of higher education will mostly be fought. Nevertheless, an institutional model focusing on building infrastructure and providing a more Club Med-like environment for students to get that "real college experience" looks increasingly antiquarian. Those colleges and universities spending more time and money on how to most efficiently network their educational and social mission both internally and externally; i.e. break down the "walls" of our institutions are more likely to thrive in the future.

Andrew Kuchins is the President of the American University of Central Asia (AUCA). He is a world renowned scholar/practitioner on Russia and Eurasia. Dr. Kuchins has held faculty, research, and administrative positions at the University of California at Berkeley, Stanford University, and the Johns Hopkins University School of Advanced International Studies (SAIS). Most recently, from 2015-2019, he was a Research Professor at Georgetown University's Walsh School of Foreign Service where he taught and ran the Russia Futures program.

Crisis May Bring forward Positive Changes for Universities

Manuel Tunon de Lara

President of the Université de Bordeaux

Let's cast our minds forward to 2040. Our university, called University of the Future after the COVID-19 episode in 2020, is now regarded as a highly disruptive campus that sets global standards when it comes to research, education, innovation and commitment to its region. It has definitively become a national asset for our country and a key player in Europe by contributing to keep the EU Green Deal roadmap on course despite the historical global crisis that occurred in 2029. One century after the 1929 great crash, the world had indeed faced deep recessions triggered by several pandemics forcing universities to operate in a drastically different environment.

While the COVID-19 pandemic put the spotlight on antiquated aspects of higher education including economical models and lack of flexibility, the moment passed, and this first warning did not necessary induce necessary changes in all universities. Many of them had struggled to maintain their position as 'champions', engaging in a never ending 'wannabe' rat race for university rankings, while others had chosen to step back and remain comprehensive regional or vocational institutions.

Our university did neither. It preferred to position itself as a disruptor, and to engage a complex process of transformation and transition towards being an experimental campus, continuously testing solutions for a new socially inclusive and environmentally sustainable paradigm.

Back at the beginning of the 2020s, in a society that had become almost entirely dependent on data, the highly competitive educational sector was coming under increasingly intense scrutiny, not only by new business actors such as firms providing data-driven insights and free-access online educational content, but also more broadly by the general climate of defiance towards knowledge and expertise spread by the social and mass media.

In facing this challenging new higher education market, from 2020 to 2040, our university set up and implemented an ambitious strategy whose aim was twofold: (1) to continue to reposition and optimize its core business as a research-based world class university, while (2) investing in disruption for the years ahead, building a new "student-centered", transnational, open, responsible and inclusive educational model. Our strategy for 2040 led us to embark on the dual quest of optimizing and growing and featured a number of changes: from being faculty-focused to learner-centered, to collaborate closely with its external and internal partners in order to co-create solutions for our collective future, to rethink the physical campus for the digital world, to experiment constantly in order to design solutions the world needs to be able to deal with the massive challenges it faces.

Now in 2040, our university has become the place where enlightened, unbiased and efficient experimental approaches can be set up and test-

ed. Being a public research-driven university, experimentation was and still is at the very heart of our vision, mission and activities. For two decades, our internal culture of engagement has boosted, developed and scaled up together with our main partners and stakeholders, to help shaping a better future and promoting a sharing sustainable society.

Helen, born in early 2021, is studying hyper complex systems and complexity of network-centric organizations at the university of the future. She says that the most important thing she was taught in this degree was to predict the unpredictable. Tuesday afternoon, she was attending an immersive class with her uncle in the “next generation railway” living lab. Graduated in 2018 as an aeronautic engineer, she is back at the university for reskilling. She chose a very popular program called “new needs for society”.

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The missions of the university of the future will not strongly differ but creation and transmission of knowledge – including what we don’t know – will be essential for such a complex and vulnerable world.

Manuel Tunon de Lara is President of the Université de Bordeaux since January 2014. He previously served as President of Bordeaux Segalen University where he championed the values of a large, multidisciplinary, internationally- recognized university and led his establishment towards a merger with two other universities in the city thus creating the University of Bordeaux with his counterparts. Manuel Tunon de Lara is professor of Respiratory medicine with research interest in asthma and allergy.

Borderless Individuum – Centered Education

Marina Bulova

Director University Collaborations at Schlumberger

IMAGINE a university that adapts to the learning ability and style of the student, capitalizing on their individual strengths. Imagine an education system that is not segregated based on the student's location, income level or social status. Today, education is based on a young person's own comprehension of their potential plus the influence of parents and friends. But in this imagined world, it is not the student who chooses which subjects to study, instead it now is the role of the university to identify and cultivate student abilities, which start to be defined in the K-12 system. The students' strengths – academic, social and psychological – and educational direction would be identified during their first year at university with the help of experienced tutors.

In this imagined world, there is a global demand for specialists with certain skills. Universities are becoming a "skills farm" by providing missing workforce. At the same time, the boundaries between high school, university and industry are fading. Talented youth is given an opportunity to tap into university-level education earlier than some of their peers. The system now adapts to the abilities of the student, making the traditional K-12 system more flexible. University-industry collaboration is becoming an indispensable part of the educational process, allowing students to test acquired skills on real problems.

Education is provided based on the student's natural preference for information consumption, whether in person or remotely; through video or audio; with limited human interaction or full immersion to the social ecosystem. Online education is more affordable, or even free, and accessible to all – regardless of their location, income level or social status. Physical presence on a campus fetches additional expenses related to travel, accommodation, and personal health and security measures. Onsite education is provided based on the student's achievements, not on their family's income.

Digitalization and global crises such as the COVID-19 pandemic will create a more rigid world, one led with procedures, protocols and AI processes. This fully predictable, calculated world offers fewer chances to observe natural fluctuations and statistical anomalies and poses great risk as any unpredicted event could break down this established system, much like a single thread can unravel a cloth. People with the skill set to think "outside the box" will be necessary to rebalance the system. Therein lies the role of the universities, to identify those with non-standard thinking, nurture this skill set, and lead fundamental research that does not necessarily follow predefined schemes. Education and innovation will drive the purpose of the universities, not business aspects. Together with education becoming accessible for everyone, open collaborative platforms shared between multiple worldwide scientific organizations and start-ups will drive innovation and remove boundaries. Research results will be shared globally.

Intellectual property rights will fade. Universities will shape multi-country collaboration projects, aiming to improve fundamental challenges, for example space exploration, global food chain, health protection, computation power.

The picture described above is an ideal situation. However, it requires that humanity agrees on common goals and shares resources and innovations without boundaries. Without undivided agreement on these principles, the segregation between educated and non-educated people will grow due to social and economic barriers driven by the cost of education. And, without such agreement, the focus of universities will be on applied scientific research activities, neglecting fundamental investigations, deeming them “non-profitable”.

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It is up to us, the current generation, to decide our path and what education opportunities we want for our children and grandchildren. Imagine limitless education for the benefit of all.

Dr. Marina Bulova, Director University Collaborations, leads cooperation activities between Schlumberger Corporation and Universities worldwide. That includes R&D collaborations, Education programs, Technology Transfer and Community Outreach initiatives. During her 17 years career at Schlumberger Marina served in various roles in Technology management in Russia, Canada and US. She acquired practical experience in all steps of the innovation cycle of the company. Dr. Bulova has two PhD degrees and holds a M.S. degree in chemistry from Moscow State University.

Universities, Knowledge Production and the Future of Learning

N.V. Varghese

Vice Chancellor of the National University of Educational Planning and Administration, New Delhi

Universities have historically been relied on for creation and dispersion of knowledge. Initially, they attracted knowledge seekers driven by curiosity. Later, developmental universities became a common phenomenon. In the recent decades, universities are seen as units of knowledge production. Ever since knowledge has replaced other resources as the main driver of economic growth, the corporate interest and market influence in institutions producing and transacting knowledge have increased.

The acceleration in knowledge explosion resulted in faster obsolescence of what people know, leading to increased demand for new knowledge and higher education places. The public investment could not keep pace with the expanding social demand for higher education and it paved the way for transformation of universities. The entrepreneurial universities, private universities and online universities relying on non-state funding became innovative arrangements for higher learning.

The market mediation in decision-making focussed on the economic value of investing in higher education. It laid less emphasis both on the developmental role and social responsibilities of universities in passing on the inheritance and cultural capital of the past and present generations to the next.

> **The nature of sharing of economic roles and social responsibilities between public and private institutions will define the future of learning.**

In my view, universities will continue to remain the major sources of knowledge production even when channels of production and diffusion of knowledge are diversified. Universities will also be shaping the collective imagination to design an inclusive framework for development. In this scenario, the traditional brick and mortar universities may survive only by breaking away with tradition.

It seems that universities will maintain their near monopoly both in training of knowledge producers and facilitating knowledge transactions. The generations of doctoral students will remain the backbone for future knowledge production. The brick and mortar system will become more focused on long degree programmes concentrating on the graduate and doctoral studies.

The future of universities lies in their capacity to offer flexible pathways to learning. Studying in multiple flexible modes, switching between on-campus, blended and fully online modes as per the convenience of the learners may become common modes of higher learning. Students may opt for courses from different departments

of a university and of other universities to acquire all the credits required for a degree.

While certification will be based on credits, the modes of credit accumulation maybe flexible. Universities may also offer short certificate courses along with long degree programmes. It is probable that institutions awarding degrees as the only form of credential may disappear. The most common model may be the one where the students may graduate with one degree and multiple short cycle credentials.

The brick and mortar universities may lose its hold in imparting job-specific skills. The non-university institutions will be fast expanding their influence and attracting students for skills training. Becoming work-ready may cease to be a good reason to go to a university; instead many students may seek admissions in non-university sectors to be trained in employable skills. Online courses and fully-accredited online universities may become a common feature to supplement institution-based learning and skill formation.

The COVID-19 pandemic has already accelerated the transition to new modes of learning. Even the worst critics and those who resisted transition to online modes are fast embracing virtual learning facilities. While digital inequality is a topic of discussion, mobile-phone-based curricular transactions are breaking the barriers to entry into the digital learning world. Future universities will have less control on the catchment area of their outreach. The challenge will be to maintain equity in the quality of knowledge transaction and social interactions through promoting safe spaces in higher learning.

Professor N.V. Varghese is currently Vice Chancellor of the National University of Educational Plannning and Administration, New Delhi. He was the founding Director of the Centre for Policy Research in Higher Education (CPRHE/NIEPA), New Delhi and Head of Governance and Management in Education at the International Institute for Educational Planning (IIEP/UNESCO), Paris. He was the Secretary General and responsible for the Secretariat of the International Working Group on Education (IWGE) and was also responsible for managing an Asian regional network ANTRIEP.

Surfing the New Liquid Education

Santiago Iñiguez

President of IE University

Universities were born internationally oriented. At the time of their foundation in the 11th century, scholars taught in Latin at different places, from Bologna to Paris, and shared their ideas despite the then existing tough barriers to mobility. Eight centuries later, Oxford's renowned fellow John Henry Newman defined universities as "an assemblage of strangers from all parts in one spot" and added that "a university is a place of concourse, where students come from every quarter for every kind of knowledge". Certainly, a key feature of universities is a universal vocation, their mission focused on developing cosmopolitan, globally committed citizens.

Recent globalization has produced, though, two conflicting effects. On the one hand, a homogenization of ideas, practices and tastes, coupled with the spread of progress and ideas defending human rights. For example, young people socialize through social networks and share the ideals of sustainability, regardless of the culture to which they belong. Paradoxically, the other side of globalization has been an increased emphasis on identity, which is magnified by some politicians to differentiate one group of individuals from another. Taken to its extreme, this can encourage mindsets that threaten coexistence: phobias toward other groups of people, usually minorities.

Recent years have seen a resurgence of populism and nationalism that uses hate speech to drive phobia toward outsiders. Other phobias seemingly on the rise are directed at women, other races, religions, sexual preferences and the poor.

Current exceptional circumstances demand from education stakeholders to assume a leadership role, speak out and stand in support of a more just, equal, prosperous and sustainable world. This also includes the international mobility of students, faculty, talent and ideas, which is essential to the university's mission.

There is another major lesson from the current pandemics. Contrary to the prophecies of those predicting that robots would take over humans, lockdowns across the world have enhanced the role of technologies in bringing us together closer and provide powerful platforms for group working, virtual meetings and also delivering effective education programs.

Indeed, the post COVID-19 world enhances adaptation and change. Professionals will live blended lives and the work environment will become increasing hybrid and liquid too. Professionals will work in teams both in presence and on social platforms, from home or at their company offices, in a continuum that blurs distance, time and that increases productivity. They will increasingly deal virtually with colleagues from different hemispheres and time zones, making friends who belong to diverse cultures and possess different visions of the world.

Hybrid formats, and what we call at IE University “Liquid Learning”, are here to stay. Not just because social distancing and cross-border mobility pose problems for attending face-to-face classes on a regular basis, but rather because they provide better results than traditional presential learning.

Indeed, education should become liquid, combining face-to-face classes with online sessions, synchronous with asynchronous interaction, exploiting the full potential for the personalization of education.

This liquidity will also be reflected on the creation and distribution of knowledge, teaching methodologies, and other universities activities, including extracurricular experiences, which may become partly virtual.

The main engine for the transition to a liquid learning world has to be, naturally, the faculty and staff at universities. The key to success in any educational format is not the technology, nor the contents. These are necessary components of online learning, but they quickly become commodities. Platforms may be the princess, contents the queen, but the experience provided by the faculty in class, be it in presence or in remote, is the empress.

Santiago Iñiguez is the President of IE University and a recognized influencer in global higher education. He has been the first recipient (2019) of the Founders Award by Thinkers50, the prestigious global ranking of thoughtful leaders in Management. He is the author of “The Learning Curve: How Business Schools Are Reinventing Education”, “Cosmopolitan Managers: Executive Education That Works”, and “In An Ideal Business: How the Ideas of 10 Female Philosophers bring value to the Workplace”.

University as a Bright and Solid Home of the Future

Simona Kustec

Minister of Education, Science and Sport, Slovenia

I would like to begin with an indisputable fact – universities have always been and must remain the solid pillars of knowledge for a better future of the society and state.

Besides many other reflections, the experience with COVID-19 revealed the true nature of the university space. Despite several instrumental and procedural shortcomings, non-vitality and obsoletion of the current system, universities have demonstrated that they can survive and work compellingly independently, without major dramatic interruptions.

To a certain extent, the last few months have shown that the blended or fully online learning could well compete with traditional learning. It is thus the responsibility of universities to explore and find the right approaches, which will enable and help their students and staff adopt new modes of teaching and working. The main challenge, lying ahead of HEIs, is to identify the right mix of basic and professional knowledge, as well as skills, needed to equip higher education graduates with ongoing "survival" skills for the labour market of the future. This mix should consider the new dynamics of labour market demands for higher education graduates upon their labour market entry and thereafter, during their entire career. A higher education degree should be perceived as a qualification for labour market entry and should provide graduates with a sound foundation to build upon, and to update and upgrade their knowledge and skills through lifelong learning, throughout their career.

Graduates need to be made aware that they are the ones who are primarily and ultimately responsible for maintaining their skills and knowledge up to date. This is neither the responsibility of their current or future employer, nor the responsibility of the state. The crisis has shown that many jobs, traditionally considered repetitive desk jobs, can be done online, which also means that they can be done from anywhere in the world. Due to professions no longer being bound by physical offices and spaces, HEIs face new challenges, threats, and opportunities. Some of the main challenges faced by HEIs are how to ensure the employability and competitiveness of graduates in the global labour market, and how to position themselves – as universities – in the global market of higher education providers in the same field.

However, governments also face the same challenges, as they need to rethink the objectives of their national higher education regulatory systems, as well as the role and objectives of the communication and information systems.

In the future, we expect to see an increased offer of shorter programmes (micro credentials), which will be offered by universities that will focus on both professional and scientific knowledge, in order to enable their students to obtain degree(s) through flexible learning paths. More emphasis will be put on student-centred learning, i.e. an objective of Bologna process, which is celebrating its 20th anniversary in 2020.

As part of preparations for the upcoming Rome declaration of the Bologna process, a significant milestone for the European higher education area (EHEA), we need to take another look at the objectives of the Bologna process for 2020-2030 through the perspective of the COVID-19 crisis.

Slovenia considers the implementation of the Bologna process and EHEA membership a competitive advantage that will help our HEIs better position themselves in the global higher education market, while ensuring the employability of Slovenian graduates and facilitating foreign graduates' transition to the Slovenian labour market.

However, the same way we see education and the university space as two key constitutive elements for the future development of a small and smart country, we also need to see the state supporting all the above.

Professor Dr. Simona Kustec is the Slovenian Minister of Education, Science and Sport. Besides her ministerial appointment, she serves as a full professor at the Faculty of Social Sciences, Department of Political Science, Chair of Policy Analysis and Public Administration. In 2019/20 academic year she also lectured at the Venice International University, Italy. Professor Kustec is a political science researcher with a rich and diverse body of work. Furthermore, she is actively involved in several research project groups in Slovenia and abroad.

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**‘TECHNOLOGY, LIKE ART,
IS A SOARING EXERCISE
OF THE HUMAN IMAGINATION.’**

– Daniel Bell

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COLLISION OF TECHNOLOGY AND HUMANITY

Transitioning To High Tech – High Touch In A New Reality

David Garza

President of Tecnologico de Monterrey

We live in a time outlined by crisis and uncertainty; a time when every country and realm of life is being challenged in unforeseen ways. COVID-19 will define our era and will probably influence everything we do of relevance for decades. Against this backdrop, it is an essential duty for universities to contribute to a sense of direction, purpose and hope.

Tecnológico de Monterrey is by far the largest not-for-profit private university system in Latin America, with 26 campuses, over 90,000 students, a health system, senior high schools, as well as a sister university. We have been pioneers in different fields in our hemisphere, including educational innovation through models, pedagogies and novel use of technology.

During the pandemic we have learned how to better serve society by being nimbler and more flexible. We have become a better orchestrator in our community in order to achieve common goals. The litmus test for our performance and our main asset is the level of trust we develop and preserve among our students, faculty and stakeholders.

There will be a clear divide between the before-COVID and the after-COVID eras. We firmly believe it is time to leave old patterns behind and not simply adapt, but lead in the creation of a better post-pandemic world.

In the future, the immersive physical campus experiences will continue to be highly valued by the best universities. However, distance learning is here to stay. It should not be considered an emergency remote-teaching model, but rather the amalgam of evolution-leveraging new technologies (artificial intelligence, virtual reality, augmented reality) and improved pedagogies.

The academic experience will also be transformed by shifts from the lecture-based approach towards challenge-based learning. Students learn by solving real-world challenges identified and selected by faculty, together with an external partner from industry, the public sector, or communities, providing a rewarding experience that increases learning outcomes and connects students and the university with the community.

The key changes will likely be related to educational focus, program offering, and delivery and operating models. Our models will be transitioning to multi-delivery platforms with different dimensions: online/hybrid/face-face, synchronous/asynchronous, small/large, etc. Besides full-immersion degree programs, there will be a growth of free-flow options based on micro-credentials and stackable programs. Lifelong learning will be in high demand. The traditional operating model of “all in one place”, fully controlled and operated by a single entity, could evolve towards university alliances, not just among universities but also with industry, with shared faculty, students and resources.

International cooperation and partnerships will become more relevant in the coming years as a way to strengthen resiliency to face global crises in the future. This cooperation will go beyond traditional student mobility programs, and will focus on deep and complementary relationships that strengthen research capabilities, with the participation of industry.

A crucial element to consider in academic paradigms will be the focus on student well-being, providing students with comprehensive and cohesive environments to enhance their leadership skills and self-realization, promoting an intellectual, emotional and physical balance.

We have to ponder collectively the societal changes that this pandemic might bring, how it will shape and affect the needs and aspirations of the new generations. We have to keep working to assemble the right template for the future, one that strives for a high tech / high touch blend in our educational focus in order to underscore empathy. At the dawn of a new reality, that is our true calling.

David Garza has served as President of Tecnologico de Monterrey (Tec) since July 2020. He was Tec´s Rector from 2017 to 2020. Dr. Garza has held leadership positions at Tec for more than 30 years and has been a professor and researcher in computer science and information technology. He has played a key role heading innovation initiatives at the university, such as the design and implementation of the Tec21 educational model in Tec´s 26 campuses.

IMAGINE the Future Digital University

Matías Rodriguez Inciarte

President of Santander Universities and Vice President of Universia

Imagine a future university that is committed to address the digital gaps by providing digital skills to students, alumni and the society in general in collaboration with external stakeholders and that digitalizes its own operations to effectively manage these processes.

This university prioritizes the provision of advanced digital skills to all students in a very practical way, usually based on projects and challenges, and mixing students from different backgrounds and disciplines. However, this emphasis in digital skills will be combined with a focus on other transversal skills and competencies, such as leadership, problem solving, creativity, communication, teamwork, etc.

This combination of skills together with the ability to acquire knowledge of several disciplines increase the students transition to the labour market and their future employability. This is particularly relevant for students whose specialization is in IT or computer science, who receive compulsory courses in ethics, philosophy and anthropology to ensure that technology is always use for societal benefits.

> **The future university also provide digital skills to its alumni and the society in general. This is part of the university's responsibility to make everyone in the society digitally literate and support effective upskilling and reskilling of the individuals.**

This training helps individuals avoid the threat of automation and digitalization in their jobs, increase their productivity, remain active in the labour market, change sectors as well as find new or better jobs in emerging digital sectors. This is done by expanding their training catalog beyond master's and doctorates including short-term programs such as micro-credentials, micro-degrees, or professional certifications.

Not only will these skills be provided but they will also be certified, increasing the information in the labour market and the signaling to the employers, who are able to know what candidates can do and not only what they know. The certification of these skills is done using blockchain technology to digitally secure them.

Blockchain is only one of the main technologies the university of the future uses, as it is highly digital in its structure and operations. For example, not only the education

provision is partly done digitally, using an efficient blended-learning system, but the university also uses AI to guide students in their academic decisions and suggesting learning routes adapted to their interests and competences, with virtual tutors that act as coaches or mentors of students.

In addition, universities of the future have Chief Information Officers (CIOs), who work collaboratively in a network with CIOs of other universities worldwide to share initiatives to address digital transformation. Digitalization allows the university of the future to be a decentralized institution with a global presence independent from the physical campus by using hybrid spaces. The paradigm shifts and the students do not go to campus, but the campus goes to the student.

The future university does not do these things alone, but in collaboration with a wide range of stakeholders. Universities often collaborate with other universities and with companies for the design, delivery and recognition of education and training. Companies communicate to universities the profiles and skills needs in the future labour markets to guide the creation of programmes targeting them.

This communication occurs informally but also formally though universities social councils, with representation of companies, the society and governments. Governments collaborate with universities in joint initiatives as the adjustment of individual's skills to labour market needs is in the core of productivity and competitiveness of regions and nations.

Although this is only a vision of the future university, the Covid-19 crisis has shown that it is critical time to rethink the role of universities and their huge potential to become engines for social and economic development in a digital world.

Mr. Rodriguez Inciarte studied Economics at the University of Madrid and Business Management at MIT. He was the Minister of the Presidency in Spain, and later member of the Board of Directors and Vice President of Banco Santander. Matias was the President of the Princess of Asturias Foundation and is currently the Chairman and Member of the Board of several Spanish companies. In addition, he is now President of Santander Universities and Vice President of Universia, in charge of Banco Santander's Programmes with universities.

IMAGINE Irreversible Change Focused on Students

Ray Fleming

Google Cloud Higher Education Partnerships and Programs Manager in the Asia Pacific region

IMAGINE that the disruptive changes of 2020 in higher education cannot be reversed - for the organisation, for academics and for the students. And the learning experience of students is always guaranteed, regardless of where they are, when they want it or how they want it. Surely that model would be so unsettling that it could undermine the full mission of higher education?

The same question is being asked in industries around the world economy. The retail and banking sectors have also had to move faster online to support consumers changed behaviours. Universities sit at the same point – where a switch to digital delivery has allowed you to focus on the user, and let other things align behind it.

Although this change was forced upon the sector, what it has demonstrated is that organisations are flexible and resilient, and that our academic colleagues were just waiting for the opportunity to demonstrate their ability to rapidly innovate. Years of investment in education technology, training and familiarity for staff enabled a rapid switch. With over 140 million global users of our education products, we saw this happen directly during the initial pandemic, with 1,300 years of learning taking place each day just on Google Meet alone.

In 2019, the AlphaBeta 'Future Skills' report, commissioned by Google, identified that although the number of hours of learning beyond the age of 21 would more than double, a very small part of that increase would likely happen through tertiary education. And so this is the opportunity to imagine better times.

If universities can support their existing students in a more widespread adoption of this model of learning, that creates learning experiences alongside life experiences, and allows both to align, then the same can be true for those lifelong learners who aren't currently at university. As businesses re-skill their workers, and as employees see a new future for themselves with newly upgraded skills, the role of the university expands out to deliver a truly lifelong learning experience for everybody.

> **"With so much successful learning happening online in 2020, and the resulting wealth of data that this change has generated, there is a positive opportunity to improve every learner's experience.**

To get there we need more innovation, and re-think the traditional academic model.

Universities can use data to deliver a learning journey that is hyper-personalised, so responsive to an individual learner that the learning fits like a glove. Up until now it's been

an option to use data to personalise, but going forward, with the diversity of the student population, and with the inclusion of a lifelong learning role, it's just not going to be possible to deliver on the university's core mission without it.

As in other industries, we can use the advancing power of machine learning and artificial intelligence to help us understand the story that the data is telling, and to move directly to using data to make decisions, not dashboards. Ivy Tech used their data to build a system that showed how they "could predict a student's final grade in a course with 60%-70% accuracy by week two of the semester" and have subsequently been able to help 35,000 students shift from risk of failure to achieving success.

Universities' three greatest assets – their physical presence, their academic corpus and the deep knowledge held within – can be boosted by the newest strategic asset of data. In May 2017, The Economist magazine ran the headline "The world's most valuable resource is no longer oil, but data". I can only imagine the new heights we could get to as universities harness their data to build the new model of lifelong learning for all of their stakeholders, and the role of the university becomes assured for the next few centuries.

Ray is the Google Cloud Higher Education Partnerships and Programs manager in the Asia Pacific region, and has worked in the field of Education Technology for more than 35 years. His international experience of the journey to a digitally transformed but human-centred education system spans multiple sectors and roles, including working for some of the largest specialist technology providers for education. Ray has worked in a number of roles, including as an education technology journalist.

IMAGINE Universities: From Newman to Lennon

Stephen Parker

Global Lead for Education and Skills at KPMG

IMAGINE a university beyond space and time and you will be thinking like Cardinal Newman in his famous 1850s lectures on the idea of a university. Newman's idea never really materialised. Modern societies moved further and further away from a pure, acontextual model. Now, with new technologies on the horizon, it is easier to glimpse a university which transcends the local and the immediate.

The Covid-19 pandemic has thrown many universities into crisis, but it was a crisis coming anyway. Today's institutional leaders might have hoped it would be their successors who inherited the really tough change, but now it is on their own plate.

The Golden Age of universities in the developed world, which started in the 1960s, has been passing for several years now. It really was a Golden Age. Higher education grew by a factor of 6.12 between 1970 and 2013, whereas population multiplied by 1.93 and real GDP by 3.63. Widespread support for this growth came from human capital theory, which saw expenditure on tertiary education as an investment in the economy, and it came from equal opportunity theory which saw the expenditure as essential for social justice. Expenditure on research was justified by a strong belief that the market alone would not lead to sufficient fundamental or pure research on which innovation and the development of technology relies. And as middle classes expanded in developing nations, the international student market took off. We have just been living through boom times in university-land!

But this support, optimism and confidence has been faltering. The earnings premium from a degree has started to decline. Vocational education has suffered dangerously from the expansion of higher education. Inequality within countries has actually worsened with the expansion of their university systems. Employers are saying they need skills and qualities in graduates that universities are not explicitly addressing.

Perhaps most fundamentally of all, costs have been rising faster than revenues, probably because universities cannot scale up in ways that many other organisations can. According to a recent OECD analysis, after accounting for rising student numbers and inflation, average real expenditures per student by higher education institutions in 13 selected OECD countries roughly doubled between 1995 and 2015. This was unsustainable anyway, but is now completely unaffordable as nations rebuild their economies after the pandemic. No one has the money to throw at universities on the scale it has been thrown in the last 60 years.

Technology and ingenuity are the solution. Modes of digital delivery will improve enormously, with extensive use of virtual reality, mixed reality, simulations etcetera. Courses will be designed for digital delivery rather than distorted for it. Learning

analytics will personalise learning to the individual student. Personalised learning at scale will be within reach, simultaneously improving learning and reducing per student cost. Machine learning will conduct research at a level of complexity no human team can compete with. The competitive advantage of humans over robots within higher education will be in their creativity and ability to inspire students to learn.

When we IMAGINE the university of the future, we no longer need to imagine a campus, a lecture theatre or a lab. We imagine how hands and minds are trained and cultivated through the optimal mix of humans and machines.

The Newton of tomorrow can sit under an apple tree, with her or his digital device, and be at university. As in Lennon's Imagine, above us is only sky.

Emeritus Professor Stephen Parker is honorary professorial fellow at the Centre for the Study of Higher Education, University of Melbourne, and Global Lead for Education and Skills at KPMG. He was a legal academic before taking up administrative positions including Dean of Law at Monash University, Senior Deputy Vice-Chancellor at Monash University and then Vice-Chancellor at the University of Canberra. He writes and commentates extensively on education matters in Australia and internationally. He has a podcast series called Talking Tertiary.

RE-IMAGINING Universities Post the Pandemic

Andreas Schleicher

Director for Education and Skills at the OECD

The global spread of the COVID-19 severely impacted higher education as universities closed their premises and countries shut their borders in response to lockdown measures. The crisis has affected the continuity of learning and the delivery of course material, the safety and legal status of international students in their host country, and students' perception of the value of their degree.

Universities were quick to replace face-to-face lectures with online learning, but struggled with insufficient experience and time for conceiving new formats of instructional delivery and assignments. Examinations were affected as well, causing disruptions in learning trajectories and study progression.

Perhaps most importantly, the crisis has exposed the value proposition of universities. Students are unlikely to commit large amounts of time and money to consume online content. Students go to universities to meet great people, to have inspiring conversations with faculty, to collaborate with researchers in the laboratory, and to experience the social life on campus. Eventually, learning is not a transactional but a relational phenomenon.

> **To remain relevant, universities will need to reinvent learning environments such that digitalisation expands and complements, but does not replace, student-teacher and student-student relationships.**

The quality of the learning experience as a key differentiator is only bound to rise as digitalisation drives forward the unbundling of educational content, delivery and accreditation that holds together today's universities. We are living in this digital bazar where anything that is not build for the network age will crack apart under its pressure. When it comes to content, universities will face an uphill struggle competing with large and highly professional providers, and as the scale and nature of hybrid learning evolves, the locus of control or ownership of course development, design, and assessment may shift as university instructors rely more heavily upon tools provided by publishers and open educational resources providers alike. Accreditation still gives universities significant power, but digitalisation may challenge this too, e.g. through micro-credentialling and blockchain technologies.

That leaves the quality of the learning experience as perhaps the most valuable asset of future universities,

and it may become harder for universities to hide poor teaching behind great research. And it is the quality of the learning experience what helps us keep the finger on the pulse of what is most relevant for the future of education.

That raises the question of how digitalisation may shape the quality of learning experiences. Think about the power of "collaborative consumption", with online markets where people share their cars and apartments with strangers. Collaborative consumption has made people micro-entrepreneurs – and its driving engine is building trust between strangers. This works because behind these systems are powerful reputational metrics that help people put faces to strangers and build trust. When it comes to the future of universities, the most distinguishing feature of digitalisation in education may be that it not only serves individual learners and educators, but that it can build an ecosystem around learning. Technology can build communities of learners that make learning more social and more fun. And it can build communities of faculty to share and enrich teaching resources and practices. Imagine the power of a higher education system that could meaningfully share all the expertise and experience of its faculty.

What if we could get faculty working on curated crowd-sourcing of best teaching practice, perhaps even across institutional and national borders? Technology could create a giant open-source community of faculty and unlock the creative skills and initiative of so many people, simply by tapping into the desire of people to contribute, collaborate and be recognised for that. In that way, technology may liberate learning from past conventions and institutions and connect learners in new and powerful ways, with new sources of knowledge, with innovative applications and with one another.

Andreas Schleicher is Director for Education and Skills at the OECD. He initiated and oversees the Programme for International Student Assessment (PISA) and other international instruments that have created a global platform for policy-makers, researchers and educators across nations and cultures to innovate and transform educational policies and practices.

IMAGINE Universities as Virtual Spaces Guided by AI and AR with Qualifications Coming with an Expiry Tag

Furqan Qamar

Professor of Management at the Centre for Management Studies, Jamia Millia Islamia

Its 2030 and the COVID-19 has changed the world including the world of learning. A decade after Corona, the cure still eludes, though vaccines can protect temporary. Fearing another pandemic lurching around the corner, people social distance, mask their faces and go into hibernation at the slightest pretext.

> **With outings, events and public gatherings discouraged, campuses have ceased to exist as teaching transformed from physical to virtual.**

Rapid technological advancements have abetted the transition. A man-made sun is now a perpetual source of light and energy, making access to electricity at a frugal fare for all. 9G network, beamed through space stations, has enabled connectivity to all the nooks and corners of the universe, in terabytes.

Communication has gone from global to the universal level and need no access devices. A Prenatal Bionic Chip (PBC) enables unlimited access to Universe Wide web (UWW), Virtual Reality and AR with the blink of an eye. It also serves as proof of identity through Universal Unique Identity validation(uUIV) and seamless financial transactions through Universal Fintech Services Access (uFSA).

The super-rich have made their home on the Moon and Mars that are now terraformed. With substantial business interests still here on Earth, they teleport back and forth at will. A miniscule minority of the earthlings occasionally get to traverse the universe in pods, mostly for business. Universal Basic Income (UBI) has eliminated destitution. Thus, the rest on the earth are the aspirational middle class striving for space travel at least once in their life.

Technology aided teaching, AI-ML enabled automated educational services and real-time validation of competencies, soon made restrictions on student intake redundant. Consequently, learners from low ranked institutions migrated in hordes to the top ranked universities, they consolidated, merged and finally reformed into Lifelong Learning and Skill Augmenting Tertiary Institutions (LL-SATI).

Social media and web presence soon took over as career-guidance counsellor advising potential learners with AI curated courses customized for individual aptitude. Finally, students were unshackled from the clutches of a single university and thus permitting seamless qualification access and portability across institutions in the universe.

As institutions succumbed to individual sovereignty, students accumulate credits from a wide variety of universally accessible Humongous Open Online Modules (uHOODs) offered by humans, humanoids and

cyborgs accredited by the Universal Higher Education Teaching Accreditation Authority (uHETAA). They charge fees at will with due regard to market dynamics and fine-tuned as per their Target Rating and Popularity Points (TRPP). Conspiracy theorists believe that brains of teachers with super-duper TRPP are preserved in cryonics to clone.

Eventually, the best universities too lost their relevance and were replaced by a universal Higher Education Qualification Authority (uHEQA) which assesses Credits accumulated in the Academic Credit Bank Account (ACBA) of a students and awards qualifications, albeit with an expiry date.

Individuals with acceptable scores in Research Acumen and Accomplishment Index (RAAI) are automatically identified and funded to pursue research in high priority areas. Research Results are pre-published for popular review. Those with high popularity index are marked for transnational research to monetize the new knowledge and stored in Databanks located in space and powered by O'Neil Cylinders or Stellar Engines.

I was shaken out of my slumber by students who wanted to know if I would take my class today. Apparently, while waiting for the class, I had dozed-off and my imagination had run riot. The reality was that defying the fancy futurology, universities had returned to their old ways just as the pandemic subsided a bit. I shrugged and walked to the sweet smell of chalk and blackboard with projector and smart board on the side.

Dr. Furqan Qamar, presently Professor of Management, has been the Secretary General, Association of Indian Universities, Vice Chancellor, University of Rajasthan and the Central University of Himachal Pradesh and Advisor (Education) in the Planning Commission. With keen research interest in public policy, planning, administration, and financing of higher education, he has published in journals of repute and national dailies. He has chaired and been members of a large number of committees, working groups at the national and international level.

The Museum of 20th Century Universities

Jamil Salmi

Global Tertiary Education Expert

Today, 20 February 2036, is my granddaughter Sofia's 15th birthday. Born during the COVID-19 crisis which upturned our world in more than one way, she lives in Melbourne while I am based in Berlin. Since she is about to finish high school this year, I invite her to join me on a virtual visit of the Museum of 20th Century Universities to celebrate her special day.

I pull on my iGlasses and jump into my favorite museum metaverse app. We meet in the lobby of the virtual museum. My granddaughter's avatar is young Marie Curie, the only female scientist to ever win the Nobel Prize twice. Mine looks like Einstein when he taught at Princeton, with the iconic wild bushy hair.

We start with the Grand Lecture Hall, an impressive amphitheater than can seat 800 people. An older white male professor is droning on for a full hour to an audience of bored and distracted students. We move quickly to the next room, a large library full of paper books and journals that students pore over for hours on. In the faculty building, rows of offices where the professors write articles behind closed doors.

Next, we enter the Gallery of Numbers. I explain to Sofia how everything had to be counted in the old days. What's your Gaokao or SAT score? How high is your GPA? What is the H-index of your professor? What is your university's rank?

> **She finds it hard to believe that universities did not select students on the basis of their life project, but focused on high school grades and test scores.**

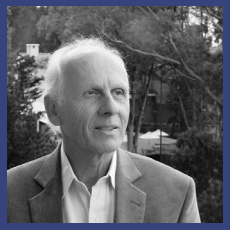
We now switch to the Pavilion of Exclusion, a sobering monument to the stark inequalities back then. We see universities for whites only; science and technology institutes with hardly any women. In a 3-D replica of Room 104 in Carnegie Hall at the University of Oklahoma in 1948, we see George McLaurin, the sole African American student on a campus of 12,174. He is sitting in a closet, the spot he was forced to occupy, separate from his white peers, after winning a legal battle to get admitted.

Next comes the Building of Disciplines. All specializations are on display. We can but wonder at the artificial distinction between the humanities and the sciences and how the knowledge offered was completely out of phase with the complex nature of real-life challenges. Sofia frowns when she sees that everyone followed a uniform set of courses towards the same degree. "Imagine that they received dated degrees," she explains, "instead of progressively building a blockchain qualifications portfolio throughout their working life!"

In the Pandemic Gazebo, we are reminded how the COVID-19 crisis triggered the coming of age of online education. Within a few weeks, sometimes only days, what was a hobby practiced by a few innovative instructors – often regarded as eccentric and less professional by their more traditional colleagues – became a mainstream platform for teaching and learning at universities worldwide.

We finish with the Examinations Chamber. My granddaughter cannot stop gasping as we float through the holograms of anxious students immersed in writing high-stake competitive finals, under the vigilant watch of stern proctors ensuring that no knowledge sharing or cooperative work takes place. How different from today's open-internet, continuous, collaborative and interactive assessment sessions!

As we are about to leave the Museum, my granddaughter's avatar shakes her head and comments: "Seriously! Can you imagine that these people were restricted to studying at a single university at a time, instead of seamless cross-learning from multiple knowledge providers over their lifetime?" "I feel so lucky to live in this age of flexible and open education!"



Jamil Salmi is a global tertiary education expert providing policy advice to governments, universities, and development agencies. Until January 2012, he was the World Bank's tertiary education coordinator. In the past twenty-five years, Dr. Salmi has provided advice on tertiary education development in more than 100 countries. Dr. Salmi is Emeritus Professor of higher education policy at Diego Portales University in Chile. Dr. Salmi's latest book, "Tertiary Education and the Sustainable Development Goals", was published in August 2017.

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‘IF WE DON'T TAKE RESPONSIBLITY OF WHAT HAPPENS TO OUR SOCIETY, THEN NO AMOUNT OF INDEPENDENCE CAN IMPROVE HUMAN CONDITION.’

– Abhijit Naskar

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SOCIALLY ENGAGED UNIVERSITY

IMAGINE a New Beginning by Inclusive Innovation

Tuula Teeri

President of the Royal Swedish Academy of Engineering Sciences

The ongoing pandemic is challenging the entire world with dawning economic crises, mass unemployment and destabilization of our societies. It is obvious that the world needs a new beginning. Not just to overcome the pandemic but to do so with sustainable development as the goal.

Universities have earned their place over a thousand years as engines of societal advancement and critical thinking, cradles of new knowledge, technology and innovation, and drivers of economic growth - all this leading to increasing prosperity and well-being. The world has changed many times throughout the history of universities. They have sometimes led the change, other times found themselves adjusting to new realities. Now is the time to lead, and to decide what to keep and what to change when we enter the next phase.

The nature of work has been changing for quite a while. Traditional jobs are being replaced by new ones that require higher levels of education and new skills. After the pandemic we will have millions of people with no jobs and the need of reskilling is increasing. This will be a massive education challenge.

Governments need to increase their investment in high-quality education and universities must speed up their reforms. Actions are needed for rapid reskilling of large numbers of people. Universities also need to cater to lifelong learners to maintain relevant competences in the rapidly changing job markets. Both these developments will require increased volume and throughput in higher education. Introducing elements of online education is one option for achieving the necessary efficiency.

The complexity of global grand challenges calls for a diversity of skills, both of individuals and teams of experts. In addition to academic content, employers request skills in creativity, entrepreneurship, teamwork and leadership. Reskilling and lifelong learning will require a solid foundation in research just as any form of higher education. However, they address adult learners in the middle of their careers who can't spend years on reskilling. Reforms are thus also needed in the way universities design and deliver courses.

The long-term nature of their work is both a strength and a weakness of universities. Research involves patiently uncovering scientific phenomena and then using this new knowledge to solve societal challenges. However, at the same time, maintaining this research foundation makes universities slow to change. At a time when changes are needed, leadership is the key. Change leadership in universities must mix respect of the academic expertise and autonomy with the creation of inspiration and incentives for new ways of working.

Governments can facilitate this by increasing the institutional autonomy of universities, granting their leaders a strong mandate to lead and by

rewarding both excellence and relevance. University leaders are wise to increase the diversity of their faculty and staff for increased creativity and to give students more freedom to shape their own education. They should invite partners from industry and other stakeholders to contribute - not to compromise the scientific depth but to complement the academic endeavor with best practices and aspirations of the job market.

The high speed of scientific and technological development gives us hope but only if our institutions and our communities are capable of change. In many discussions of our shared future the concept of inclusion has been lifted as a key area of change that must take place – research and innovation must benefit more people in all parts of the world. A goal and conviction that was born long before the pandemic hit us and that with the consequences of the global crisis has become even more important.

IMAGINE now a recovery and a new beginning toward a sustainable future built on inclusive innovation and world-wide collaboration.

Tuula Teeri is the President of the Royal Swedish Academy of Engineering Sciences (IVA). She has held research and leadership positions at VTT Technical Research Centre of Finland and KTH Royal Institute of Technology in Sweden. As the President of Aalto University in Finland, she led a successful merger of three universities in technology, business and design. She is member of the Academic Research Council, Singapore, and the Board of Stockholm University, Sweden.

Universities to Intensify Efforts to Keep SDGs on Track Post COVID-19

Dhanjay Jhurry

Vice-Chancellor of the University of Mauritius

Universities can and must play a more proactive and prominent role in embracing sustainable development goals (SDGs). Why Universities? Because universities train the decision-makers of tomorrow; they are viewed as independent; they can shape behavior; they champion ethics and values; and they can deal with complex problems through research and innovation.

After the lockdown due to the COVID-19 pandemic and the inevitable economic downturn, how can the 2030 SDG Agenda be put back on the right path? Universities face challenges on account of their rigid organisational structures, difficulty to embed sustainable education in their curricula, inertia to change and often lack of openness and connectedness to the world.

This starts at the helm of the university in setting the vision. Universities should aim beyond the traditional development of human and intellectual capital and embrace business and social capital, which are key to promoting sustainable development.

It becomes imperative to review organisational structures if universities are to effectively address multi-disciplinary topics such as climate change, food security and ocean conservation. At the University of Mauritius, we brought together under one Faculty the physical, biological, agricultural and marine sciences to enable academics to address key SDG issues in a structured manner.

To fully respond to SDG target 4.7 – *'By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development'* – we cannot remain in silos. We need to change the system as a whole. It involves rethinking the curriculum, campus operations, organizational culture, student participation, leadership and management, community relationships and research; and doctoral training so that PhDs are not only original pieces of work but also impactful contributions to society.

Despite the negative impacts of COVID-19, which has given rise of protectionism for some, it is not a threat to globalisation as many fear. In fact, this crisis should foster partnerships and collaborative actions more than ever. Universities can and must lead the way. Digital technologies can help in enhancing partnerships post-pandemic. Universities must embrace digitalisation. The University of Mauritius recently organised a 10-day-online internship programme with TACCI (Trans Asian Chamber of Commerce and Industry) in India on *'IoT to Product Design'*, attracting 200 students from both countries: A vivid example of new technology-enabled partnerships requiring little financial means.

The pandemic has reminded us of the importance of values and discipline. The need for students to acquire not only knowledge and skills but also values and attitudes that empower them to contribute to sustainable development becomes a must - they are the next generation of SDG Ambassadors.

Universities are ideally positioned, through their vast partnerships and networks across all sectors of society, to lead the implementation of SDGs and get closer to achieving the 2030 Agenda.

Pooling together universities around SDGs to form 'University SDG Clusters' could lead to impactful results at the regional or global scale. University partnerships drawing public, private and community partners together is key to success. Universities in the global south could lead the way.

It is time to act taking into account lessons drawn from the pandemic. The huge energy savings in China during lockdown and the depollution of the atmosphere gave hope to those struggling to address climate change, but only for a short period, as economic activities take over post COVID-19. Universities can play a more prominent role in advising policy-makers how to better reconcile SDGs and the GDP.

Professor Dhanjay Jhurry is the Vice-Chancellor of the University of Mauritius. Previously, he held the National Research Chair in Biomaterials and Drug Delivery (Mauritius Research Council), while heading the Centre for Biomedical and Biomaterials Research, which he founded. He received the first Best Mauritian Scientist Award in 2011, was decorated by the Republic of Mauritius (2019/2012) and by the Republic of France (2007). Prof Jhurry is an elected member of the Association of Commonwealth Universities Council and of the Scientific Council of the Francophone Association of Universities.

IMAGINE Universities as Prototyping Places for Social Transformation

Michinari Hamaguchi

President of the Japan Science and Technology Agency

Crises have historically been catalysts for social change, and the COVID-19 crisis is no exception.

In Japan, the concept of 'Society 5.0' has been advocated in recent years as a policy for science, technology and innovation aiming at human-centered society by integrating cyberspace and physical space. Yet the current crisis shows how far the concept remains from the real world and real life. The crisis urges us to accelerate digital transformation, but how shall this be achieved? We need to consider individual, social, regional, and global values, and should collaborate in science, technology, and innovation activities.

In designing this transformation, universities can function as core bases of value creation, and become places where transformation is prototyped with the cooperation of multiple stakeholders.

Thus, they must not stay in their ivory towers with a 'science and technology first' mind-set. Rather they must act as hubs for the circulation of knowledge, inspiration and insights where various stakeholders from academia, industry, government, and elsewhere interact while giving due consideration to social needs.

Due to the increasing complexity of the problems of modern society, the vertically divided university department system is now obsolete. There are an increasing number of people struggling in academia that have no interface with real society, stuck inside research fields that are overly departmentalized and specialized. In order to promote social innovation that meets the needs of the real world and a truly human-centered digital society, cooperation should take place across sectors such as industry, academia, government and the local population, and between the fields of natural/social sciences and humanities. A university should be unbiased and open to all stakeholders, and a place for these stakeholders to gather and interact.

We should set a vision for a society to be realized 5-10 years from now, identify and 'back-cast' every element necessary for its realization, and start working towards it with the cooperation of multiple stakeholders. We have to take action. The silos must be broken down. Universities can serve as core bases for this action.

Collaboration between universities is also required. In Japan, small and medium-sized universities are scattered across all regions but are not integrated. In order to accelerate the aforementioned social innovation, it is necessary to build an integrated ecosystem of universities that complement each other and form a network that crosses regional boundaries.

Universities must also serve their

local communities. In light of the risk of urban overconcentration and excessive division of labor as revealed by the COVID-19 crisis, it is necessary to strengthen local universities and revitalize their regions. We must build a unique innovation ecosystem rooted in regional characteristics and contribute to the autonomous and sustainable development of local communities by fostering local production-for-local consumption industries.

As a national funding agency, we must create systems to encourage and support these actions through funding in line with policy priorities, and welcome ambitious ideas of researchers born of free curiosity. In the current crisis, forced control may appear to have had temporary successes, but in the long run, we believe that individual free thought will inspire greater creativity and innovation.

IMAGINE a university that is not only for scholars to study and do research in but allows people from broader society to get together and design our future society based on free thought, ardent spirit and unbounded creativity. A university where collaboration between a rich variety of stakeholders contributes to social transformation and human well-being.

Michinari Hamaguchi earned his PhD in medicine from Nagoya University. He was appointed Research Associate at the Nagoya University School of Medicine in 1980, and from then worked at Nagoya University except for the period 1985-1988 when he pursued his research at Rockefeller University in the U.S. He served as the President of Nagoya University from Apr. 2009 – Mar. 2015 before becoming the President of the Japan Science and Technology Agency (JST) in Oct. 2015.

IMAGINE a University Truly Connected to Its Local Community

Phil Baty

Editor of Times Higher Education (THE) World University Rankings

Has it ever been more obvious that universities are a profound force for good in the world?

From the international teams of biomedical scientists racing against time to develop tests, treatments and vaccines to tackle the COVID-19 pandemic, to the social scientists helping us to understand and mitigate the profound socio-economic fall-out of the crisis, to the arts and humanities scholars bringing vital critical thinking and communications skills to help us all imagine a different future for humanity itself – the extraordinary events of 2020 demonstrate the broad and powerful impact universities have on society.

And yet, it seems like universities are under attack.

> **We have witnessed the rise of populist nationalism, with politicians across continents challenging the core values of globally-focussed, outward looking universities, championing restrictions to the open, international flow of talent and ideas that are the lifeblood of universities.**

Public trust in university research remains far less secure than it should be – actively undermined by people like current US President Donald Trump, who in May 2020 dismissed one of the world's most respected universities, Colombia, as a "disgraceful institution" after it published research suggesting the poor US response to the pandemic had cost lives.

In France, a survey by the National Political Science Foundation found that the French public actually lost confidence in scientists during the pandemic, as frustration and confusion around lock-downs mounted.

In the UK, The Times newspaper published a leader item in June 2020 which suggested that the closure, though bankruptcy, of some UK universities would not be "particularly regrettable".

But I imagine universities whose demise would be an obvious matter of profound and widespread regret.

These are thriving universities that are fully appreciated, highly valued and properly supported – by their local communities, the wider taxpaying public, and by our political leaders.

These universities are truly open to talent. Access is based on students' future potential, not the prior attainment that can be so heavily shaped by privilege. Admission is driven by ability, not ability to pay.

These universities have an inclusive curriculum, and clear and robust policies enabling true equality of opportunity for all students and staff. The diversity of their campus community, and notably their leadership team, demonstrates this.

These universities have truly embraced their local communities. Despite a global footprint, they understand the needs of their immediate neighbours, welcoming them onto a campus designed to be porous and offering their facilities and resources to all. They provide solid and secure employment for locals, their students volunteer in the community, their research has global impact, but is informed by local issues.

These universities have an excellent communications culture. They are not shy to show-off and champion the great work they are doing. They embrace a diverse, multi-media communication strategy to ensure that they reach and engage all members of society – including those who have not personally benefited from a higher education but who understand that they have benefitted in so many ways from the work of their local university.

They are full of academics who are proud to be public intellectuals, media-friendly advocates and ambassadors, who help us all celebrate the profound public good of our universities.

Phil Baty is an international authority on university performance and strategy, with more than 23 years of experience in global higher education, including a decade as Editor of the prestigious Times Higher Education (THE) World University Rankings and its derivative analyses. He is an award-winning journalist and editor, a sought-after speaker and commentator and the creator of the prestigious THE World Academic Summit. He tweets from @Phil_Baty

IMAGINE a New Network of Research Universities Partnering to Solve Global Grand Challenges

Santa J. Ono

President and Vice-Chancellor of the University of British Columbia

The world is faced with several grand challenges such as climate change, chronic infections and pandemics, food insecurity, drug/antibiotic resistance, peace and human rights. These challenges threaten the very existence of human civilization as we know it today. Although thousands of universities around the world host research teams working on these challenges, there is insufficient coordination between these universities to leverage this expertise to overcome these challenges with the expediency that is required to address these threats. In addition, competition not collaboration, is too often the dynamic between teams working to solve these challenges.

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This requires that we rethink part of the mission of our comprehensive research universities and re-imagine how they interact. This has happened several times during the history of human civilization. And this must happen again now for the world to survive the grand challenges we face today.

For the past 130 years, there has not been a major transformation in the post-secondary sector, despite many such predictions. There have certainly been innovations that have been introduced: such as the emergence of interdisciplinary centres, flipped classrooms and massive open online courses. But there has not been a re-think of the fundamental mission of the university with the exception of the United Nations University founded in 1972. This global university, with locations in five continents, is a postgraduate university focused on five interdependent clusters: peace/human rights, socioeconomic development, global health, sustainability and scientific innovation in society (the areas of focus for the UN). These clusters are ideally conceived to address the world’s grand challenges. Unfortunately, the UN University has a student body of ~335 and an annual budget of ~$120 million. Although the UN University has research teams in 12 countries carrying out important work to address grand challenges, the university is not large enough to significantly solve these challenges.

Imagine integrating a similar UN University model/framework as a key part of the mission of an existing network of comprehensive research universities. So many more students: undergraduate, graduate and professional could become involved in solving the world’s grand challenges. And the collective impact of large network of comprehensive research universities could undoubtedly accelerate the resolution of the global grand challenges we face. The number of students involved in grand challenge work would increase from 335 to tens of thousands and

the annual budget focusing on grand challenges from $10-20 million to perhaps $10-20 billion. And more importantly, the efforts of the distributed teams could be coordinated and benefit from synergies that do not optimally exist today.

I propose that the UN identifies university presidents from 50 global research universities (from both developed and developing nations) to embrace this new "network" model of grand challenge solutions. With each institution being represented on strategic committees around the five areas of the UN University and develop a global strategy to accelerate progress on addressing grand challenges. An additional group of 12-18 leaders from academia, government, business and NGOs would oversee the creation of the network and the work of these 50 universities.

This network would be interdisciplinary from its inception and structured so that teams are incentivized to collaborate, not compete. It would have to be truly engaged across the entire ecosystem, beginning with K-12 up to lifelong learners whilst being integrated into the regions the universities serve. All 50 universities embrace values such as integrity, openness, tolerance and global citizenship which are embedded into principles of this global coalition. The UN leverages its global influence to create a new global fund of $5-10 billion/year to catalyze and incentivise collaborative work across the network, with a "match" mechanism similar to the Vaccine Alliance (Gavi) to ensure that host nations are invested in the work of the network via universities located in their countries.

Santa J. Ono is the 15th President and Vice-Chancellor of the University of British Columbia. He has served at UBC since 2016 and also currently serves on the Board of Directors of Universities Canada, as Vice-Chair of the U15 Group of Universities in Canada and Chair of Research Universities of British Columbia. He served the Province of British Columbia as its Chief Innovation Advisor and serves Keio University as a member of its International Advisory Board. He serves on the Boards of Fulbright and MITACS and has served on the Boards of ACE and the Council on Competitiveness. Prior to UBC, Dr. Ono served as the 28th President of the University of Cincinnati and Senior Vice-Provost and Deputy to the Provost at Emory University.

The Pandemic in Higher Education Tests Our Social Values

Simon Marginson

Professor of Higher Education at the University of Oxford

There are striking differences between countries and cultures in the pandemic experience, in general and in higher education.

To appreciate this, let us consider the ideal higher education response - what happens in higher education when social values aligned to the 'common good' are uppermost. According to the UNESCO notion of education as a 'global common good', higher education should contribute to solidaristic social relations, including shared welfare, inclusion, tolerance, and mutual respect, while also contributing to universal individual rights and freedoms on the basis of equality. In a common good higher system, under conditions of the COVID-19 pandemic, these protocols are followed:

1. Government emphasises isolation, social distancing and mask-wearing as acts of social solidarity. People must protect not just themselves but the lives of others.
2. Government announce that because the health and the lives of students and staff take absolute priority, all higher education remains solely online until it is fully safe to reopen all institutions for everyone.
3. Government guarantees the financial sustainability of institutions for as long as necessary, just as it underpins sectors such as health or finance.
4. Institutions develop and provide the best possible quality of online educational provision and administration, consistent with economic delivery.
5. Because online higher education can effectively provide only part of the full product inherent in face to face education in common institutions – for example, online education provides cognitive learning, information and credentialing but not full sociability with other students, in-place student-teacher interaction, physical facilities, the full suite of extra-curricular activities and academically-nested work experience – then in countries that charge students fees, tuition cost is discounted.
6. On reopening in a country or locality institutions, establish stronger public health protocols than existed prior to the pandemic, and probably modify the extent of travel by staff and students, especially travel across national borders.

It is too early to have tested protocols 5 and 6 but we do know where countries stand on protocols 1-4. Some have properly managed the health of students and sustainability of higher education, but not others.

The countries that have handled the overall pandemic best are those in East Asia, such as Taiwan, Singapore and South Korea, in which each person learns from birth that we live in a society and our behaviour affects others. The toll has also been low in China outside Hubei province where the pandemic began. Not by coincidence, these countries have centrally managed the closing and opening of higher education and reopened solely on the basis of health advice, not financial or political factors. Institutions have reopened only when

new cases in the community are at near zero.

In contrast, in the UK at the time of writing, almost every university was promising to reopen face to face in September and October despite the high death toll. The UK government, which sees higher education as a business market, will not provide guarantees of funding and institutional survival. If institutions say that they expect to be solely online early in the 2020-21 academic year, they risk a collapse of enrolment and the loss of both core funding and competitive position. Given this kind of thinking it is not surprising the high number of UK COVID-19 related deaths.

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Some countries have shown the pandemic can be handled in a socially responsible manner with good outcomes. Other countries have done badly. But the good news is that all countries can learn from each other, and policies can be changed.

Simon Marginson is Professor of Higher Education at the University of Oxford and Director of ESRC/OFSRE Centre for Global Higher Education. Previously, he was Professor of International Higher Education at UCL Institute of Education and Professor of Higher Education in CSHE at the University of Melbourne. He is Editor-in-Chief of Higher Education, the principal world journal in higher education studies, and a member of 15 other journal board. Marginson is one of the world's most highly cited scholars in higher education studies and international and comparative education.

IMAGINE Universities That Help Restructure Regions

Rune Dahl Fitjar

Pro-Rector for Innovation and Society at the University of Stavanger

The challenge of restructuring the economy is one faced by many regions, whether due to structural changes in the global economy, loss of competitiveness or climate change. The recession in the wake of COVID-19 has made this more acute, being the straw that may break many declining industries' backs. To cope with this, regions need to attract new industries and transform existing ones into more competitive and sustainable activities. A complex task, which requires workers, companies, investors and policy-makers to develop new types of skills and competencies. This gives universities an important role to play in restructuring regions.

The University of Stavanger is in a region with a dominant offshore oil and gas industry, which due to both climate change and declining reserves is not sustainable in the long run. The region therefore faces a massive challenge of restructuring its economy towards a more diversified and sustainable industry mix. Besides the challenges imposed by lockdown for many industries, COVID-19 also led to a steep fall in oil prices and a rapid drop in investments in the industry, with many companies going bankrupt or laying off workers.

At the university, we sought to address the short-term consequences of the lockdown by creating new educational offerings for laid-off workers and by collaborating with regional companies on innovation projects to help them find a way out of the crisis. In the longer term, we recognise that restructuring the regional economy also requires a concerted effort, which must involve the university. Green restructuring is therefore the main headline of the university's strategy for the next ten years.

> **The university needs to be an active partner for the region in the development of new industries and the transformation of existing ones.**

Many universities and regions look to Stanford and Silicon Valley for inspiration on how to do this. And the credentials of Stanford in the development of the IT and biotech industries are impressive indeed. But we are not sure this is the best approach for a university and a region such as ours. Most regions are not like Silicon Valley, and most industries are not like IT or biotech. Hence, new industry creation is only very rarely the result of new scientific breakthroughs. More often, it is the result either of internal processes of branching from related industries in the region, where knowledge from different industries is combined in new ways, or of the region attracting new activities from outside.

In these processes, we see the university as a connector across different stakeholders and as a magnet for new talent. The university can

be a neutral arena, independent of industries and between the private and public sector. We can enable collaboration between diverse actors to stimulate new combinations. We are also embedded in global knowledge networks which can bring knowledge from the outside into the regional innovation ecosystem. All these roles require broad and meaningful engagement with society.

Alongside this support function, we also need to provide an arena for critical reflection on the consequences of restructuring. Economic restructuring can be a painful process, and its costs are not evenly distributed. The university must also do research on how to manage restructuring fairly and with regard for its social costs.

This adds up to a multi-faceted role, involving technical as well as social sciences and humanities research, education, innovation and outreach activities. Mobilising all branches of the university will therefore be crucial for the success of the university and the region in this process.

Rune Dahl Fitjar is the Pro-rector for Innovation and Society at the University of Stavanger. He has been a Professor in Innovation Studies at the UiS Business School since 2013. Fitjar received his PhD in Government from the London School of Economics in 2007. He was the project leader for the EU-funded network on The Role of Universities in Innovation and Regional Development (RUNIN) from 2016 to 2020.

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‘IT IS THE LONG HISTORY OF HUMANKIND (AND ANIMAL KIND, TOO) THAT THOSE WHO LEARNED TO COLLABORATE AND IMPROVISE MOST EFFECTIVELY HAVE PREVAILED.’

– Charles Darwin

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ENTREPRENEURSHIP AND UNIVERSITY–INDUSTRY INTERACTION

The University As A Catalyst For Entrepreneurial Ecosystems Locally And Globally

Erik Stam

Professor of Strategy, Organization & Entrepreneurship and Dean of the Utrecht University School of Economics

We are currently in the midst of the COVID-19 crisis. A crisis that paradoxically has strengthened both the local and global role of universities. On the one hand, universities have gained a more global reach. The crisis has accelerated their digital transition. Education and research have never been as intensively digital as in this crisis, which has made the global reach of universities possible. We teach students locally and globally at the same time, in the same digital classroom, and it has never been easier to meet research staff worldwide.

On the other hand, universities are becoming an anchor in their local economy: a stable employer in the business turbulence of the crisis, and students prefer to commute a short distance from their university rather than from other regions. We do not yet know what the long-term effects of this crisis will be, but it will certainly lead to new articulations of the local and the global. What role can we expect the university to play in such an increasingly digital and fragile knowledge economy?

We already knew that we live in a society that faces global challenges. Tackling these challenges, locally has become even more prominent in the COVID-19 crisis. Challenges for which solutions must be discovered and created. This requires attitudes, skills and behaviours that stimulate the pursuit and realisation of new value creation.

The university's traditional role as a developer of in-depth disciplinary, scientific expertise needs to be enriched with attitudes and skills aimed at creating new value and improving tomorrow's society. Universities should show in their curriculum and overall communication that it can be attractive for students and staff to get involved in the identification and pursuit of new opportunities for value creation, and should also enable the development of skills to do so, within, or perhaps even better, outside the university. Talent and knowledge creation must become increasingly multidisciplinary in order to create new combinations of knowledge and skills needed to meet global challenges. Creating these new combinations and making them work requires students and researchers equipped with the right entrepreneurial skills and attitudes.

Universities should encourage bottom-up initiatives, combined with a university vision. Universities need to become aware of their role in entrepreneurial ecosystems, namely to train students who can create value in organisations, the economy and society. And universities are a source of knowledge that stimulates curiosity and is relevant to society.

The future is not something that exists out there, but something that we create. Entrepreneurship is key to creating the future, and universities must be a catalyst to enable entrepreneurship by being a source of talent and knowledge locally, but also to connect with other enterprising ecosystems globally.

Universities have an extremely important role to feed entrepreneurial ecosystems with talent and knowledge, and can also enable the creation of an entrepreneurial culture and act as a connector between public and private actors. They will do this primarily via the core tasks of research and teaching. There is no one way to do this right. Being an effective feeder is something that can be learned via trial-and-error, in collaboration with (alumni) entrepreneurs and other key actors in the regional entrepreneurial ecosystem and of other entrepreneurial ecosystems.

Erik Stam is the Professor of Strategy, Organization & Entrepreneurship and Dean of the Utrecht University School of Economics. He has held positions at Erasmus University Rotterdam, the University of Cambridge, the Max Planck Institute of Economics, the Netherlands Scientific Council for Government Policy, and the University of Oxford. He is a leading scholar on entrepreneurial ecosystems. His broader research interests cover the societal and organizational contexts of entrepreneurship and the relation between entrepreneurship and economic development. He has (co-) authored more than hundred books, book chapters, and articles in a variety of disciplines, including economics, geography, business/management and public administration.

IMAGINE Smart Policymakers and Funding Organisations Stimulating Entrepreneurial Competence of Universities AND Improving Their Investment Yield at the Same Time

Fredrik Hörstedt

Vice President for Utilisation and Innovation at Chalmers University of Technology

Entrepreneurship might be one of the most misunderstood concepts in the university world. The typical interpretation is that entrepreneurship is about developing startup companies that are spun out from the university. But that interpretation is far too narrow, and it hampers the societal contributions from universities.

Imagine that we chose to see it differently and viewed entrepreneurship instead as a competence and recognized that it is applicable to university research and education as well as to innovation and other forms of utilisation.

In fact, this is not a novel view at all. For some time already, researchers, practitioners and public organisations have been debating what should and what should not be regarded as entrepreneurial competence. The concepts vary a bit across the board but there is a fair agreement that entrepreneurial competence is about mobilising the resources necessary to taking ideas and opportunities into action while creating value for others.

> **What would be truly novel is a university taking entrepreneurial competence as the pivotal point of departure when defining its mission and strategies. It seems attractive at first glance but is difficult to do in practice since universities generally are large, old and quite conservative organisations.**

Nevertheless, the potential is significant since the societal contributions of universities would increase in multiple ways. Research questions would be formulated differently, yet fully independent by academics, based on understanding of how the results might be applied in practice.

Teaching would be conducted differently, with a value-centric perspective on students and their future employers. Innovation and other forms of utilisation would naturally be reinforced including, but not at all limited to, the spinning out of startup companies. Many non-commercial routes utilisation of would also be favoured, including those that will impact norms, beliefs, rules and standards.

Entrepreneurial competence of faculty and students is key to have universities respond even more strongly to the paramount challenges society today is facing. Policy

programs like Horizon Europe are not more powerful than the reaction they trigger. I am convinced that entrepreneurial universities create more value for society compared to non-entrepreneurial ones.

Hence, entrepreneurial competence is a mean for policy makers and funding organisations to increase the return on investments in research and higher education. And note that entrepreneurial competence is not exclusive to engineering or business schools, but of vital importance to all scientific disciplines including natural sciences, medicine, social sciences and humanities.

Investing in the development of universities' entrepreneurial competence is therefore a smart thing for policy-makers and funding organisations to do. The reason is simply that they will get more societal impact from universities without allocating more money to research and higher education. Making sure that some resources are reserved for the long-term development of entrepreneurial competence will improve how universities go from "input to impact" in general and with regards to societal challenges in particular.

We are facing a future where the world needs to recover from the coronavirus pandemic and at the same time prepare for a green, digital and resilient sustainable future. With such an outlook we would like to be sure that universities provide their outmost contributions and that they have the right conditions to do so. Entrepreneurial competence is a vital part of those condition and policy-makers and funding organisations plays a key role in stimulating its development within universities.

Dr. Fredrik Hörstedt is Vice President for utilisation and innovation at Chalmers University of Technology. He is responsible for Chalmers' innovation ecosystem including venture creation, research technology organizations and science parks. He holds the overall responsibility for Chalmers' interfaces with business, research institutes, public authorities and politics. He is a board member of the European Innovation Council, a member of the EUA Innovation Ecosystems Expert Group, and an advisor to the Swedish Government on research, innovation and digitalisation.

IMAGINE Europe with Entrepreneurial Lifelong Learners

Martin Kern

Director at European Institute of Innovation and Technology (EIT)

IMAGINE a green, healthy and sustainable future for the planet and its people. How do we power the change necessary to turn such a vision into reality? At the European Institute of Innovation and Technology (EIT), we believe entrepreneurial education is essential to enable this societal transition. We believe in the power of lifelong learning, continuously upskilling our knowledge to deliver innovative solutions for Europe.

Universities are key partners to achieve the EIT's vision and critical to equip students with creativity and entrepreneurship skills, but also to drive regional ecosystems as innovation leaders. With universities we push knowledge forward, expose students to new ideas and turn these ideas into reality. Together with universities and the EIT, budding entrepreneurs can bring their innovative ideas to the market and spark change.

The current crisis requires us to reflect on education and the role universities play in our societies. With many universities around the world closing their 'physical' doors, online and blended education present a new era of learning.

We must leverage the shift to digital learning, recognising the opportunities it opens to upskill knowledge and the benefits it can bring.

Technologies are evolving rapidly, and whilst this means some jobs will disappear, new ones will be created with entire industries transformed. We need to ensure that skills and competences are adapted and that future talent is equipped to thrive at the forefront of innovation. Universities must continue as they always have to push the boundaries of knowledge forward, but also to facilitate technology transfer and contribute to upskilling through continued education. By doing so they drive innovation, ensuring that learners across Europe have the skills to keep up with the pace of advances in society.

The switch to blended education enables students to choose location, time and pace, catering their learning to a more flexible approach. By widening blended education options, we can foster collaboration between different learning perspectives and approaches and boost the impact entrepreneurial education brings to Europe. We also usher in much needed digital skills to underpin the ongoing digital transformation.

Yet, what does blended education mean for universities? It can:

- lead to higher student retention through personalised educational tracks,
- rethink traditional classrooms, giving access to groups with differing abilities,
- share resources faster and more easily with more digitalised content and archiving, and,
- enable more students to become

active lifelong learners, returning to education to upskill their knowledge.

To transition to an online learning sphere, innovation is key. When the pandemic began, the EIT Community reacted quickly and supported educators by sharing knowledge and making key resources available to adjust to teaching and learning needs. New digital tools were swiftly introduced not only to teach, but also to support the academic community in adapting to the new conditions.

Innovation in higher education and in universities is not new for the EIT Community. Through EIT Digital, for example, we power innovations early on that contribute to a more digital learning environment. They supported start-up, ProctorExam, who as early as in 2015 was creating a highly secure web-based platform for online examinations. The programme has since been bought by universities in Austria, Belgium, the Netherlands and the UK.

At the EIT, we champion lifelong learning through our education programmes that are created in collaboration with the leading higher education, business, and research organisations across Europe. While the transition ahead remains uneasy for educators and students, we must rise to the challenge that the pandemic has thrust up on us. By doing so with universities paving the way, we will contribute to a more resilient and digitally skilled Europe.

Martin Kern is the Director at European Institute of Innovation and Technology (EIT). He joined the EIT in August 2014. Prior to that, he worked at the European Commission for 15 years in a variety of posts, mainly in the area of enlargement policy and with financial assistance to support economic and social development programmes. He has a master's degrees in Economics and English from the University of Heidelberg and one in European Studies from the University of Reading.

A Multi-Dimensional Future Looks Brighter

Arianne Bijma

Global Manager Talent Programs and University Relations at ASML

Ten to twenty years from now, companies and universities that have built strong multi-dimensional partnerships will be better positioned to react to ever more dynamic environment.

If we have recently learned one thing, it is that the world is changing fast in unpredictable ways. Disruptions in technology, health, politics, environment and social structures have shaken up the dynamics in pretty much every organisation.

> **The organisations that not only survive, but thrive in these circumstances are those that adapt the best to change. This is true for all organisations, whether they are companies, governmental organisations or universities.**

The best way to build an agile organisation that is prepared for an ever changing environment is building connections with the world outside the organisation. These connections help to develop sensitivity to change and allow the organisation to react fast and effectively in collaboration with its stakeholders. For industry, it is vital to stay connected to the world of knowledge and talent within universities, while for universities it is vital to stay connected to world of the application of knowledge and the future employers of their students. However, building meaningful connections that bring these benefits of collaboration and agility is not easy.

In an exaggerated depiction of the sometimes difficult relationship between industry and the academic world, industry is seen as short term thinking, money hungry and opportunistic, while universities are seen as slow, old fashioned and disconnected to the real world. So how are partners different from this caricature in successful partnerships? And how do successful partnerships grow?

Successful partnerships are first and foremost based on an alignment of long term goals, both in the content as in the way partners expect to benefit from the partnership. Secondly, strong partnerships need to be multi-dimensional.

Alignment of content is usually the easiest part, whereas the alignment of goals is less straightforward and takes more time to discover. The best way to establish if potential partners match is to start small. You shouldn't start with a full partnership right away, you start with a small collaboration, for example a small research project or internships. When a mutual beneficial collaboration arises, this engagement can be expanded to other fields, e.g. internships, company employees giving guest lecturers, collaborative PhD projects. Too often these collaborations remain one-dimensional, e.g. only in research. But for a strong partnership to flourish, it is essential to have an array of collaborative activities that leverage the results and multiply the

connections. By seeing all of these activities as building blocks, both parties can build steadily on a strong fundament, ultimately resulting in a strategic partnership that is built for the long term. For a partnership to succeed, both partners need to be open about their own goals and always keep the long term objectives in scope.

This also allows to steer away from short term objectives, and focus on long term objectives of both partners. All activities should in the end contribute to these long term objectives.

Both companies and universities can maintain a large number of ad hoc collaborations, but they can only manage a handful of meaningful, long term partnerships. That is why, after the exploration phase of a minor collaborative project, both parties need to focus on a limited number of partners that are well aligned on the long term goals.

Collaborations between industry and the academic world are not just about research funding, or access to talent. They are about people, together enhancing the body of knowledge, the exchange of knowledge and the exchange of people between a company and a university, creating long term value for both organisations and the people involved. If we start building multi-dimensional partnerships now, in ten years we will have incredibly powerful networks of organizations that are well positioned to face the challenges ahead.

Arianne Bijma is Global Manager Talent Programs and University Relations at ASML. Coming from an Innovation Management background, Arianne Bijma joined ASML in 2015 to set up a new strategy for Talent Engagement and University Relations. Access to knowledge and talent is her main purpose, as ASML is playing champions league when it comes to technology and innovation in the Semiconductor industry. With over 25000 employees across the globe and almost two billion euros R&D spending every year, innovation is in ASML's very core. With a global team, Arianne is responsible for developing and implementing the strategy that defines the technological domains, the university ecosystem, and the programs, that enable the interaction with bright minds across the globe.

Knowledge Transfer Metrics: Towards a Europe-Wide Set of Harmonised Indicators

Giancarlo Caratti

Head for Intellectual Property and Technology Transfer at the European Commission

Transforming Europe into a knowledge-based economy has been a prime objective of the European Union since the Lisbon European Council of March 2000.

A knowledge society depends for its growth on the production of new knowledge, its diffusion through education and training, its dissemination through information and communication technologies, and on its use through new industrial processes or services.

With 4,000 institutions, over 17 million students and some 1.5 million staff, of whom 435,000 are researchers, European universities have enormous potential, but this potential is not fully harnessed and put to work effectively to underpin Europe's drive for more growth and more jobs.

Universities are unique, due to the key role they play in the three fields of: research and exploitation of its results, thanks to industrial cooperation and spin-off; education and training, in particular training of researchers; and regional and local development, to which they can contribute significantly.

I imagine a future university that places knowledge transfer is as its core and that measure its knowledge transfer activities with a wide range of internationally adopted indicators that go beyond the traditional measures of patenting, licensing, number of spin–offs and revenue including research collaboration and other "non–academic" users and engagers.

These core indicators are appropriately interpreted considering contextual factors. For example, output metrics are not viewed in isolation and input indicators are key to shaping outcomes.

"I envision universities and Public Research Organisations (PROs) that share common indicators to track their progress in knowledge transfer and are able to benchmark with similar institutions working in similar environments.

They use a composite indicator/scoreboard that allows universities and PROs to measure progress on the different key elements of knowledge transfer activities. They use a web-based tool, which can be used for data acquisition, and allows self-assessment and benchmarking.

There are several barriers to adoption of core harmonised indicators, from the practical through to the philosophical. The latter includes a fear of how such data might be used and the implications for universities and PROs and their Knowledge Transfer Offices. This is not without foundation, as there has tended to be a crude interpretation by commentators, without consideration of context.

There is also the issue of how the EU–wide data are collected, curated and reported. The collection and analysis should be managed by a credible organisation that understands KT and is recognised by the KT profession. This organisation should be neutral and collaborate with national KT associations and government agencies as appropriate. Incentives may be required at a national level to stimulate and support the ability to engage at the pan–EU level.

In this context, the European Commission's Competence Centre on Technology Transfer, in collaboration with the European Association of KT professionals (ASTP), convened an Expert Group to consider how best to progress towards an EU–wide set of harmonised metrics for knowledge transfer in PROs (including universities).

The European Commission and ASTP can play an important role in facilitating consensus building for adoption of a European-wide set of harmonised indicators, definitions and implementation mechanisms going forward. In this regard, a crucial element of success will be the engagement of leadership in universities and PROs in addition to their technology transfer offices, and key stakeholders so that the project may be of value to all.

Giancarlo Caratti is Head for Intellectual Property and Technology Transfer at the European Commission, managing its intellectual property and promoting technology transfer. In 2015 he was Deputy Commissioner General for the EU participation in the World Expo Milano. He worked in the Universities of Florence and Pisa as teaching and research assistant in mechanical engineering. He spent one year as visiting scholar at the Georgia Institute of Technology and worked in a private engineering firm before entering the EC in 1986.

Changing Future Now

Janis Vitenbergs

Minister of Economics of the Republic of Latvia

"The best way to predict the future is to invent it." – Alan Kay

There is a lot of truth in that statement and as history shows, including the recent COVID-19 crisis, the future is near impossible to predict. The best we can do, is learn from the experience and create a more robust foundation that can provide us with agility for a quick adaptation when facing new challenges. This is both, a big opportunity, but also a challenge for universities of the future that will need to prepare society and industry leaders.

Universities and academic knowledge have always had a major role in strengthening the democratic values and fostering citizens' participation. Especially people with excellent competencies are those who had defined the path of development and I see that in the days to come it will be even more important to ensure that universities have a strong voice in time of uncertainty.

I believe that there are two key things that will shape the success for universities of the future, which are interdisciplinarity and fostering innovation. These two founding elements are crucial to provide an agile and open-minded approach, allowing to shape quick response to industry changes and the economic environment.

When it comes to Latvia, we have chosen to base our foundation in several core industries, including the IT sector, which is one of the fastest growing sectors of the Latvian economy. Over the last decade, IT exports have increased fivefold, and in 2018 alone employment in this area doubled. In the last 10-15 years, several global ICT giants have entered and deepened their presence in Latvia, and many new startups have emerged.

This means that Latvia has developed firm foundation for a sector with enormous potential. We strongly believe that cooperation between public, private and academic sectors has allowed us to identify and set goals, which in the future will have a significant benefit for society. For example, it has already allowed our country to quickly adapt and switch to a fully digital not only private, but also public sector and parliament in a matter of weeks.

It is evident that the IT industry is generating jobs and demand for skilled people at an increasing pace around the world. According to Talent Search People International (TSP International), three of the top 10 most in-demand jobs are software engineers, developers and data scientists. Additionally, we can see that IT skills are now a basic requirement in any field, be it medicine, biology, arts, and even agriculture and policy.

Regarding innovations, the history speaks by itself – whenever there is a necessity to tackle complex situations brilliant ideas have found their way to blossom in difficult times and, in fact, to a large extent the most useful innovations have been made in universities – vaccines, solar power, ultrasound and many others.

We see that nowadays all the fields are somehow related to each other and in that regard, I believe that it is crucial that universities of the future are able to provide interdisciplinary learning opportunities, working closely with different industries.

From today's perspective I hope for a bright future where all great minds are able to come together, adjust to the current situation and work with enthusiasm!

The Minister of Economics of the Republic of Latvia, Janis Vitenbergs joined the government in April 2020. In May, the government approved the Minister's strategy to reduce the consequences of COVID-19 crisis for Latvia. The Minister believes that export-capable industries with growth potential should be supported and adult education should be refocused. Also, it is necessary to ensure that funding for research and development, commercialisation and marketing of the results of R&D is available. Elected to the Saeima in 2018, chaired the Saeima's Economic, Agricultural, Environmental and Regional Policy Commission as of 2019.

Balancing Innovation, Entrepreneurship and Academic Values

Rebecca Allinson

Managing Partner at Technopolis

There seems to be a convention that every higher education policy document should start with "in this rapidly changing environment", and "there are challenges to be faced". Could this be more true than right now?

In my years of working in higher education policy, one thing that always struck me was that although universities recognised the changing environment and the challenges, this was generally in retrospect – higher education was, and is, mostly playing catch up. This means adapting at a pace governed and often hindered by administration, culture and the "old guard" preserving the ivory tower.

This does not mean there were no inspirational innovators and entrepreneurs in higher education. They have always been there, fighting to get things done. The success of these innovators is often described as "inspirational" in case studies and literature, but seemed seldom recognised within the institution in which they made such an impact.

I remember when I first got involved in HEInnovate in 2013, attending a conference on entrepreneurial education and how the participants saw themselves as the mavericks and the outsiders pushing an agenda which they were struggling to convince their hierarchies to value in the way they did. Move on a few years and some of the same mavericks had become insiders, moved to centre stage and are now considered to be at the forefront of their university's strategic thinking. As a result, these days the picture is rather different. In the face of an extraordinary global public health crisis we have seen how the stately higher education vehicle slowly moving towards its destination can actually accelerate in formula one conditions, with changes taking place in weeks rather than years.

In many cases, once again it is those innovators and entrepreneurs who have been central to their universities' efforts to get tuition online in a week, grapple with issues of exams and assessment and respond with agility as the feedback from students and staff comes in.

> **Yet at the same time, and avoiding nostalgia, we must not lose the essence of what makes a higher education experience great. Great for students, teachers, researchers, employers and all the other players who work alongside these institutions to make them what they are.**

What I mean is that we should remember why the "old guard" care about the university, and not lose what was good about it. This concerns quality, rigour, inspiration, good teaching and research, physical interaction, the opportunities for students to build lasting professional

networks, travel internationally and make new friends.

So the truism of the challenges to be faced in a rapidly changing environment might have a novel twist. The risk is that by the next academic year it could be the “old guard” who are fighting like mavericks on the sideline for maintaining and mainstreaming some of the most important parts of the university experience. It is many of these experiences which also provide the 21st Century skills and competences which underpin our ability to adapt, be resilient and thrive.

Rebecca Allinson is a Managing Partner at Technopolis, a Science, innovation and research consultancy. Rebecca heads up the higher education division and has over 20 years experience of working on issues of higher education policy for the European Commission and National Governments in Europe. Rebecca is passionate about higher education and entrepreneurship and the changes that are happening across the globe to support people, from every walk of life, to access and benefit from the opportunities higher education can bring.

The Role of Higher Education in Innovation and Entrepreneurship Ecosystems

Francis Petersen

Rector and Vice-Chancellor of University of the Free State

In a rapidly changing, uncertain and complex world, the roles that universities are playing as the engines of social mobility, as drivers of the economy and as generators of new ideas are now more critical than ever. Due to the universal nature of knowledge, universities are global in their scope – a space that encourages new ideas, controversy, inquiry and argument, and challenges orthodox views; but they are also deeply entrenched in their local environment, influenced by socio-economic and political dynamics. There is an expectation that universities should exhibit great levels of responsiveness and must play a critical role in the betterment of society, both socially and economically. The COVID-19 pandemic has shown deep fault-lines in our society – stark poverty and inequality – universities should actively engage with these challenges, and although they cannot eliminate them on their own, they can and should be part of the solution.

The achievement of an innovative, entrepreneurial and technology-rich economy and society depends on the depth, width and overall quality of human capital, informed by knowledge and the experience of research – a key role for universities. With an increase in youth unemployment, and a rising number of young people entering the higher education system, universities should redefine their traditional narrative, which is starting to loose validity – that having a degree means that you are guaranteed employment or even worse, that you are instantly employable. Whereas education is seen as an important component in stimulating entrepreneurial activity, entrepreneurship is seen as a source of employment through the promotion of business formation. Hence, universities should strive towards more inclusive and flexible curricula that reflect the realities of private sector, industry, commerce and the future world of work. A student entrepreneurial value chain approach, focusing on sensitisation, graduate attributes, exposure to entrepreneurs, incubation, introduction to proper networks and business development, could be a deliberate institutional design so as to maximise an entrepreneurial culture amongst graduates. All of this will need to embrace digital content with a mixture of remote and on-site teaching and experiential methodologies.

> **The future world of work, and perhaps graduate employability, are not only driven by the digital economy, but also by business and private sectors re-thinking their own business models post COVID-19.**

A vibrant relationship between universities and these sectors is not a 'nice-to-have', it is essential. Hence, advisory boards for academic departments at universities, composed of representatives from these sectors, coupled with traditional research engagements and the offering of short learning programmes (skilling

& re-skilling) with these sectors is the type of ecosystem that will promote innovation and entrepreneurship. However, these relationships, whether renewed or initiated for the first time, must be co-created: Building a strong society and economy is a collective responsibility. As COVID-19 has stressed the notion of social solidarity, emphasing a common purpose, an innovation and entrepreneurial ecosystem must embed integrated linkages with business, public sector, civil society and government.

Although innovation is the capacity to generate, acquire and apply knowledge for the advancement of economic and social purposes, it is also about improving current practices and performing new things in new and different ways – more collaborative, and more multi-disciplinary. As the business sector will reflect and redesign their operational models post COVID-19, the university innovation ecosystem should and must be able to contribute to internal business and process renewal. Universities must interrogate flexible human resource models such as staff who can work remotely, and possible joint-appointments and secondments across the different sectors of the economy. In order to deliver effective teaching and learning, universities will have to develop a continuum from face-to-face to online methodologies. Although globalisation will remain a focus, an urgent need to promote localisation is critical, and with a possible downturn in international travel, universities must re-imagine the realization of their internationalisation strategies.

Francis Petersen is the Rector & Vice-Chancellor of the University of the Free State in South Africa. He has formerly been Deputy Vice-Chancellor of the University of Cape Town, Dean: Engineering & the Built Environment at the University of Cape Town, the Executive Head: Strategy at Anglo American Platinum and Executive Vice-President: Research and Development at Mintek. He has extensive experience of management at various levels within the university and industry sectors, and has been actively involved in strategic planning and systems thinking with regard to R&D in the Science & Technology Sectors.

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is the strategic initiatives manager at the University Industry Innovation Network. In this role, she designs and delivers innovative training, consultancy concepts and models to develop more engaged and entrepreneurial universities. Balzhan has undertaken research around university-business collaboration and social innovation and has run a number of training programs and workshops around entrepreneurial universities, future of universities and university-business collaboration. She was an analyst in the consulting project for the European Commission (DG Education and Culture), implementing the largest European study in the area of university-business collaboration. Balzhan holds a doctoral degree from the Vrije Universiteit Amsterdam (VU Amsterdam). In her PhD research she focused on the engagement of academics and businesses in education-driven university-business collaboration.

Arno Meerman

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Todd Davey

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Carolin Plewa

is the Deputy Dean (Research) Faculty of the Professions and Professor in Marketing and Stakeholder Engagement at The University of Adelaide. She specialises in the interaction and value co-creation across a myriad of organisations and individuals, with a particular emphasis on university-business collaboration, as well as service and social contexts. Her research in the context of univer¬sity-business engagement, in par¬ticular, has led to her appointment to the South Australian Science Council (2015-2018) and to her ap¬pointment as an inaugural co-chair of the University Industry Innovation Network (UIIN) Australia Chapter. Carolin's achievements have been recognised by her being shortlisted for the 2019 Australian Financial Review Higher Education Awards – Emerging Leader Category. Professor Plewa has published her research in international marketing, management and education journals.

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‘HE WHO HAS A WHY TO LIVE FOR CAN BEAR ALMOST ANY HOW.’

– Friedrich Nietzsche

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