MEGA TRENDS
Why, How & When: Preparing for and managing the Future

President’s Message

Trends: Omnipresent and Dynamic, Adopt, Adapt or Face Peril!

Faster, bigger, smaller, ubiquitous, simple, complex, systemic, chaotic – that is the constancy of change?

Whether it is big data, tablet computers, smartphones, e-commerce or social media, our lives are at the mercy of change. Like entrepreneurship, change is not self-selecting; it can be imposed on anyone or any type of business/organisation at any time. How we as individuals and organisations pick up on trends correlates directly to our place in the world.

Trends may be long in their gestation or seemingly manifest overnight. The trend of living one’s life via social media appears to be an integral part of a greater proportion of the world’s population by the day. E-wallets now have banks scrabbling to introduce their own product before this part of their business is taken over by businesses such as PayPal, Square etc. MOOCs (Massive Open Online Courses) are gathering momentum, thus prompting such Ivy League institutions as Harvard, MIT, UNSW and others to get ‘on board’.

Trends represent opportunities; but should one be a ‘devil’s advocate’ before committing organisational resources? Does the value proposition resonate not only within our own organisation but also with our B/HERT stakeholders? Ancillary to this question is what part may government policy play in determining the pursuit of a trend? Unknowns are a fact of life and business. It is having the wherewithal to be able to evaluate what does this trend mean to us as a business, what are the ramifications of ‘sitting on the sideline’, is this a fundamental change to our business model, our operational paradigm.

Much like life-long learning, trends challenge us but also make us grow both as individuals and businesses.

It is in such an environment that B/HERT strives to make a difference; Australia lags much of the world with respect to the working relationships amongst Government, Industry, Tertiary Educators (all categories), research bodies’ and the general public. Doing nothing about this fact is not an option. It is appropriate to acknowledge the current positive trends to address this apathy. Perhaps there can be no criticism of the Gillard Government’s dedication to see change; it is showing leadership but perhaps what is missing is a new Australian culture to enable a 100% connection among all the players; fix the skills shortage, fix the shortfall in the output of graduates of universities, TAFEs and the VETs versus demand; be creative, upskill all our migrant intake taking some lessons from the migrants of the 1950’s and 60’s, create through public attitude led by industry, the educators and governments. How so? To pursue such initiatives will fail without proper consideration.

B/HERT’s raison d’etre is to facilitate.

In this my last President’s Message I would like to thank the membership of B/HERT, the Board, the staff of the universities, TAFE and VET providers, but particularly the B/HERT staff, under the tireless efforts of our CEO, Dr Sharon Winocur. Our sponsors, our Award judges and other friends of B/HERT who give of their time should be singled out; thank you all.

To my successor designate, Mr Bill Scales AO, my best wishes in your leadership in the next phase of B/HERT’s influence in growing the relationships and the deliverables outlined above.

Sincerely
Peter Tyree
As a natural outgrowth of the Telstra Education Roundtable discussions in December 2010, Telstra Enterprise and Government launched a ‘quick hit’ qualitative research project to record real stories about how the education landscape is changing and to ask three key questions – 1) in what ways are educational needs changing in Australia? 2) how might Telstra play a role in developing the preferred future for education? and 3) what might be fruitful areas for the Roundtable to engage in collaborative work near term? We conducted in-depth interviews with representatives of Australia’s Public, Independent and Catholic schools, TAFEs, universities, Education agencies, ACARA and DEEWR, and were privileged to hear some remarkable stories about the innovative work occurring in the education space. This report is a summary of the specific insights gained through those interviews and amplified by secondary research.

While there were wide-ranging views and opinions offered on the future of education, a common thread running through our interviews was a universal ‘call for change’. As often repeated, the industrial age model of education has outlived its purpose. For those who must now compete in a new global knowledge economy, the current educational model is not meeting the needs of today’s students. The question is in what ways do we change this century-old model? Our respondents were clear. It starts with the learner and their changing expectations.

1. **Today’s student is different in meaningful ways and as a result is transforming education as an industry.** Most of the students who are currently engaged in Australia’s schools, TAFE colleges and universities share a defining generational characteristic; they are growing up in an environment saturated with technology. Unlike their parents, they are not passive recipients of digital media; rather they are active initiators, designers and collaborators. As digital natives, they fundamentally process information, think and behave differently than their parents; and as a result, the old broadcast method of teaching doesn’t fit anymore. Today’s student is looking for a robust learning ecosystem that is “learner centric,” taking into account the needs, interests, and learning style of the student; and leverages technology in a meaningful and engaging way.

2. **In a 21st century model of education, learning can beliberated and enhanced in a technology rich environment.** Technology gives our newest generation of students a public voice and the means to actively engage with teachers in the co-design and development of their own personalized learning experience. While we are still in the early days of pedagogical innovation, we believe that technology offers an opportunity to shape the relationship between the teacher, learning, and the student in unique and valuable ways.

a. **Learning, Locating and Timing:** For students today, learning is mobile and often happens outside the confines of “school itself”, in terms of time and space. Technology offers the student a constantly connected environment which supports on-demand learning, designed to suit individual learning needs and styles.

b. **Learning Source and Mode:** Students bring with them their own expectations of how and from whom they will learn. For them “school” operates as a design hub for learning that incorporates a rich network of learning collaborators. This enables teachers to act as partners facilitating the learning process; setting expectations, helping students plan their path forward, monitoring learning progress, mentoring and supporting their learning journey as they draw on a community of learning collaborators often facilitated through the use of technology.

c. **Learning Content and Assessment:** One of the keys to next generation learning is creating a close alignment between content and assessment so that students receive instruction specifically tailored to their needs and interests. In a personalized model of education, technology can be a “potent fuel not just a tool” for learning; assisting teachers in assessment, targeting specific learning needs, and using multiple modalities to engage students in different ways.

While there are many promising advances in technology as applied to education, our respondents identified mobility, collaboration and cloud computing as the technologies that were on their near-term watch list. In the body of the report we review each of these technologies in terms of its relevance for teaching or learning and how it is being applied in a variety of educational settings.

3. **21st century skills should be the outcome of a 21st century education.** While reading, writing, mathematics and science are still the core educational touchstones of a contemporary education; today’s students live in a world that requires additional capabilities. As ATC21S points out, “learning to collaborate with others and connect through technology are essential skills in a knowledge-based
Creating proficiency in these areas, however, requires a curriculum and a learning environment that is conducive to the development of those skills.

4. Getting “education right” for the future requires a different approach to teaching and an ongoing commitment to “tooling teachers up” for the very special task of designing and facilitating effective and engaging learning experiences. The biggest revolution in education needs to be changing the teaching profession itself. As respondents shared with us, even teaching professionals who are consummate technology users are not clear in their understanding of how to effectively transform their traditional classroom into a personalized learning environment. But this is a complex issue and is not solved by changes in initial teacher preparation alone. Transformational change will require robust on-going support and development for educators in a number of key areas if we want to address the education challenge in a meaningful way.

5. Transformation starts by building a partnership that can put in motion a set of “disciplined experiments” designed to form the building blocks for a new educational model. A learning strategy for this century cannot focus only on the school; it needs to incorporate a network of learning partners as part of a system-wide approach to transformation. So where do we start? Respondents most often mentioned the importance of setting in motion a set of “disciplined experiments” around personalized learning: (1) how to translate what we know about the 21st century learner into meaningful classroom realities; (2) developing flexible content and delivery networks; and (3) building capabilities within the teaching profession.

Clearly we need to make changes in the way we approach the business of education. Respondents repeatedly told us that Telstra can play an important multi-dimensional role in educational reform as a thought leader and solution innovator. The Telstra Education Roundtable can provide an important forum where businesses, government, and educators can collaborate in common areas of interest. Telstra understands the power of a personalized learning pathway and is committed to the on-going development and deployment of technologies that will inspire a new generation of learners and educators.

About Telstra
Telstra is a leading provider of network-centric communication and managed services to large enterprise and government organizations in Australia and around the globe. Telstra serves over 200 of the world’s top 500 companies through its international operations that facilitate access to over 240 countries and territories. Telstra offers superior value for money through its range of award-winning world class products and services.

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Big Waves and Boondoogles

Modern economies are cyclical. The most important cycles are the long economic waves. These last 70-80 years and they define the world’s mega-trends. We have just come to the conclusion of one of those waves. It began in 1950 and ended in 2010. It started on an upswing and terminated in chronic stagnation. There were good times during the era but many sluggish periods as well. Some of the good times hid bad practices. Much of the wealth created in the 1990s and the 2000s was fictional. It was a product of speculation rather than ingenuity and hard work. The overlapping long economic waves of 1900-1970 and 1950-2010 were notably less impressive in real terms than the waves of 1780-1870 and 1850-1920. While the global economy is wealthier today than it was in the nineteenth century, its creative energy is less.

Can the spirit of the nineteenth century be recaptured, or will the world’s next long economic wave be more down than up? The answer to that question lies in one word: productivity. The secret of modern industrial capitalism was to create more with less. To achieve more with less, science was applied to production, commerce was freed from government, the work ethic spread, and social institutions were stream-lined. In the twentieth century, a counter-thrust occurred. Late 20th-century science was consumed by grant-getting and place-seeking. State capitalism rose to prominence. Hedonistic and remissive behaviours were widely sanctioned, while, in a perverse counterpart, regulation petrified flexible institutions.

Without high productivity and resulting growth, any modern society struggles. In the eighteenth century, the gap between the wealthiest and poorest countries was 2:1. Today it is 60:1. When Europe tried a common currency, the gap between the high-productivity North and the low-productivity South paralysed the Euro. Germany opted for flexible labour markets and remained competitive in manufacturing. Countries like Spain, Portugal and Greece tried to mask their low productivity with high debt. They borrowed low-interest Euros to fund phony growth. This set off speculative property booms and underwrote state offices where no one turned up for work. When the interest payments came due, though, these states couldn’t pay. Because they were in the Euro, they also could not rely on old tricks—such as devaluing the local currency or inflating debt out of existence.

All that was left, then, was the bracing purgatory of high unemployment.

It is not only Southern Europe that has productivity problems. Japan has stopped growing. In 1990 the dynamism unleashed by the nineteenth-century Meiji reforms finally slowed to a crawl. Japan entered a twilight age of retirement—much as Venice had in the eighteenth century. Decent growth in America in the late 90s and early 2000s masked an underlying economic patch-work. Some American states created real wealth; others coasted on the fictional wealth of property booms fuelled by artificially-low interest rates and junk mortgages. China emerged as an economic powerhouse in the late 1980s. But even that will not last forever. Like Japan before it, China has found a path to successful modernity. That is a major achievement. However China’s system of authoritarian state capitalism is deeply flawed. Its state enterprises are sclerotic and corrupt. Its banks are immature. They provide little liquidity to the small and medium private enterprises that are the well-spring of economic dynamism.

The case of Australia is interesting. It avoided the worst of the economic downturn of 2008 for two reasons. The Howard-Costello government in the late 1990s tackled long-term productivity issues and reduced sovereign debt to negligible levels. The latter was the single most important public policy act of the Australian twentieth century. Debt spiked and productivity declined sharply during the subsequent Rudd-Gillard era. To do well in the next long economic wave, Australia will have to substantially improve its long-term productivity. Countries do this by reducing bureaucracy, having a flexible labour force, lean and efficient organization, a strong work ethic, and powerful technology. The latter, though, is difficult to implement because it is difficult to predict. It is unpredictable because it is discovery driven. Very few people foresee the next wave of technology. Most gurus, especially in government, tout out-of-date technology. From a public policy point of view, what matters less is technology than flexible and quick systems of technology adoption. A prime example of what not to do is to institute a government monopoly like Australia’s National Broadband Network to deliver technology.

If one looks back on the long economic wave between 1950 and 2010, its flaws are conspicuous. This was the age of electronics, computing, media, and nuclear power. Fifteen years ago commentators were all in praise of the era. The Internet boom was in train. New elites emerged. Smugness and self-congratulation ruled. Today the achievement of the era is much less evident. It is more than a decade since software upgrades routinely delivered interesting new functionality. Today they are mostly an irritation for users—a time when users lose their favourite settings.
At least half of any IT projects fail. They leave clients seriously dissatisfied. Imagine car makers producing 50% of cars that were lemons? The mediocrity of information technology is reflected in the electronic age as a whole. As time passes, its science looks shallow. Since the discovery of the DNA double helix by Crick and Watson in 1953, the amount per capita of high-level science breakthroughs have diminished markedly. Universities expanded massively during the period. Research productivity inversely declined. Less than 20 per cent of ‘teaching and research’ academics in the OECD routinely produce research.

The teaching side of the equation is no more productive. Universities were one of the signature institutions of the electronic age. As the 1950-2010 long wave unfolded, they expanded remorselessly. As they did, their real productivity declined. They become heavily bureaucratised. Their information technology was dysfunctional. Central costs ballooned while governments drove large numbers of young people into universities who had no aptitude for university curriculum. Today half of university entrants show no improvement in reasoning or understanding across their first and second years. Half also either drop out of university or else are never employed in a job requiring a degree. What would we say of a factory that produced fifty per cent unusable widgets? We would say it had a productivity problem.

Governments created the problem. Not only that—they created a problem they couldn’t afford. Governments funded the expansion of the universities. They raised expectations that more and more young people would go to university. They even funded free university places. This was unaffordable. So governments did one of three things. They borrowed the money to fund places, exacerbating public debt problems. They introduced ‘fees-and-loans’ packages for students, creating unproductive private debt for students who dropped out, had poor job prospects or never used their degree. They under-funded student places — as in Australia. The system undermined the intellectual productivity of the university in the name of expanding the university. It financed millions of people to learn approximately nothing while those who were in a position to seriously benefit from a university education were routinely short-changed by the parsimonious curricula and the shoddy environment of the mass university.

This kind of unseemly roundabout was not peculiar to universities. It haunted much of the electronic era. A peculiar ambivalence beset the age. It saw out socialism and communism. Both were dead ducks by 1989. But the age could not let go of their asphyxiating legacy. So it turned from anti-capitalism to various kinds of faux capitalism. A legion of fauxitalisms mushroomed. These were driven by government subsidies, preternaturally low interest rate policies, and regulatory over-kill. Clinton-era laws forced American banks to lend to people without means. This created the subprime mortgages that financiers then parceled together with good mortgages and speculative mortgages as bank ‘assets’. These fueled the banking crisis of 2008. From Jimmy Carter’s funding of Great Plains Synfuels to Barack Obama’s shelling out for Solyndra’s solar cells, billions have been poured into boondoggles of green capitalism. Of all these money-pit schemes, none better captures the delusions of the age than the $78 million of American taxpayer money that was funneled into the ethanol fuel plant built by Triad America in the Reagan era. The company, owned by Saudi arms dealer Adnan Khashoggi, declared bankruptcy in 1987. The financial crisis of 2008 signalled the rapidly approaching end of an age. We are starting to look back on it now. What we see should inform the future. Times do pivot and behaviours do change. We cannot foresee the future, but should the future turn out better than the past this will be because we have learnt something from experience. We do not know what the next great economic wave will be. It is being invented right now. But we do know how to manage it. To ride the wave requires three key national policy settings: low debt-to-GDP ratios, high productivity, and a deep skepticism about boondoggles. What we have seen from the recent past is that fauxitalism does not work. I don’t know if the next long economic wave will trend away from that or not. I don’t know if skepticism about knowledge capitalism, green capitalism, state capitalism and all the rest of the rent-seeking gimmicks is an emerging trend. But we could do worse than begin that trend. The future of capitalism can take care of itself. Laissez-faire: leave it alone. Be mindful instead of good public finances and national hard work. Encourage ingenuity—for innovation is the primary source of growth. But understand that grants, subsidies and place-seeking do not fuel innovation, only the illusion of it.
Building Leadership Skills for a Connected Workforce

A critical mega trend for a more productive Australia in decades to come is the transformation of organisational leadership at the workplace level. A paradigm shift is required where leaders need to move from a mindset of "industrial age star players" or "control freaks" to the "connected coach" obsessed with enabling staff to be great. Hierarchical and siloed management mindsets won’t cut it in a world where organisations are more challenged than ever to transform and adapt. Great bosses are those that enable workers at all levels of organisational hierarchies to lead change and be the best they possibly can.

Ongoing research funded by the Department of Education, Employment and Workplace Relations and the Society for Knowledge Economics (SKE) in collaboration with University of New South Wales, Australian National University and Copenhagen Business School since 2009 has canvassed more than 5 600 employees at 77 Australian companies. It clearly identifies leadership as having the greatest correlation with firm productivity and profitability.

Front-line managers especially have the strongest impact on profitability. This level of leaders manages important relationships with customers and has the biggest span of control. It is the interpersonal and motivational skills of these managers that prompt floor staff to exercise discretionary effort.

The SKE report Leadership, Culture and Management Practices of High Performing Workplaces in Australia: the High Performing Workplace Index (2011) found that leaders in high performing workplaces:

- Spend more time and effort managing their people (29.3% higher)
- Have clear values and practice what they preach (25.7% higher)
- Give employees opportunities to lead work assignments and activities (22.9% higher)
- Encourage employee development and learning (21.1% higher)
- Welcome criticism and feedback as learning opportunities (20.4% higher)
- Give increased recognition and acknowledgement to employees (19% higher)
- Foster involvement and cooperation amongst employees (18% higher)
- Communicate a clear vision and goals for the future (17.9% higher)
- Are innovative and encourage staff to think about problems in new ways (16.5% higher)

The connecting force of the internet and mobile technology will be other important drivers of workplace productivity in decades to come. Technology has two defining effects which means we have to rethink the role of leaders.

Firstly, connectivity and technology is spinning all industries into unprecedented volatility and uncertainty that creates a shift in the focus and actions required of leaders.

The consequence is that leaders need to dedicate themselves to ensuring their organisations are strongly aligned and connected internally and externally. They must spend less time in the “what their organisations do day to day” and immerse themselves continuously in “why they do what they do” and “how they do it”. This means the traditional approach to strategy, planning and risk management needs a significant upgrade.

Looking forward – if not already – organisations will be subjected to significant industry shifts that could be terminal if not embraced and addressed. No matter what industry or sector you operate in, you better fasten your seatbelt and get your eyes fixed on what lies outside and ahead. To not do so will become increasingly dangerous if not terminal, just as it was for Digital and Wang who no longer exist.

Secondly, connectivity is creating new potential in people and organisations. At the heart of this is that people now have access to knowledge and the opportunity to connect with others to create value that has been amplified by connecting technology. This potential in people today is being limited by industrial age management perceptions and conditioning. Similarly connectivity has amplified the potential of all stakeholders meaning that misalignment with any stakeholder expectation could be damaging.

This unprecedented change in our operating environment with heightened threats and great potential underpins the need for new leadership thinking that rises above the day to day notion of “control”, “mistake avoidance” and “know it all attitudes” and must make way for an obsession with enabling, learning and trying new thinks at the core.

As the physicist David Bohm said, “The basic problem is fragmentation” a way of thinking that consists of false division, making division where there is tight connection and of seeing separateness where there is wholeness”.

Bohm called fragmentation – in our view of the universe and of ourselves as separate from one another and nature – “the hidden source of the social, political, and environmental crises facing the world”.

Perhaps more an imperative than a mega trend, vital to our hopes for the future is that we embrace new thinking as leaders, which is in tune with the connected world in which we live. Leaders who are “head coaches” more so than “star players”.

Steve Vamos,  
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The rise of Massive Open On-line Courses (MOOCs) has been the subject of considerable media discussion of late. The voices associated with this debate have generally be of two slightly conflicting types: (a) MOOCs are a threat to the current Australian university system, and (b) MOOCs are overstated as a threat to universities since they cannot replace a large portion of the valuable teaching and learning that occurs at a university. I will argue that rather than a threat; MOOCs represent a real opportunity for Australia and one that should be embraced wholeheartedly. This is particularly the case with high volume programs such as we see in Australian business faculties; which, is where I will focus my discussion.

MOOCs are potentially a revolution in teaching and learning. Although distance learning has existed for approximately a century and on-line learning for slightly more than a decade, the convergence of two phenomena imply that on-line courses will soon come to dominate university education.

First, technology has finally caught up with the ideal. Having been involved in early on-line programs there were two factors that kept the beast from rising. The first was the lack of a ubiquitous open technological platform. Early attempts were almost always proprietary and highly limiting in terms of functionality. Today’s technologies are modular and can be adapted to specific needs quickly and cheaply. Building a MOOC is like building a shed.

Second, individuals have learned how to learn without direct instruction. Indeed, the comfort level of generations that have grown up with technology and technology-based learning, simply find it natural to learn in a way that is different from what we normally associate with university learning. Indeed, the Graduate Management Admissions Council surveys now find that on-line MBA courses dominate all other modes of delivery in terms of satisfaction.

In addition to the above there are just some basic economic issues that arise and make MOOCs a potentially dominant model. First, they allow younger people to learn in a way they are comfortable learning. If you live your life staring at your phone rather than paying attention to where you are walking then you are potentially open to the MOOC model. Second, MOOCs reduce the major cost of learning – time. The largest cost to students is not tuition but time: time travelling to school, time away from being gainfully employed, time away from home and family. MOOCs reduce the total cost of education by being flexible in terms of a personally valuable, and non-replaceable, asset. The more valuable an individual’s time, the more valuable is a MOOC.

Third, MOOCs free the student from the current mix of instructors. Why should I not have the opportunity to be instructed in game theory by a leading scholar from Stanford or MIT? Should I be constrained by the limitations of my local university? MOOCs allow people access to the best brains and the best instructors, globally.

The Australian Business School Context

Australian business schools are the financial engines of nearly every Australian university. Without their large volume of international students (more than 50% of all overseas students in Australia study business, while the comparable number in the US is slightly over 20%) and the full fees that that entails most Australian universities would find it difficult to operate many other key faculties. In addition, business schools are relatively cheap to operate, as the teaching of most business courses does not require a great deal of technical training (which is why upwards of 50% of the student contact hours at many institutions will be with adjuncts and casuals).

This is potentially open MOOC territory, which is no doubt why they are perceived to be such a threat. Business programs are replete with commoditised offerings with very large courses supplemented by armies of casual tutors. However, this ‘threat’ creates two real opportunities.

First, Australian institutions are well positioned for the “massive” side of MOOC operations simply because most of our business faculties are massive (the median Australian business school has around 7,000 students in mostly 3 year programs; the largest of the US state schools would have about 3,000 students in their mainly 4 year programs). I have always found it particularly interesting that despite this fact, few institutions have actively moved to virtualise what is effectively large-scale standardised instruction. We continue to hold onto the belief that instruction requires ‘live’ instructors students can reach out and touch, while students view this as increasingly irrelevant.

Second, even if these courses were not virtualised by Australian institutions, others will virtualize them and make them available locally. In the Australian case this is a real threat because there is no real need to ‘locally’ adapt the content given that 50%+ of Australian business school students are not locals to begin with. Purchasing ‘imported’ MOOC content or creating it locally would allow Australian business faculties to downsize their human capital significantly.
I can immediately see the reactions of many to this last statement; i.e., I am advocating ‘downsizing’. But it is a necessary statement and one that is key to the value of MOOCs, particularly for Australian business schools. As revealed by almost any measure, the quality of the scholarship emanating from Australian business schools is poor. The average median Google Scholar citation per year of a business school academic is less than 2. Based on Thomas-Reuters data, Australia is between 20% and 30% below world norms in terms of the impact of what is published. While Australia boasts thousands of faculty in its business schools, the number possessing significant scholarly impact (i.e., citations) is less than 1% of the total. The reality is that the vast majority of the human capital at our business schools is employed only to teach very basic commoditised content and is, unjustifiably, being forced to meet scholarly standards that are inappropriate for the logic of their employment. For lack of a better way of characterising this, Australia is suffering from very significant intellectual diseconomies of scale when it comes to business scholarship. A solution to this problem lies in the logic of the MOOCs: work to leverage the brightest minds and get them out to the largest number of people as quickly and as easily as possible. Hence, what we should think about is more intellectual bang for the buck. We have the scholars (that 1% I mentioned earlier) who can hold their own with leading scholars globally and would no doubt be in demand for their expertise. What we should be doing is investing in releasing the power of those minds to students both locally and globally. This would not only increase the efficiency of our universities but also increase the impact of our scholarship, as we would no longer be constrained by the volume driving hiring needs. Ultimately, I believe this is the only reasonable course for a very simple reason: If Australian business schools do not embrace MOOCs it will simply be a matter of time before our competitors move into the space locally and at scale. The marginal cost of Stanford, MIT, Cal Tech or Duke moving into our virtual space is nil and they will be impossible to dislodge once entrenched. They bring to bear not just intellectual capital that we will be unable to match, but also the knowledge and scale against which second or third movers will simply not be able to compete. Either we move or we will be marginalized.

The reality is that the vast majority of the human capital at our business schools is employed only to teach very basic commoditised content...
**Back to the Future**

Forty years ago, the original publication of *Limits to Growth* (LTG) caused quite a stir in both the general media and academic circles because of its disturbing findings that in the two (of three) future scenarios that Donella Meadows and her co-authors from the Massachusetts Institute of Technology (MIT) investigated, there was an “overshoot and collapse” of the global system by the mid to latter part of the 21st century. In addition to this “doomsday prophecy” controversy (as labeled by some), there was the issue that the authors were then using a new quantitative modeling approach of large very complex systems with many simplifications and assumptions. In other words, their critics were raising questions about both their results and their methods.

Some of those who were critical were not only industry leaders, economists and political figures, but also established academics in their fields from highly respected universities (even from their own at MIT). The late American economics professor said that technology could solve all the problems the authors identified, but only if growth continued apace; and that, if growth must end, a natural end was preferable to intervention.

By the time the 30-year update was published, some 1,600 of the world’s leading scientists, including the majority of Nobel laureates at the time had organised themselves as the Union of Concerned Scientists (UCS) and political figures, in 1992 the “World Scientists’ Warning to Humanity”, imploring the urgent need for fundamental changes “to avoid the collision our present course will bring about”.

This year marks 40 years of LTG. In 2008, my CSIRO colleague Dr Graham Turner published a peer-reviewed paper entitled “A Comparison of ‘The Limits to Growth’ with Thirty Years of Reality” where he showed that changes in industrial production, food production and pollution are all in line with the book’s predictions of economic and societal collapse in the 21st century. In 2011, Italian Prof. Ugu Bardi published a comprehensive assessment of LTG’s historical importance, and its continuing relevance in the present and into the future.

What will the scientists, industry leaders and policymakers in another 40 or 60 years say at that time?

**Back to the City**

What the UCS called the collision of human activities and the natural world is most intense in centres of human population and consumption – our cities. Brunner et al. estimated that the material throughput of a modern city is about an order of magnitude larger than that in an ancient city of the same size. Australia, being one of the most urbanised countries in the world, has been estimated to have an Ecological Footprint of 7.7 global hectares (gha) per person, which is about four times the level of what the planet can regenerate on an annual basis (if requirements are averaged worldwide) . Sydney’s Ecological Footprint (i.e. its notional hinterland) is said to be 150 times greater than the actual land area of Sydney itself.

In 1950, around 30 percent of the world’s population lived in urban areas. The balance tipped just in the last two years, when for the first time in human history, more than half of the world’s population lived in cities. By 2050 this will have increased to 70 percent. “Urban areas are hot spots that drive environmental change at multiple scales . Cities themselves present both the problems and solutions to sustainability challenges of an increasingly urbanised world” . Thus, it is easy to understand why many say that, “sustainability will be lost or won in our cities”. The many – and usually popularly reported – global rating of the world’s cities always give our five largest Australian cities favourable ranking (with usually one or two cities in the top ten) but the scoring criteria and processes vary widely, in addition to being based mostly on very simple and limited surveys of perceptions and without any considerations of any sustainability matters. No one needs to be an urban issues expert to know about the huge challenges in cities first hand; every one forms a view but relies on others to deal with them. Common at the individual level, this is usually also manifested at institutional and formal governance levels. Everybody knows the problems but no one wants to own the solution(s) – it’s almost always someone else’s role and responsibility.

The institutional, business and professional sectoral approaches have been fragmented. Above all, few programs engage with urban communities in developing solutions; and those undertaken are often one dimensional, lacking adequate appreciation of the interactions between the economic, social and ecological spheres. In other words, they suffer from a lack of a whole-systems approach.
Putting aside jurisdictional issues and differing disciplinary viewpoints, the current situation of atomized programs (e.g. ‘sustainable energy futures,’ ‘sustainable water futures’ or ‘sustainable transport futures’ alone) will continue without considerations of cross-linkages and broader interdependent factors such as overall resource use or substitution, policy and regulations, market demands and social attitudes, technological and ecological impacts, among others.

### Into “Glocalisation” and Techno-Social Transitions

In 2002, UNEP published ten guiding principles based on an international Melbourne workshop that came to be known as the *Melbourne Principles for Sustainable Cities*\(^1\), which presented a holistic framework within which institutions, communities and individuals can draw together the attention and valuable resources of all the professional, political and community participants in urban sustainability. In addition, they serve to highlight the importance of local context, history and culture, and the interdependence between urban areas and their hinterlands. They also serve a pedagogical function of presenting the elements of what makes a city sustainable, without being prescriptive on any particular pathway. Global challenges require global actions and solutions, but the latter needs to be specifically context-relevant for local situations. Thus, we extend René Dubos’s famous quote into:

> “Think globally, act locally. Think locally, act globally.”

In other words, their strong linkages demand a harmonized and ‘glocal’ mindset, strategies and sets of actions. In Australia, for example, concepts and some examples of urban transition pathways have been compiled by Prof Peter Newton\(^2\). The critical differentiating elements across the world’s cities are the social, cultural and institutional systems, thus, transitions are techno-social issues.

When the editors of the Proceedings of the National Academy of Science (PNAS) in the US decided to adopt a new theme on sustainability science (“a room of its own”) in 2007, Prof William Clark stated:

> “Finally, and most ambitiously, sustainability science research is seeking to support the integrative task of managing particular places where multiple efforts to meet multiple human needs interact with multiple life-support systems in highly complex and often unexpected ways.”\(^3\)

The most complex of places – and the most needy of sustainability considerations – is our cities. Integrative and complexity naturally demand the need to bring back elemental or disciplinarian knowledge into whole systems views of cities.

Capturing the local context and unique features of individual cities will provide a bottom-up understanding of the drivers and factors that will ultimately feed the next generation of LTG scenarios modeling and analyses. This approach to understanding urban futures has only gained traction in the last 10 years\(^4\) \(^5\). This emerging field involves complexity theory and complex systems science, which are concerned with understanding systems characterised by nonlinear behaviour, feedbacks, self-organisation, irreducibility, and emergent properties, where the whole is not only more than but also different from the sum of its parts. Batty noted that:

> “We have only just started in earnest to build theories of how cities function as complex systems. We do know, however, that idealized geometric plans produced without any regard to urban functioning are not likely to resolve any of our current urban ills…”\(^6\)

Like in the global LTG approach, this will help us “develop new theoretical insights about cities that can inform quantitative analyses of their long term sustainability in terms of the interplay between innovation, resource appropriation and consumption and the make up of their social and economic activity.”\(^7\) Likewise, it is not about predicting the future but about investigating the potential nature and impacts of alternative scenarios, and understanding the factors that drive them.

The OECD has recognized the need and the opportunities for this with a recent publication on applied urban system modeling. There are renewed interests in specialised meetings on the topic. And in mid-2013, CSIRO will organise a science-based but all-stakeholder symposium on urban and sustainability futures in Melbourne, with some international science leaders in the field.

The field has an intriguing and exciting future, with continuing advances in all fields of science, improved sensing and availability of all kinds of data and information (“big data”), esp. with contextual information (e.g. socio-demographic and place/map locations), and democratisation and socialisation of ideas (e.g. mobile devices meet blogs, social networks and YouTube’s “broadcast yourself”).

### Into the Future … Today

The original LTG project was *undertaken* by a large team at MIT, *commissioned* by the Club of Rome – an informal, international group of distinguished businessmen, statesmen and scientists – and *funded* by the (private) Volkswagen Foundation in Germany. The LTG team’s pioneering effort and
results have masked this equally unique and very important collaboration.

Forty years hence, we need broader and deeper commitments from, and across, key decision-makers and stakeholders to better understand and most effectively address humanity’s most pressing challenges today. This means:

- **Stakeholders** of all types actively contributing to vision-casting, pooling resources and collaborations at both global and local scales (e.g. perhaps even providing a badge of recognition for our “degrees of collaboration” on sustainability initiatives, in a similar way the “Erdős number” is used in degrees of collaboration in mathematics around Paul Erdős, and the “Bacon number” in the movie industry around Kevin Bacon);

- **Scientists and researchers** continuing to test and push the envelope of knowledge and providing well-considered information. This means providing equal opportunity, esp., for presenting alternative concepts/ideas as long as the same standards of scientific rigour are applied (e.g. doomslayers, “skeptics”, etc.). Bodanis’s fascinating story17 of $E=mc^2$, for example, showed how “established” mindsets and personalities in various fields at that time delayed the recognition of the real meaning and significance of Einstein’s landmark contribution. Advancing knowledge demands debate of ideas and presentations of alternative evidences – let iron sharpen iron;

- **Educators** in any field of study, incorporating themes on sustainability, as many of the world’s top universities are already doing in law, business, social sciences, etc.

- **Business leaders** expanding their interests and planning horizons beyond the short-term, and collaborating with those motivated to deep-dive into environmental and social impacts and long-term implications of economic and business decisions;

- **Statesmen and political leaders** considering science-informed inputs into policy;

- **Communities**, households and individuals taking initiative to take responsibility for their future (e.g. ICT-enabled and social-network empowered “people power”).

Perhaps a better question to ask than what was posed in the beginning is: “What will people in another 40 or 60 years (2052 and 2072) say at that time about us today?”

To better account for this, we may need to reconsider again the UCS statement in 1992:

“A new ethic is required – a new attitude towards discharging our responsibility for caring for ourselves and for the earth…”

The scientists issuing this warning hope that our message will reach and affect people everywhere. We need the help of many.

We require the help of the world community of scientists – natural, social, economic, and political.

We require the help of the world’s business and industrial leaders.

We require the help of the world’s religious leaders.

We require the help of the world’s peoples.

We call on all to join us in this task.”

---

2 Wired, Issue 5.02, Feb 1997.
A Significant Opportunity for BUSINESS, INDUSTRY, TERTIARY EDUCATION and GOVERNMENT to progress the Future Development of the ICT Profession and its Role in Business/Economic Performance

When: 13 March 2013   Where: Swinburne University of Technology

WHAT’S IT ALL ABOUT

Knowledge and information is being created at an exponential rate. Business practices, systems and processes are key enablers in business intelligence, infrastructure capability, decision making, output optimisation, trend identification, real time forecasting and capital allocation. This is reality and no sector is immune.

ICT is about capital allocation. Get this right and labour productivity improves, outputs are sustainable, performance metrics are achieved, and flexibility and competitiveness become part of the economy’s DNA.

Value chains are now global. The Australian economy has shown resilience but is facing some significant issues that will require us to make transformative leaps rather than incremental steps.

Capital allocation through ICT application, system development and integration, and strategic implementation will assist Australia in its quest to remain a significant regional trade intermediary and services aggregator.

There must be an increased realisation of Economic Value Added capital allocation. ICT is an integral part of the allocation process and its role in driving innovation, new business models and economic rents.

ICT will disrupt and transform all future business, destroying old ways of operating, creating new opportunities and industries, impacting business, individuals and government in ways not yet dreamed of.

Hugh Durrant-Whyte, CEO, Nicta, NICTANews, September, 2012

The forum will highlight prima facie examples of commitment to innovation, productivity improvements, ICT adoption and the sectoral collaborations that are necessary to get this right.

AGENDA

Labour v Capital productivity. ICT transforming the business model. Embedding the impact of ICT on the innovation value curve. Advancing the correlation between ICT and multi-factor productivity. A greater role for ICT in the boardroom. Skills convergence and the need for cross-disciplinary course modules, course structure and pedagogies. How inter-sectoral collaboration is critical to Australia’s competitiveness. Competitiveness, productivity, investment and skills in the global context.
THE FUTURE OF MANAGEMENT EDUCATION IN AUSTRALIA

IS BORDERLESS LEARNING THE ANSWER?

Australian Business Deans Council

February 2013

The Round Table is a participant in the current review of ‘The Future of Management Education’, in association with the Australian Business Deans Council. As part of this review the Round Table is presenting a one-day NATIONAL FORUM on MOOCs. The forum will be held on 6 February 2013 (tbc) at Macquarie University (CBD campus). Please visit bhert.com for further details as they become available.

COMPETE GLOBAL and COLLABORATE LOCAL/GLOBAL

Tertiary education institutions are required to compete globally. One driver of meeting this competition is to scale-up by collaborating both locally and internationally. Implementation of collaborative initiatives such as MOOCs will involve structural reform, strategic resource allocation, updated governance practice and new IT platforms at the institutional level.
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