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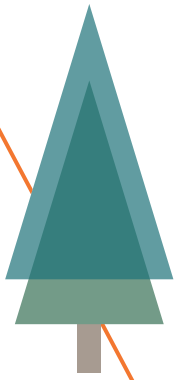
AN AVALANCHE IS COMING

HIGHER EDUCATION AND THE REVOLUTION AHEAD



ESSAY

Michael Barber
Katelyn Donnelly
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Foreword by
Lawrence Summers,
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March 2013
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Institute for Public Policy Research

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Higher education and the revolution ahead

Michael Barber, Katelyn Donnelly, Saad Rizvi
March 2013

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our approach to education,
the same cohort we’re attempting to “protect”
could find that their entire future
is scuttled by our timidity.’

David Puttnam
Speech at Massachusetts Institute of Technology, June 2012

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FOREWORD

LAWRENCE SUMMERS

An Avalanche is Coming sets out vividly the challenges ahead for higher education, not just in the US or UK but around the world. Just as we've seen the forces of technology and globalisation transform sectors such as media and communications or banking and finance over the last two decades, these forces may now transform higher education. The solid classical buildings of great universities may look permanent but the storms of change now threaten them.

Of course, competition between universities around the world has been intensifying for decades, and now they fight for talent and research funding. In *An Avalanche*, the authors argue that a new phase of competitive intensity is emerging as the concept of the traditional university itself comes under pressure and the various functions it serves are unbundled and increasingly supplied, perhaps better, by providers that are not universities at all. Thinktanks conduct research, private providers offer degrees, Thiel Fellowships have more prestige than top university qualifications, and Massive Open Online Courses (MOOCs) can take the best instructors global. Choosing among these resources and combining them as appropriate, many of those served by traditional universities may be able to better serve their objectives.

At the same time, the changes outlined by the authors are opening up access to quality higher education to the masses in previously unforeseen ways. Until recently, a select few people could get the opportunity to benefit from elite institutions. Just this year I met a 12-year-old girl from Pakistan who had been teaching herself university-level physics online using course materials from Stanford. As I write this, the introductory biology course from MIT, taught by leading researcher Eric Lander, is about to be made available free around the world.

The fundamental question in *An Avalanche is Coming* is whether a university education is a good preparation for working life and citizenship in the 21st century or, more precisely, whether it will continue to be seen as good value, given the remorseless rise in the cost of a university education over recent decades. For students, the question is immediate and challenging given the growing anxiety around the world about youth unemployment, even among college graduates. For policymakers, all kinds of new challenges are raised: how to promote meritocracy; how to

regulate a sector that used to be national and is increasingly becoming global; how to ensure universities of the right sort combine with great cities to fuel innovation and economic growth; and how to break the rigid link – at least in people's perceptions – between cost and quality.

For university leaders, the questions are more profound still. The authors argue that the obvious strategy – steady as she goes – is doomed to fail; the one thing you don't do in the path of an avalanche is stand still! But what should you do? Does the curriculum need complete overhaul? What are the right models of teaching and learning now that the traditional lecture seems obsolete? Which students should be targeted? What global allowances will be necessary?

The authors of *An Avalanche is Coming* don't answer these questions definitively but they most certainly put them on the agenda. Furthermore, Michael Barber's argument about unbundling needs to be studied and acted on by university leaders around the world. Those involved in thinking through the prospects for university education in the 21st century will find much to interest and provoke them here.

Certainly there are challenges ahead, but surely also opportunities for those bold enough to seize them. The potential unbundling is a certainly a threat, but those who rebundle well will find they have reinvented higher education for the 21st century.

Lawrence Summers
Charles W Eliot University Professor and President Emeritus, Harvard University

PREFACE

MICHAEL BARBER, KATELYN DONNELLY, SAAD RIZVI

The motivation for *An Avalanche is Coming*, as it was for *Oceans of Innovation*, published last year, is a desire to see our education systems and institutions prepare present and future generations to seize the opportunities of the 21st century and overcome its many challenges.

Our belief is that deep, radical and urgent transformation is required in higher education as much as it is in school systems. Our fear is that, perhaps as a result of complacency, caution or anxiety, or a combination of all three, the pace of change is too slow and the nature of change too incremental.

We agree with David Puttnam who argued that:

> '[I]t's … tragic because, by my reading, should we fail to radically change our approach to education, the same cohort we're attempting to "protect" could find that their entire future is scuttled by our timidity.'
> Speech at Massachusetts Institute of Technology, June 2012

Given the state of the global economy, tensions in international relations, massive gaps between wealth and poverty, the deepening threat of climate change and the ubiquity of weapons of mass destruction, our contention is that we need a generation better educated, in the broadest and most profound sense of that word, than ever before. We need – as the London 2012 Olympics promised – an inspired generation, all of whom are well-educated and some of whom are able to provide the bold, sophisticated leadership that the 21st century demands. We need citizens ready to take personal responsibility both for themselves and for the world around them: citizens who have, and seize, the opportunity to learn and relearn throughout their lives. We need citizens who are ready and able to take their knowledge of the best that has been thought and said and done and apply it to the problems of the present and the future.

This surely should be the mission of universities, and here in *An Avalanche is Coming* we have sought to describe the threat posed to traditional 20th century universities if key institutions don't change radically, as well as the huge opportunities open to them if they do. The avalanche metaphor is appropriate because the one certainty for anyone in the path of an avalanche is that standing still is not an option. Indeed,

it is a classic error of strategy to calculate the risks of action but fail to calculate the (often greater) risks of doing nothing.

As will become clear in the course of this paper, we see many possibilities but are by no means certain what the way forward is – because there is no single way forward. Instead, what we will probably see is a diverse range of experiments, some of which will work and some of which won't. Our central message to leaders of universities and those who shape and regulate education is, in the words of the old hymn, to 'ponder anew'. The certainties of the past are no longer certainties. The models of higher education that marched triumphantly across the globe in the second half of the 20th century are broken. Just as globalisation and technology have transformed other huge sectors of the economy in the past 20 years, in the next 20 years universities face transformation. We aim here to provoke creative dialogue and challenge complacency. We have not attempted to be comprehensive in our examination, but instead this paper will be more like an impressionist painting which has its emphasis on the bigger picture rather than on the detail.

As with *Oceans of Innovation*, the writing of this essay has involved continuing intergenerational dialogue. Michael, a product of 20th-century education (in the 1960s and 70s) has found many of his assumptions questioned and sometimes overthrown. Saad and Katelyn (products of turn-of-the-century education) have come to recognise that some aspects of the good, the true and the beautiful are timeless. In any case, our collaboration has confirmed our view that intergenerational dialogue is a spur to creativity.

In an ironic comment on our own argument, we each found ourselves taking pride in the university we attended. Whenever Katelyn inserted an example from Duke, Saad responded with one from Yale. But we hope we have written something that will help all those responsible for universities to consider their options creatively.

Michael Barber
Katelyn Donnelly
Saad Rizvi
March 2013

EXECUTIVE SUMMARY

An Avalanche is Coming argues that the next 50 years could see a golden age for higher education, but only if all the players in the system, from students to governments, seize the initiative and act ambitiously. If not, an avalanche of change will sweep the system away.

Deep, radical and urgent transformation is required in higher education. The biggest risk is that as a result of complacency, caution or anxiety the pace of change is too slow and the nature of change is too incremental. The models of higher education that marched triumphantly across the globe in the second half of the 20th century are broken.

This report challenges every player in the system to act boldly.

Citizens need to seize the opportunity to learn and re-learn throughout their lives. They need to be ready to take personal responsibility both for themselves and the world around them. Every citizen is a potential student and a potential creator of employment.

University leaders need to take control of their own destiny and seize the opportunities open to them through technology – Massive Open Online Courses (MOOCs) for example – to provide broader, deeper and more exciting education. Leaders will need to have a keen eye toward creating value for their students.

Each university needs to be clear which niches or market segments it wants to serve and how. The traditional multipurpose university with a combination of a range of degrees and a modestly effective research programme has had its day.

The traditional university is being unbundled.

Some will need to specialise in teaching alone – and move away from the traditional lecture to the multi-faced teaching possibilities now available:

- the elite university
- the mass university
- the niche university
- the local university
- the lifelong learning mechanism.

The pressure of competition on universities is greater than ever, not just because of the global competition between them, but also because a range of new players like MOOCs provider Coursera, skill-educator General Assembly and consultancies that develop people and produce cutting edge research, are now stepping up to compete with various specific functions of a traditional university.

Governments will need to rethink their regulatory regimes which were designed for a new era when university systems were national rather than global. In the new era, governments need to face up to big questions – how can they fund and support part-time students? Should a student who takes courses from a range of providers, including MOOCs, receive funding on the same basis as any other student? How can government incentivise the connection between universities, cities and innovation? In an era of globalisation how do governments ensure that universities in their country continue to thrive? How can meritocracy be ensured?

There are three fundamental challenges facing systems all round the world:

1. How can universities and new providers ensure education for employability? A great example of the future is the excellent employability centre at Exeter University in the UK which offers all students sustained advice and promotes volunteering as well as academic success. Given the rising cost of degrees, the threat to the market value of degrees and the sheer scale of both economic change and unemployment, this is a vital and immediate challenge.

2. How can the link between cost and quality be broken? At present, the global rankings of universities in effect equate inputs with output. Only universities which have built up vast research capacity and low student:teacher ratios can come out on top. Yet in the era of modern technology, when students can individually and collectively create knowledge themselves, outstanding quality without high fixed costs is both plausible and desirable. New entrants are effectively barred from entry. A new university ranking is required.

3. How does the entire learning ecosystem need to change to support alternative providers and the future of work? A new breed of learning providers is emerging that emphasise learning by practice and mentorship. Systematic changes are necessary to embedding these successful companies on a wider scale.

The key messages from the report to every player in the system are that the new student consumer is king and standing still is not an option. Embracing the new opportunities set out here may be the only way to avoid the avalanche that is coming.

THE STARTING POINT

THE STARTING POINT IS A SNOW-COVERED MOUNTAINSIDE THAT LOOKS SOLID.

Nothing looked more impervious to revolutionary change than Brezhnev's Soviet Union in 1980, yet just over a decade later it was gone. The hegemony of the Catholic Church in Ireland looked unshakable in 1990, but two decades later it was gone. Lehman Brothers seemed a good option for top graduates in 2007. Just a year later, it too was gone.

Norman Davies, the esteemed and often controversial historian, was interviewed recently in the FT, and explained historical change this way:

> 'Historical change is like an avalanche. The starting point is a snow-covered mountainside that looks solid. All changes take place under the surface and are rather invisible. But something is coming. What is impossible is to say when.'[1]

In the Soviet Union, in the Catholic Church in Ireland and in Lehman Brothers, it is possible, with hindsight, to see the harbingers of disaster ahead. There were even people at the time – in all three cases – pointing out problems and questioning strategy and direction, but they weren't heard.

Right now, nothing looks more solid, more like that snow-covered mountainside, than the traditional university. Look at the classical architecture, the Doric columns on the campuses of Yale or Harvard, or the even older college buildings in Oxford or Cambridge. Look at the building boom in universities across the world, with the spectacular new laboratories, libraries and living accommodation constructed in the past two decades. Look at the data on the extraordinary expansion of research in the past 30 years as governments and businesses have understood its importance to future economic growth. Look at the vast expansion of undergraduate and graduate numbers over the same period in the already-developed world (when Michael was an undergraduate, 14 per cent of the cohort went to university in England; now it is close to 50 per cent, and England is by no means unusual). Look at the academic output – much (but not all) of it high quality.

1 Davies 2012

Of course, this rise and rise of the university has posed problems, particularly in finding the means to share the cost burden of expanding student numbers, but it would be easy to conclude that right now we have seen the realisation, the full flowering, of the 20th century concept of the university. Indeed, the rise of universities in the developing world, often based on this western paradigm, is the ultimate endorsement – imitation is, after all, the sincerest form of flattery.

The mountainside looks solid indeed, but there are changes 'under the surface'. They are 'rather invisible', but they are unmistakable. An avalanche is coming. It's hard, of course, to say exactly when. It may be sooner than we think. Certainly there is no better time than now to seek to understand what lies ahead for higher education – and to prepare.

1. UNDER THE SURFACE

A combination of factors is likely to challenge the 20th-century university paradigm and shake it to the core. Indeed, the avalanche might sweep it away altogether. Consider the following factors.

1. The global economy is changing

The combination of globalisation and technology is transforming the way the global economy works. Supply chains are being transformed. The ubiquity of knowledge and the close-to-zero cost of sharing it, create what Thomas L Friedman called 'the flat world', and the pace of innovation is accelerating. We've seen extraordinary change in the past two decades but, as the old song puts it, 'You ain't seen nothing yet'. Already, economic power is shifting east – Pacific Asia's contribution to global GDP has risen from 9.1 per cent to 22.8 per cent over the past 50 years.[2] Already, the internet has changed every line of business – even stonemasons in Britain buy their stone online from India to stay competitive. Already, physical products such as airline engines are sold not as one-off products but as services – functioning engines constantly maintained for 15 years. Already big data means that businesses and customers can compare, refine and improve products on an almost-daily basis. But the revolution ahead will be more dramatic still.

We've seen with our own eyes a violin, with perfect pitch, that was 3D printed at Exeter University; a wallet at the MIT Media Lab that knows how much money you have in your bank account and gets progressively harder to open the more you spend. Wearable computing, such as Google Glasses and pulse monitoring watches, is already here. Three states in the US – California, Nevada and Florida, if you want to avoid them – have already made driverless cars legal. (Cabs might soon get a whole lot cheaper!) We haven't even mentioned the biotech revolution that is happening in parallel.

As we argued in *Oceans of Innovation*, the prospects for education systems, at school level and in higher education, will be massively affected by the wider patterns of innovation in the global economy. These systems will have to develop means of effectively innovating themselves. These dramatic changes have two different, but related,

2 Barber, Donnelly and Rizvi 2012: 12

implications for universities. First, as in any other sector, they require a rethink of the business model. A sector which caters largely for young people, a generation that is now connected from birth, might be expected to be under greater pressure than most to change. Second, these changes have altered the nature and pattern of demand for skills and knowledge in the workforce: with every passing year, the demand for well-educated, imaginative, collaborative, confident people who take personal responsibility and will go the extra mile ('creative creators', as Tom Friedman calls them) increases. A few in each class of undergraduates will become the next generation of academics – a noble calling – and be well-prepared by their undergraduate and graduate classes. But what about the vast majority who will need to find something else, who will less and less often be **filling** existing jobs and more and more be **creating** jobs for themselves and others?

At the same time, globalisation is not only bringing diversity to countries' populations and especially to large cities, but also enhancing the number of potential students who 'shop' globally for the best higher education offerings. Just as marketisation has transformed entire sectors in the past three decades, so it is now transforming higher education, not just within countries, but globally. This trend will accelerate as public funding for higher education around the world is reduced and replaced by private funding such as loans or direct payments.

When Saad was choosing a university for himself, his search went across institutions in Pakistan, the US, UK, Canada, Australia and Singapore. The location was not relevant – only the quality of learning, the opportunities offered and the extent of financial aid. In the 21st century, the student consumer is king. In particular, the global economy is steadily increasing the demand for Science, Technology, Engineering and Mathematics (STEM) subjects, and students who are well-grounded by the school system and well-motivated in these fields are an increasingly sought-after resource. Yale now recruits almost 10 per cent of its undergraduate class from overseas – in most cases offering not just scholarships for education but also travel to and from home. Since graduates very often stay and live and work in the city where they graduated, these shifting global patterns of demand for higher education are becoming increasingly significant to the economic success of cities and countries. This adds simultaneously to the perceived importance of universities and to the competition between them. We also know from conversations with government ministers around the world that countries and cities are increasingly concerned about managing their diaspora and encouraging the return of their most sought-after talent.

In public policy, the global competition for the best students, particularly in STEM subjects, often collides with a countervailing tendency – visible in the US, UK, Israel and Australia, for example – towards restrictive immigration policy. Countries where block-headed immigration policy wins out will inevitably discover the baleful economic consequences. Despite foreign nationals creating 450,000 jobs and $52 billion in revenue for America between 1995 and 2005, nearly one-third of employed foreigners want to leave the US due to its immigration policies.[3] Despite graduating from top universities and securing jobs in some of the best American companies, foreign graduates in 2008 had to go through an immigration lottery with a one-in-three chance of being allowed to stay in the country. The other two-thirds were told to leave and took their intellectual capital (and contributions to the economy) elsewhere. More recently, city-states such as Singapore and Hong Kong have been wooing these high-flyers with more easily obtainable visas and seed capital for those who want to start a new business. The EntrePass programme run in Singapore, for example, encourages entrepreneurs by rapidly providing residency and supporting students with ongoing mentorship and incubation.[4] Other nations would be wise to follow this lead.

2. The global economy is suffering

As these transformational shifts occur, the global economy is also dealing with a trauma of the worst crisis in modern times, as the consequences of two decades of irrational exuberance slowly unwind. The problems are all the greater because, during the long boom, the vast majority of the enhanced wealth, particularly in the US, went to a relatively small economic elite, leaving not just the poor but also the middle class struggling to keep up. In the US, the share of households earning middle-class income has declined from 50 per cent in 1970 to 42 per cent in 2010. And the gap in wealth is widening every year – between 1979 and 2007 the top 1 per cent grew their income by 275 per cent compared to just 40 per cent for the middle classes (the 20th-80th percentiles).[5] Additionally, as you can see in figure 1[6], median household income in the US has declined, particularly after the credit crisis. Those who lacked a good education struggled to make progress before the crash; after it, they were brutally exposed. The growth of the emerging economies of Brazil, Russia, India and China – the BRIC economies – and rising standards of education across much of the developing world are obviously major gains for humanity, but they pose a significant additional threat to under-educated youth in the developed world.

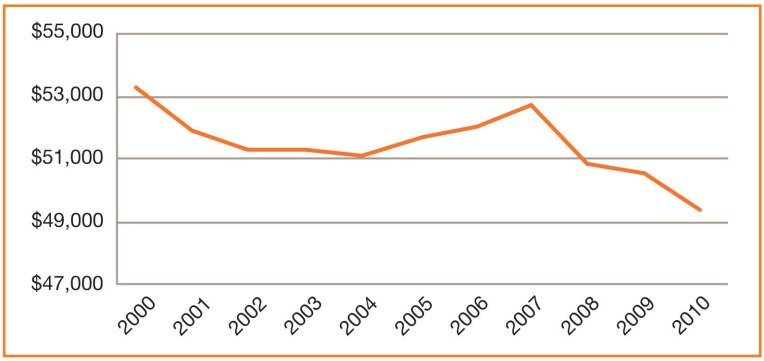
3 Wadhwa et al 2007

4 EntrePass 2012

5 US Congress 2011: 11

6 See Thomson Reuters Datastream 2012: https://forms.thomsonreuters.com/datastream/

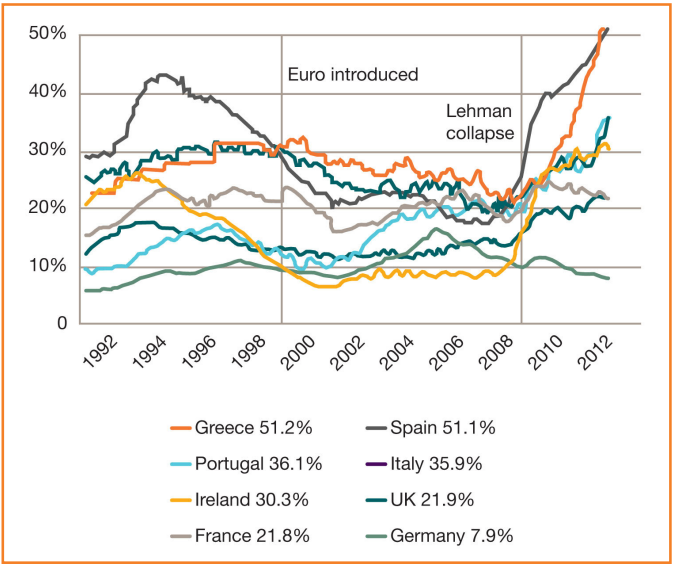
Figure 1
Stagnation of median household incomes shows the increased pressure on the middle class



Source: Economic Policy Institute analysis of US Census Bureau Data. The graph indicates NBER recession.

This has led to frighteningly high levels of youth employment (shown in figure 2) – staggeringly around 50 per cent in Spain, and among African Caribbean young people in the UK – as well as the growing phenomenon of graduate unemployment.

Figure 2
European youth unemployment has increased dramatically in the past three years



Source: Thomson Reuters Datastream, Eurostat Reuters graphic/Scott Barber 5/2/2012

It is easy to dismiss this as a cyclical effect. While this may in part be true, it should not mask the more profound problem of the mismatch between what the emerging global labour market demands and what a university education all-too-often provides. In 2011 in the UK, 25 per cent of those who left university with a degree were unemployed (compared to just 20 per cent among school-leavers) and the US

had almost 300,000 masters degree holders dependent on food stamps. What is striking is that, at exactly the same time as there is high graduate unemployment (and/or underemployment), there are also employers with unfilled vacancies who can't find people with the requisite personal attributes or skills. A recent survey found that almost 45 per cent of employers struggle to find people with the right skills for entry-level positions, and 70 per cent blame this shortfall on lack of adequate training.[7] No wonder some graduates, and some business and political leaders, are beginning to question the value of higher education. A degree might not be all it is cracked up to be. President Lee of South Korea summed up this sentiment crisply as: 'Skip college and go to work'.[8]

3. The cost of higher education is increasing faster than inflation

These questions of value are becoming sharper as the cost of getting a degree rises. This year, the National Center for Education Statistics in the US pointed out:

> 'Between 2000/01 and 2010/11, prices for undergraduate tuition, room and board at public institutions rose 42%, and prices at private, not-for-profit institutions rose 31% ***after adjustment for inflation***.' [our italics]

According to the *Wall Street Journal* on 28 February 2013, total student debt in the US is up 51 per cent from 2008–2012 and now totals nearly $1 trillion. Moreover, 35 per cent of students under 30 with debt are delinquent (90 days or more behind with their payments), compared to just 21 per cent in 2004.[9]

Similar trends are evident in other countries too. The cost pressures on public universities in England were a major reason why the British government created the new student fee regime in 2010 and introduced it in 2012.

As Clayton Christensen and Henry Eyring point out in *The Innovative University*, this remorseless increase in cost is predominantly driven by the 'bigger-and-better tendency'.[10] They may exaggerate in suggesting that, over time, each university is striving to become Harvard, but the basic point is surely undeniable. The problem from the point of view of the undergraduate student is that much of the cost base of a traditional university is irrelevant to their experience and sometimes – as highly-paid expert research professors avoid undergraduate teaching responsibilities, for example – detrimental.

7 Barton 2012
8 Yun 2012
9 Simon and Ensign 2013
10 Christensen and Eyring 2011: 82

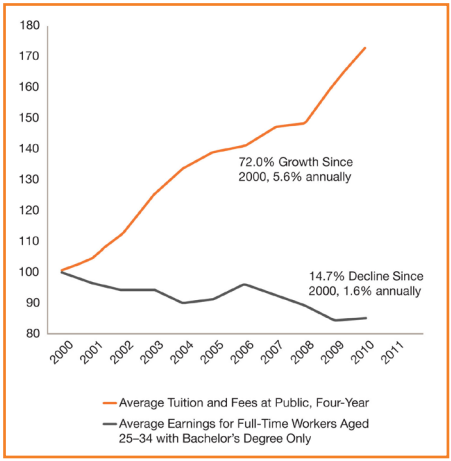
Furthermore, the price charged to students, even once the cost base is accounted for, is not always responsive to the classic relationship of supply and demand. Indeed, thanks to the inadequacy of outcome measures for universities (unlike schools, for example), input measures tend to be seen as proxies for quality. Hence in the various university rankings, the lower the student:teacher ratio, the better the ranking.[11]

In other words, additional cost is assumed to correlate with higher quality. This creates a self-fulfilling prophecy and therefore drives up cost. Moreover, regardless of cost, price is also often seen as an indicator of quality. When the new fee regime was introduced in the UK in 2012, for example, many universities chose to set their fees at the maximum of £9,000, not because of any real cost calculation, but because they feared that anything cut-price would be seen as low quality and that they might lose market share or damage their brand, or both. Both real costs and market logic remorselessly drive the price of a degree upwards.

4. Meanwhile, the value of a degree is falling

Achieving a degree, measured in lifetime earnings, has significantly more value than completing high school, but it is not clear that this will continue for all time and all degrees. As figure 3 shows, the average earnings for US students with a bachelors degree fell 14.7 per cent between 2000 and 2012 despite a 72 per cent increase in cost.[12] In the UK, while graduates are less likely to be unemployed and the graduate premium, according to London Economics is holding up, much depends on the nature of the degree and employers often question the skills a degree provides.[13]

Figure 3
The declining value for money of a college degree



Source: College Board, U.S. Department of Education, Census Bureau, and Citi Research. Tuition and earnings were weighted in 2010 dollars; tuition and fees were enrolment-weighted.

11 Baty 2011

12 See http://static1.businessinsider.com/image/50b62f7769bedd754700000a-522-476/student-tuition-earnings.jpg

13 London Economics 2013

To some extent, this is the effect of supply and demand. The number of graduates in the world is increasing rapidly, partly due to the growing proportion of each age group going to university in developed countries, but much more due to exponential growth in the numbers going to university in emerging markets. By 2020, China alone will account for 29 per cent of all the university graduates in the world aged 25–34. In absolute numbers, that will mean there will be as many Chinese graduates in that age group as in the entire US labour force.[14]

To add to the questions, there is also strong evidence of grade inflation, with the number of graduates gaining first class honours in the UK having more than doubled in the past decade. In just four years, the number has increased by 45 per cent.[15] Even accepting some overall improvements in the school system and university teaching, these numbers are surprising and suggest that top honours are indeed being devalued.

Combine these trends with the changing demands of the global labour market referred to earlier, and the questions about the likely value of a traditional degree seem at the very least worth asking. Whatever the answers, the fact that these questions are being asked at all adds to the pressure and may ultimately become another self-fulfilling prophecy. Moreover, when the value of a degree is broken down by subject and institution, it is already evident that some of them, while possibly intrinsically valuable to an individual, are in economic terms barely worth the paper they are written on. According to the *Chronicle of Higher Education* on 4 March 2013, the Boeing Company in 2008 began to rank colleges based on how well their graduates perform within the corporation; it plans to conduct the same evaluation again this year, says Richard D Stephens, senior vice president for human resources and management.[16]

A recent study in the US showed a significant difference in the risk of unemployment among recent university graduates depending on their major. Those that majored in the liberal arts and non-technical subjects had some of the highest rates of unemployment (around 11 per cent), while those with more technical expertise had significantly lower rates.[17] Another study found similar results in average earnings by major. Engineering had the highest, at $75,000, while psychology, social work and education had the lowest, at $42,000.[18] Reporting a recent survey from the National Association of College Employers, Forbes magazine reinforced this message.[19] Nine of the top 10 majors in terms of earning

14 OECD 2012
15 Harris 2012
16 Fischer 2013
17 Carnevale et al 2012
18 Carnevale et al 2011
19 Casserly 2013

after graduation were in technology – computer engineers could expect to earn an average of $70,400 on graduation, closely followed by chemical engineers at $66,400. The average for the Class of 2012 was $44,455, modestly up from the previous year. The cost of degrees is often the same, but the results in terms of earnings and employment vary significantly.

However, it is worth noting that, even though the value of the degree in absolute terms may be falling, there is still strong evidence that those with undergraduate and postgraduate degrees out-earn their un-credentialed peers. A recent study by the Sutton Trust found that, on average, a masters degree holder in the UK earned £5,500 more per year than someone with a bachelors degree, and in the US the premium is even higher, at $16,500 per year.[20]

The recent Singapore Committee on University Pathways seems to have realised these variations in degree value, and has recommended adding 3,000 university places by 2020 (taking participation to 40 per cent), but insisted that the new places should be on a new 'applied degree pathway which would have a close nexus with the economy and produce students equipped with a strong theoretical foundation and a keen understanding of its real-life applications'.[21]

In any case, the value of a degree compared to other types of learning or experience might also decline. Though the brand value of a degree is still an important factor in securing first jobs, it is rapidly substituted by better proxies of performance such as actual work experience and the brand value of previous employers. In fact, in a recent workshop we facilitated, the CEO of Kelly Services, Carl Camden, said that a degree was no more than a filter for applicants to make it into the resumé pile. He added that his customers, who are employers, can be unwilling to pay for workforce training since the newly-trained might then leave for a higher-paying job elsewhere. Instead, they prefer a job applicant to come with skills. A few years at a top-tier management consulting firm, for example, is often more valuable than an MBA from an elite institution.

5. Content is ubiquitous

One evening recently, Michael and his wife were trying to recall the names of the three Karamazov brothers. Needless to say, within minutes they had resorted to Google – much easier than getting the book itself from the next-door room. What was striking for Michael, though, was the immediate access not just to the names, but also to a series of considered, thoughtful academic commentaries on the book.

This is routine now, of course, but is evidence of the ubiquity of information. Lecturers or a university library no longer have the

20 Lindley and Machin 2013

21 Wong 2012: 3

monopoly (or at least hegemony) they once had. This has implications for teaching and learning which we'll come to later, but here suffice it to say that, at the very least, as content becomes freely available, so the power of the academy is reduced.

There is more, though – the sheer quantity of information has grown exponentially. As Eric Schmidt of Google said recently, 'Every two days we create as much information as we did from the dawn of civilisation up until 2003.'[22] Before Newton went on to discover gravity, he studied and internalised almost everything of significance written on celestial mechanics over the preceding millennium – a feat that is unimaginable today.

Table 1 sets out the remarkable explosion in the number of academic articles published per year over the past three centuries.

Table 1
The growth of information over 300 years

Year	Academic articles published per year
1726	344
1750	699
1800	3,066
1850	13,439
1900	58,916
1950	258,284
2000	1,132,291
2009	1,477,383

Source: Arif Jinha, ***Article 50 million: An estimate of the number of scholarly articles in existence***, Ottawa 2010

We might mention in passing that information is a long way from wisdom, but at this point the key principle is that this information is everywhere, raising issues about its control, about transparency and about synthesis. The trend in the academy towards specialisation, which is at least a century old, continues unabated, but citizens of the world now cry out for synthesis. Within universities, of course, there are wonderful synthesisers (Jared Diamond, Edward O Wilson and Malcolm Gladwell spring to mind), but often the synthesis is now provided by organisations outside universities – thinktanks, public agencies or consultancies, or by those who translate the synthesis into action. In Michael's own field of school reform, for example, he would venture the thought that the most influential reports globally in the past five years have come from the Organisation for Economic Co-operation and Development (OECD), McKinsey or, recently, the Economist Intelligence Unit.

Meanwhile, university-based academics, for reasons that should not be entirely discounted, still attach the highest value to scholarly journal articles, at a time when books and newspapers are being joined by blogs, videos, info-graphics and tweets in a thunderous clamour for people's attention.

22 Siegler 2010

6. The competition is heating up

For the great 20th century universities, overwhelmingly in North America and Europe, there is growing global competition from the developing world; the outstanding universities in Singapore and Hong Kong, for example, and more recently the Indian Institutes of Technology (IITs) and new universities in China. Even Pakistan, with all its challenges has, in the Lahore University of Management Sciences, created a world-class institution within the past 25 years.[23] There are similar successes in Mexico, Chile, Turkey and South Africa.

This is healthy and, given the growth in global population and the expanding demand for higher education, an opportunity as much as a threat. The new competition, the real threat, is not so much the emergence of these new universities specifically designed to imitate the great western universities; it is the emergence of entirely new models of university which are seeking to exploit the radically changed circumstances that are the result of globalisation and the digital revolution.

At its peak in 2010, the University of Phoenix had over 600,000 students worldwide. The largest provider of undergraduate education in the US is the for-profit DeVry University in Illinois, with 70,158 undergraduates, according to a recent *US News* report.[24] Laureate, another for-profit organisation, founded in 1998, has over 60 institutions of higher education in 29 countries in its network, including University of Liverpool in the UK, which has made a bold move into online education.

The reputations of some of the new for-profit providers have been tarnished by high dropout rates (a US government report alleges an average rate of 64 per cent in associate degree programmes) and high spending on non-education related expenses such as marketing and profit-sharing. Perhaps the government, through lax regulation and student loan subsidies, has also contributed to the problem, but either way it would be a mistake to think that the innovation itself will be diminished by these abuses.[25]

There are other models of innovation that threaten disruption too. Take the example of Brigham Young University in Idaho (BYU-Idaho), described at length in Clayton Christensen's riveting account of *The Innovative University*. By introducing a full-year-round operation, changing the learning model (so that students took more responsibility for their learning, and faculty were better prepared and also able to teach in groups) and introducing online courses and degrees, BYU-Idaho took an entirely new direction. Whereas the standard lecture was once 80 per cent of teaching, now it's just 20 per cent. Team teaching with students themselves sharing the load has enabled cross-curricular

23 Lahore University of Management Sciences 2012
24 Lytle 2012
25 Fain 2012

courses on, for example, Pakistan, where none of those involved were experts, but all learned together.[26] This is an example of a university transformation that consciously defies the 'bigger and better' tendency, including boldly giving up their sport and athletics programmes. When they recruited Kim Clark from Harvard Business School to advance their transformation, the sector began to take notice.

The results of these changes are improved quality, increased student numbers and lower cost. Historically in any market, competitors who achieve these outcomes soon overcome complacent incumbents.

If this were not enough, the past two years have seen the rise of the now well-known acronym, the MOOC. MOOC stands for Massive Open Online Course and means courses are free of charge, open to a global audience and built for large numbers of people. Online education and distance learning are not new. The Open University in the UK is an age-old example of learning that has happened away from a university campus, and the Allama Iqbal Open University (AIOU) in Pakistan has been providing courses for the masses via television for decades. What is new is the improved quality of the online experience through technology and design, and also the calibre of the instructors that some MOOCs offer. David Glance, who is leading a partnership between University of Western Australia (UWA) and Stanford to develop a mobile MOOC, sums it up: 'The challenges facing universities are real and certainly the MOOC has been the tipping point. We know we've done this work in some way in the past, but this time it's different – it's at the right place at the right time with an audience cultured to that approach.'[27] In addition to US-founded MOOCs, the UK has responded with FutureLearn, an online university, which builds on the foundations of the Open University but has content from institutions around the UK.

There is some early evidence that the quality of teaching and learning online can be better than face-to-face, not least because all the interactions are explicit and can be analysed and improved upon, rather than taking place behind lecture room doors.[28]

When Maxim Gorky ironically called the second volume of his autobiography *My Universities*, he had in mind that the best preparation for life is in the real world rather than an ivory tower, and that mentorship can be found in the most surprising places. Increasingly there are sources for higher education that are respected and not a university. For example, the Thiel Fellowship, which pays $50,000 a year for two years so that recipients can drop out of university and focus on their ideas and projects, is seen as more competitive than Princeton.[29] Some students

26 Christensen and Eyring 2011: 455
27 David Glance, from personal interview with the authors
28 US Department of Education 2010
29 Kelly 2012

are finding that work-based learning and connecting with mentors operating in their field is more valuable than abstract study. Another potential frontrunner is [E]nstitute, a recent New York start-up with the tagline 'learn by doing'. They admit a select few 18- to 24-year-olds who believe college doesn't support their needs. The institute then pairs these fellows with mentors for a two-year apprenticeship. The fellows receive full room and board in New York City and have access to a pool of 300 mentors.[30]

Critics point out that those programmes are currently only available and funded for the extreme elite, but there are signs that the movement is becoming more mass market. The website notgoingtouni.co.uk provides a one-stop shop where young adults can find apprenticeships without a degree. In the ferment of the moment, it is hard to predict how these and other developments will unfold. Our aim here is to draw attention to the emerging possibilities.

Of course there are still a number of barriers to new entrants, which up until now have, in Norman Davies' words, left the snow-covered mountainside still looking solid. These may hold back the avalanche for a while. For example, the regulatory regimes in many countries still reflect the model of the traditional university and are stacked in favour of incumbents and against newcomers. To take Britain as an example, it remains hard for for-profit providers to gain degree-awarding powers, and the Coalition government is divided on whether this is a good idea. Only in 2010 did the Browne Review – in a recommendation accepted by the government – propose that 'part-time students should be treated the same as full-time students for the costs of learning'.[31] And Britain is relatively progressive. In other countries, including many American states, the regulatory regime remains designed around the traditional, full-time undergraduate student aged 19–24.

The various university rankings are another barrier to innovators who want to enter the echelons of the top global universities. These rankings are an influential factor in a student's choice of a university and carry significant brand value in the sphere of employment and the larger non-academic community. For university administrators, a university rank features heavily in the marketing and publicity of the institution (particularly for mid-market providers). More importantly, it governs how administrators shape the policy and direction of the institutions themselves in a bid to rise up the rankings. Effectively, the small group of people who control these rankings have a phenomenal impact on university policies globally. Table 2 outlines the criteria used to evaluate universities in three prominent university league tables.[32]

30 Smith 2012

31 Browne 2010: 5

32 ARWU 2011, Times Higher Education 2012, QS Top Universities 2013

Table 2
The adverse incentives from university rankings

Times Higher Education	QS Top Universities	ARWU
• Teaching (30%) • Research: volume, income and reputation (30%) • Citations: research influence (30%) • Industry income – innovation (2.5%) • International outlook – staff, students and research (7.5%)	• Academic Peer Review (40%) • Global Employer Review (10%) • Faculty/Student ratio (20%) • Citations per faculty (20%) • International faculty ratio (5%) • International student ratio (5%)	• Education: Alumni winning Nobel Prizes and Fields Medals (10%) • Faculty: Staff winning Nobel Prizes and Fields Medals (20%) • Highly cited researchers in 21 categories (20%) • Research – papers in Nature and Science (20%) • Papers indexed in Science/ Social Science Citation (20%) • Per Capita academic performance (10%)

Source: ARWU, Times Higher Education, QS Top Universities

All three weight research related activity as more than 50 per cent of the criteria for judging a university – despite these factors having minimal impact on a typical undergraduate's experience. In addition, they make it next to impossible for a new provider to rise to prominence without massive in funding over many decades. This is at odds with the today's world, where many of the most valuable and influential corporations are less than 20 years old.

The final barrier to new entrants is the sheer power of the incumbents. In this market, perhaps more than any other, history counts – a degree from Oxford, Cambridge or Harvard counts in part because it always has. Jonathan Cole's magisterial account of *The Great American University* points out that, with the exception of Stanford, all the current great American universities were already great before World War II. Katelyn would add Duke as a second exception. The incumbents have other advantages too, not least endowments, famous alumni and active alumni committed to ensuring that their alma mater's reputation – and by implication their own – remains intact.

Surely, though, it would be complacent to believe that these barriers can hold back the avalanche indefinitely. The forces of globalisation and technology, the complex and challenging circumstances of the transformed global economy and the simple but inexorable calculation for individuals of cost and benefit suggest that, while we may not know exactly when it will happen, in Norman Davies' terms, 'something is coming'. The question is, what?

2. THE COMPONENTS OF THE SUCCESSFUL 20TH-CENTURY UNIVERSITY

> 'From the day Jane and I entered graduate school in 1970, Yale has been our life. Since I joined the faculty in 1974, my efforts – as teacher, scholar and President – have been rewarded in superabundance. As President, I have had the strong and enabling support of devoted faculty, staff, students, alumni, trustees, and friends but as my twentieth anniversary approaches, I recognize that this is a natural time for the transition.
>
> 'We stand between the realization of many important institutional goals and another round of major initiatives. We have successfully completed the Yale Tomorrow campaign, renovated all twelve residential colleges, reduced our budget in the wake of the financial crisis, secured the funding to construct the new School of Management facility, achieved critical mass on the West Campus, and ensured the successful launch of Yale-NUS College by recruiting outstanding leadership and the first cohort of faculty, and breaking ground on a new campus. Before us lie decisions about when to proceed with such projects as constructing the Yale Biology Building, facilities for science teaching, a new home for the School of Drama, and two new residential colleges, as well as relocating the Hall of Graduate Studies and Hendrie Hall.'

This extract from a farewell message written in 2012 by the retiring president of Yale, Rick Levin – a president acknowledged to have been an outstanding success and credited with the internationalisation of the university – reveals a fascinating truth about the traditional 20th century university, which is this: above all, it is a place, a collection of buildings. In a letter reflecting on 20 years of leading one of the world's top universities, Levin highlights a tremendous series of building projects; not once does he refer to a specific academic outcome, research study or impact on the world. His letter is an eloquent statement not just of priorities but of permanence. Academics come and go, but bricks and mortar stay put. Yale, at any rate, does not appear to see an avalanche coming. Or if it does, it does not feel threatened by it.

Given that the world's great universities have an impressive century behind them and in some cases several centuries (Yale, for example,

was founded in 1701), an assumption of permanence can hardly be said to lack foundation. As Christensen and Eyring point out:

> '… the identity of a university can be found in the structure of departments and in the relationship among faculty and administrators. It is written into course catalogs, into standards for admitting students and promoting professors, and into strategies for raising funds and recruiting athletes. It can be seen in the campus buildings and grounds. These institutional characteristics remain the same even as individual people come and go.'[33]

They might have added that these features combine with other elements – a history, famous former scholars and academics, for example – to create brands which are among the most powerful in the world. The names 'Harvard' or 'Oxford' instantly provoke images of academic excellence over centuries.

These characteristics are deeply embedded in the institution. As Christensen and Eyring explain:

> 'There is evolution in the university … [but] only in thoughtful response to significant needs and opportunities. Entrepreneurism occurs within fixed bounds; there is rarely a revolution of the type so often heralded in business or politics. This steadiness is a major source of universities' value to a fickle, fad-prone society.'[34]

Furthermore, such is the dominance of the leading universities that others seek to emulate them. Christensen and Eyring again:

> 'With rare institutional exceptions, quantity and quality in the academy continue to grow. Courses become more numerous and more specialised. New degree programs are created. More qualified faculty are sought, as is entry into more prestigious athletic conferences. New buildings are added and older ones upgraded.'[35]

As we have seen, Christensen and Eyring describe this as the 'bigger and better' tendency and suggest that the vast majority of universities in the US are, from however distant a baseline, seeking to become Harvard. Just as in development economics people describe the goal as 'Getting to Denmark', so for universities the goal is 'Getting to Harvard'. As they point out, the Carnegie classification of universities 'supercharges' this tendency, in effect setting for each institution the objective of climbing up the rungs of the Carnegie ladder.[36] Universities

33 Christensen and Eyring 2011: 77
34 ibid: 78
35 ibid: 79
36 ibid: 79

have raised funds for Medical Schools, then Business Schools, for example, as these confer prestige.

Christensen and Eyring's analysis is focused on the US, but similar tendencies are apparent elsewhere. For example, after England's binary system (which separated polytechnics from universities) was ended in the early 1990s, the former polytechnics, without exception, changed their name to 'university' and set off along the 'bigger and better' pathway. Michael wondered then, and wonders even more strongly now, whether some of them would have been more successful in the long run if they had created a distinctive modern polytechnic. The former polytechnics that are considered to have done well are those that have climbed the university rankings and – like Nottingham Trent or Oxford Brookes – broken into key research fields.

It is worth taking time here to make explicit the characteristics of the classic 20th century university, partly because they are so obvious that they are taken for granted, and partly because, as we shall see, it is this mix of elements that is threatened by the coming avalanche.

Outputs

There are two essential outputs of a classic university: research and degrees (though it should be pointed out that it is perfectly plausible to do one without the other). Though common perception is that universities are institutions of learning (which hence award degrees) first, and research institutions after – in reality the converse is true. Increasingly, teaching in a university is seen as a necessary, laborious task to generate revenues for research. The quantity and quality of research has grown immensely. Given the increasing importance of science and technology both to modern governments and to business, both have invested ever-greater sums in research. In 2006 alone, 640 American universities spent a collective $47.8 billion on research and development, a 45 per cent increase over the preceding five years.[37]

Meanwhile, the 'bigger and better' tendency has also led to the expansion of research in the humanities and in economic and social sciences. From this research, a few academics become globally known, at least within their field; another tranche make respectable careers; and others still are penning vast numbers of unread academic articles in the (often vain) hope of promotion. Without a doubt, in this respect, 20th century universities have added immensely to the sum of human knowledge and understanding, including making some of the greatest scientific breakthroughs of all time – the identification of DNA by Crick and Watson, for example. It also should be noted that universities play an important role in promoting intellectual freedom and in conducting autonomous, non-biased research away from market and government interests.

37 National Science Foundation 2006: 1

The other major output is the degree and, by design, degrees are traditionally related to research because their purpose is to train the academics of the future. Moreover, the theory at least is that students will be taught by the leading thinkers in their field, and that much of the excitement of an undergraduate or graduate degree is this contact with the faculty. In practice this often falls short, with overcrowded seminars, remote lectures and graduate students standing in for the academic leaders whose priority – driven by motivation that is partly intrinsic and partly extrinsic (university reputation and rankings, for example) – is generally research. Moreover, for the majority of students who do not plan an academic career, the curriculum can sometimes seem esoteric or irrelevant.

For many students it is the degree itself rather than the teaching and learning that really matters. A degree has currency in the labour market and while, as we have seen in some cases, its value may be falling, it is nevertheless a passport to a range of professional opportunities denied to those without one. Not all degrees are equal, of course, and the university brand remains potent. If your degree is from one of the top universities, its value is greatly enhanced.

Beyond undergraduate degrees there has also been a vast expansion of higher degrees – masters, MBA and PhDs. In the year 1900, there were only 300 holders of PhDs in the entire US.[38] In 2007, there were over 45,000 research doctorates awarded by US institutions.[39] In some professions – teaching, for example – which at mid-20th century did not require a university degree, an undergraduate degree is now prerequisite, and increasingly a masters is seen as an important asset if not, generally speaking, a requirement for career progression and advancement.

We can add a third university output which has become increasingly important in recent decades: the role of universities in enhancing the economic prospects of a city or region. The relationship of Silicon Valley to Stanford is well documented, as is the relationship between Harvard, Massachusetts Institute of Technology (MIT) and Boston. A Kauffman Foundation study found that MIT alumni companies have estimated annual world sales of $2 trillion, of which $164 billion comes from companies located within Massachusetts, representing 26 per cent of the sales of all companies in the state.[40] It also found that many of these companies would not have been located in Massachusetts had it not been for MIT, since less than 10 per cent of the student body is from Massachusetts, but 31 per cent of all MIT alumni stay in the local area.[41]

38 Cole 2009: 30

39 Survey of Earned Doctorates (SED) Fact Sheet 2007: http://www.faculty.harvard.edu/sites/default/files/downloads/3.2.3%20SED%20Fact%20Sheet.pdf

40 Roberts and Eesley 2009

41 MIT News 2009

In both cases, a virtuous circle is established of university research connected to start-up companies or major industries, which attracts more business, leading to investment in the city itself, making it a more desirable place to live and therefore enabling the universities to attract faculty for lifestyle as well as academic reasons. Well beyond the shores of the US, other places – Toronto, Manchester, Moscow, Hong Kong and Melbourne, for example – are seeking to create the conditions in which these happy circumstances arise.

These benefits have only emerged so clearly in the recent past, and are identified in the outstanding work of Richard Florida at the University of Toronto, who attributes the success of cities to 'talent, technology and tolerance', a mix which makes the presence of a good university all but essential.[42] Ed Glaeser from Harvard, whose work is similarly impressive, points to 'human capital, connection and competition', a not dissimilar list. As he points out, those developing a city often think of infrastructure alone instead of seeing a city as 'a mass of interconnected humanity'.[43] Again, the significance of a university in this mix is plain. In the 21st century, this particular contribution of a university may take on ever-greater significance because the traditional outputs, as we shall see, face growing competition from outside the sector. Moreover, it requires faculty, students and all the facilities such as theatre and art centres, to be physically located. It may therefore become a key element of the salvation of many traditional universities.

People

As we have seen, their leaders often think of universities as a number of buildings, sometimes on a campus. Instead, the truth is that most of all, as John Dos Passos said of the US, a university is 'the speech of people'.[44]

Traditionally, there are three categories of people at a university: those involved in governance and services, the faculty and the students. The sheer growth of many universities means they are often very large, the size of a small town. Ohio State University in Columbus, for example, has 46,000 undergraduates. In many cities, the university is the single largest employer and a significant influence on the area. According to Sir Steve Smith, the vice chancellor, international students at Exeter University in the UK (4,000 out of a total of 18,000) support 3,240 jobs in the local economy, highly significant in a city of just over 100,000 people.

Those involved in governance may be the fewest in number, but their role is critical, not just in ensuring the finances are in a good state, but also in securing the academic freedom on which success ultimately

42 Florida 2012
43 Glaeser 2011
44 Dos Passos 1966

depends. The administration and service functions – staffed increasingly by top professionals in specialist fields – make up the engine that keeps the vast, complex organisation running smoothly. These range from the fundraising and alumni organisations that fuel the growth of the university to the technology, facilities and maintenance staff. The professionalisation of university administration, in fact, is one of the unsung but important developments of the post-war decades as universities have become big businesses, accountable and transparent to their funders, whether they are government, business, foundations or indeed, increasingly, students. Indeed, these professional staff are often as critical to revenue generation as academic staff in, for example, winning research grants or recruiting top talent.

Meanwhile, the faculty lead and undertake the research and (sometimes) the teaching, the two activities which drive the key outputs. The relationship between faculty and the organisation itself is fundamentally tense, in a way that is not true of other organisations of intellectual merit. Consultancies, for example, create incentives in which individual consultants are driven by organisational goals. Universities cannot (and should not) do the same.

To take one subject as an example, for a historian, credibility and success come in part from progress within the organisation, but at least as much – and often more – from their reputation among their peers, other historians in the same field at other universities, for example, or even the public. With the rise of the media age, some historians have become major public figures, popular intellectuals who become brands in themselves. AJP Taylor, a great historian of post-war generation, might be considered the first British example, with Simon Schama and Niall Ferguson his contemporary successors. A few of these scholars have become so successful that they can set their own terms and take their brand and reputation to the highest bidder just as top sportsmen can. This tendency is apparent across almost all subjects of study. In fact, this phenomenon doesn't necessarily require an academic post. We have seen the rise of gurus such as Seth Godin who have no formal postgraduate qualification (other than an MBA) yet are highly influential in the world of ideas. We think of this as the Ronaldo Effect, named after the brilliant (though not always loved) Portuguese footballer whose talent is such that he can pick for himself which top club to play for.

These scholars are a far cry from the run-of-the-mill faculty making their (often good) living from a combination of teaching, research and consultancy. While the stars may attract the students, these are the people who actually teach them. Given the primacy of research in university reputation and ranking, faculty are normally selected on the basis of their research output with the teaching role assumed almost, but not quite, as an afterthought. It is PhD students – the potential future academics, and often current research collaborators – who are the most

prized, while undergraduates are too often seen as a necessary drudge that, with promotion, perhaps one can give up.

Last but not least, there are the students, whose dramatic growth in numbers over the past few decades we have already noted. Traditionally these students have been 18–22-year-olds coming straight from K-12 school programmes. The demographics of this group are now changing – students increasingly enter college at an older age and complete their degrees over a longer period. In fact, in the US, the traditional undergraduate age of 18–22 is now in the minority.[45]

Competition for the best students drives not only the selection process and the appointment of faculty, but also the facilities – living accommodation, sports facilities, and so on. Given that many students are more interested in a degree and the experience than in the teaching and learning itself, it is not surprising that these wider aspects of the so-called student experience are given high priority. Note in president Levin's farewell letter the attention to the renovation of 12 residential colleges and the plans for two new ones.

Furthermore, there has been a global trend over recent decades to require students to pay more themselves for their degrees, either up front or more commonly through loans, paid back later by a variety of means. The Browne Review – *The Independent Review of Higher Education Funding and Student Finance in England* – made the case in a way that represents this global trend.

> 'A degree is a benefit both to the holder … and to the nation … Getting the balance of funding appropriate to reflect these benefits is essential if funding is to be sustainable. Our recommendations place more of the burden of funding on graduates, but they contribute only when they can afford to repay the costs financed.'[46]

However, again reflecting a global trend, the Browne Review also encouraged student choice, thus putting the onus on the universities themselves: 'Institutions will have to persuade students that the charges they put on their courses represent value for money'.[47]

One consequence of this trend is that students across the world have become customers who, especially the most demanding among them, exert a growing influence at universities. Some countries, such as England, even have student surveys which provide comparative data on a range of aspects of university life, from teaching and library facilities to accommodation and nightlife. With the rise of social media, universities everywhere face intensifying consumer pressure, which is a largely

45 Hess 2011
46 Browne 2010: 2
47 ibid: 25

positive trend. For universities now – as in other sectors of the economy – this raises the question of which market niche or niches to pursue. It may turn out to be impossible to please all of the students all of the time.

The programme

The people of the university interact around a programme which represents the purpose of a university – to extend human knowledge and understanding and to pass it on to the next generation. Hence research and degrees are the major outputs.

The curriculum of these programmes is traditionally set around three or four years of study, composed of courses decided by the leading academics in departments. Given that it is much easier to start a course than to close one down, and that increasing specialisation has been such a feature of the past half-century, it is not surprising that the curriculum, both at undergraduate and graduate levels, is often a complex array of different, largely unconnected courses which can be combined in different ways to achieve the necessary credit for a degree.

With the rapidly changing world and the pace of new developments in industry, a concentrated four-year curriculum may find itself on the path to obsolescence. Individuals now need to continuously update their skills to stay relevant to the changing market conditions. To quote Mark Pegrum, Associate Professor at UWA:

> 'The days of going to college for four years and working afterwards is changing. Students now have jobs before college or in parallel to college. They therefore have a different perspective on education than the traditional cohort of 20 years ago.'[48]

The content of the courses is imparted to the students in a variety of ways – lectures, seminars and (occasionally) tutorials, combined with set reading. It is also assessed in a number of ways – essays, homework, problem sets, end-of-course or end-of-degree exams, practicals (in some subjects) and sometimes viva voce. Technology and globalisation make it possible to redesign every single aspect of teaching, learning and assessment, as we'll see later.

A crucial part of the definition of the university is that it has degree-awarding powers, a power given by the state. Responsibility for the programme that leads to a degree rests with the academic staff and is often hard for the administration to control. More importantly still, it is this power that establishes the market position of a university. A consultancy may provide better business training than a business school but, for the moment, it cannot confer a degree.

The quality of teaching varies enormously in spite of efforts at university level (for example, during Lawrence Summers' period as president of

48 Pegrum 2012

Harvard) or national level as in England over recent decades. Given that tenure, promotion and academic reputation tend still to be driven largely by research considerations, these efforts have had incremental benefit at best. Moreover, the spread of new communications technologies and social media has raised fundamental questions about both content and its delivery. For decades, students who had 'read the book' could often anticipate what would be in 'the lecture'. When lectures can now so easily and cheaply be recorded and downloaded, the value of the live performance becomes more questionable still. Students recognise this and the result is the proliferation of viral videos that challenge the status of the lecture.

The experience

Another vital part of a university education is the experience: the experience of meeting fellow students, of being (potentially) inspired by new ideas and/or leading academics, the opportunity to socialise with a diverse slice of humanity in an educational setting, to lead an organisation, play sport, engage in drama or politics or 101 other possible activities, and of course to make friends.

The classic 20th-century university has placed great emphasis on this, from as long ago as Abbot Lawrence Lowell's presidency of Harvard, when he stressed in his inaugural address the importance of students being 'constantly thrown together' as a vital element of a liberal education.[49] All the evidence suggests that these broader experiences are indeed highly valued by the typical undergraduate student and, while for a few they become a complete distraction, for many they are an essential element of the value of going to university. For students today, perhaps always, the learning outside a classroom is often more meaningful than that inside.

There are also more structured experiences which more or less relate to the programme itself, such as study abroad and/or work experience and internships. In some courses such as those on start-ups at Stanford, where students are in fact starting up companies, there is evidence of a genuine combination of the theoretical and the applied as, of course, is the case in the prestigious vocational courses such as medicine. Another example is DukeEngage, a ground-breaking programme at Duke University that gives students an immersive summer experience in the US or abroad. The students take pre- and post-trip modules and the course is focused on real output and results at the placement. Since its start in 2007, 2,000 students have been through the programme.[50] Similarly, the Yale International Summer Award supports students who spend a summer either working or studying outside the US, in its bid to make every graduate a global citizen.

49 Christensen and Eyring 2011: 160

50 See http://dukeengage.duke.edu/

While the programme in most universities has been incrementally refined over recent decades, if most undergraduates of one or even two generations ago returned, they would not feel out of place, though they would probably complain that students these days expect a degree of comfort that was unthinkable 'in our day' when spartan conditions were part of the experience.

The familiar features of a university (as we have described in the past few pages) are summarised in table 3.

Table 3 Components of a traditional university

Outputs	
1. Research	• Journal publications, reports, citations and patents
2. Degrees	• Verification of time spent at institution and exams passed • Brand value
3. City prosperity	• Economic and social development of city and/or region
People	
4. Faculty	• Professors and other faculty
5. Students	• Full-time and part-time students, often between the ages of 18 and 22
6. Governance and administration	• University leadership and board • Admissions, fundraising, alumni services, maintenance and facilities
Programme	
7. Curriculum	• Individual subject-based courses adding up to a three- or four-year programme • Course content and syllabus prepared by faculty • Textbooks and reading materials
8. Teaching and learning -	• Lectures, tutorials, seminars
9. Assessment	• Exams within and at the end of courses • Dissertations at the end of a programme
10. Experience	• Student organisations • Co-curricular activities (such as debating, research competitions) • Extracurricular (drama, sports) • Work experience (internships, volunteering)

We have undertaken the task of going through these components for one reason only – to show that (almost, but not quite) all of these elements of the traditional university are threatened by the coming avalanche. In Clayton Christensen's terms, universities are ripe for disruption.

3. UNBUNDLING, OR THE NEW COMPETITION

In his deeply reflective book, *The Old Ways*, Robert MacFarlane quotes a master sea-captain talking about learning from watching the rolling surface of the sea: 'You need to look for disturbances,' he says, 'be alert to unforeseen interactions.'[51] This is good advice for those who lead universities in the 21st century. We can now see the disturbances on the surface of the water.

It is in the nature of markets in periods of transformation that successful enterprises find themselves competing not just with traditional rivals in their own market, but with entirely new kinds of competitors – as, for example, early 19th century canal owners found when railways developed, or traditional post offices have found with the advent of email and other forms of instant communication.

This change in competition is beginning to happen in the universities market. First came globalisation: the global competition for research funding and the most talented students, especially as foreign students became a major source of revenue not just for individual universities but for countries as a whole. This pitted Oxford, for example, not just against Cambridge, but also against the Ivy League and, again for example, Durham and Edinburgh against Amsterdam and Uppsala, not to mention Melbourne and Singapore.

Globalisation will continue to gather pace, but what we've seen recently, as in other markets, is the growing impact of technology, which threatens many components of the traditional university. As we shall see too, this new competition is not necessarily only at the level of the whole institution, it is also competition at the level of each individual component. When this happens, the unbundling of the existing institutions becomes possible, likely or even necessary. Other means of grouping the various components become more attractive to consumers and/or more economical and efficient. This process of unbundling and then re-bundling in a variety of ways raises fundamental questions for the traditional university. We can consider each of our 10 components in turn.

51 MacFarlane 2012: 129

1. Research

University research has grown, is still growing and will remain a key output of universities, at least the best ones. In science, engineering, and medicine, where a good deal of the funding is available, the costs of undertaking research are growing and the investment required in the latest equipment is now such that only universities with large scale can compete. Only universities with real research power (quality times volume equals power) have a future in these fields. Those that don't will either have to find partners or step aside. Indeed, almost all the most highly-cited research these days is the product of international partnerships rather than single universities. In other words, as Steve Smith put it in private communication with us, 'universities can only be truly global in impact if they are global in their research partnerships.'

There is a case to be made for research completely removed from commercial influences and short-term gain – research that contributes to the advancement of humanity without any immediate prospect of return on investment. However, this forms only a subset of a university's research activities, and is shrinking due to constraints of budget and increased dependence on commercial partnerships.

Other players in the research field are gaining in influence and are delivering results sometimes more cost-effectively. These include private laboratories such as Craig Venter's Institute for Genomic Research in Maryland, large businesses with major research programmes such as Pfizer and Merck, as well as foundations and trusts such as Wellcome. The Large Hadron Collider, for example, which is stretching the boundaries of physics more than any physics department at a single university, is run not by any university but by the European Organization for Nuclear Research (CERN).

In the social science area, competition from outside the academy is growing too, from thinktanks, consultancies and major institutions such as Brookings. McKinsey & Company has invested heavily in the McKinsey Global Institute, which releases top-tier, frequently-cited analysis on social issues. The Centre for American Progress plays a thinktank role, as does the Thomas Fordham Foundation, while the Economist Intelligence Unit repeatedly produces ground-breaking and practically-applicable research on a global scale.

Increasingly, in all these areas, research involves universities building partnerships both with other universities and with these emerging players. For example, Stanford has incubated the now prestigious Hoover Institution, which attracts top names and scholars outside the traditional university system. For university leaders, the choices of which strategic partnerships to build are amongst the most challenging long-term decisions they will make.

The growing competitiveness of the research field, both among universities and between them and these other players, is having the effect of concentrating more and more research funding in fewer and fewer institutions. In the UK, 80 per cent of funding goes to just 25 institutions. Doctoral training is being similarly concentrated. This tendency is global and also applies in China, Australia, Hong Kong and Germany. Thus, for leading universities with a good track record, successful academics and departments in key fields and a strong brand, there is much more opportunity than threat ahead, but even here there are challenges. One of them is that so much of the current innovation and emergent thinking is taking place at the boundaries of disciplines, making traditional departmental silos a barrier to progress. This is one of the major insights which influenced the recent radical redesign of Arizona State University. Similarly, Duke University has blended together departments of English, ethics, neuroscience and computing to create a diverse array of interdisciplinary certificate programmes, including Information Science and Information Studies.

If the leading universities need to think strategically to stay ahead of the research game, more modest universities (whose research output is similarly modest) have serious questions to ask. Why prioritise research if, as a result, students receive education of lower quality?

2. Degrees

The awarding of degrees is perhaps the most fundamental role of a university, yet it too is increasingly open to challenge. In part, this is from private sector competition – new private universities which are influential not just in the US but also in countries such as Brazil. Michael and Katelyn met the founder and chairman of Anhanguera, the largest for-profit distance learning network in Brazil, valued at $1.4 billion and serving hundreds of thousands of students. It was founded with cost and value for money at its core. The founder constantly has his eye on which content, skills and mind-set his customers and learners will need to be successful in today's world. In addition, companies such as Pearson (for whom we, the authors, work) are seeking to be able to award degrees themselves. Pearson owns CTI, a university in South Africa focused on providing education for employment, and has recently launched Pearson College out of its headquarters in London. Pearson College is a partnership with other corporate players such as Cisco, and academic institutions such as Royal Holloway, which awards the formal degree.

There is also an increasing acceptance of non-degree credentials that don't rely on traditional universities. The Financial Times (FT) has an education programme for non-executive directors that arguably offers better networking and a stronger brand name than traditional programmes and, better yet, is specific to the role.

This is not all. There are growing signs that the degree itself may become questioned. Why, for example, take a degree which teaches you about how to start a company when you can be part of an incubator that will support you in actually doing it? In the past five years, incubator and accelerator programmes have become prominent enough for them to have formal rankings. Some of the best, such as Y-Combinator and Techstars are considered to have brand values similar to those of an Ivy League business school. These programmes come with funding to start a company, intense mentorship, and a tapped-in network. For example, Bloomberg Businessweek on 21 February 2013 reports on Tim Draper's 'University of Heroes, where students aged 18-26 discussed the future instead of history, play volleyball with two balls, and learn survival skills that includes suturing and weapons training. Set to open in April [2013], the program is a $7,500 8-week crash course in entrepreneurship.'

While a degree from a top university will be a major asset in getting a first job in one of the world's leading companies, after that it is increasingly the company's name – McKinsey, Goldman Sachs, Google or the FT – on your resumé that determines future progress. This is because, in addition to being highly selective, these companies are great places to learn transferable professional skills. They are also places where mentorship happens and where valuable networks are formed. For example, Michael's collaboration with Katelyn and Saad began at McKinsey, where they were successfully leading the groundwork in Pakistan on his most important and transformative venture. It was due to their demonstrable impact and results that he asked them to become founding members of his team at Pearson. Their degrees were no longer a key measure. It was their actual achievement and reputation in McKinsey that counted. Throw into the mix the emergence of LinkedIn and other professional social networks, and individuals will be able to assemble a profile of actual skills, experience and recommendations for which, in the past, the degree was a proxy.

In *The Start-Up of You*, Hoffman and Casnocha argue that:

> 'What's required now is an entrepreneurial mindset … if you want to seize the new opportunities … you need to think like you are running a start-up: your career … this means you need to be adapting all the time. And if you fail to adapt, no one – not your employer, not the government – is going to catch you when you fall.'[52]

Increasingly this is the way the most talented 20-somethings in the world think. As the options open up and the world turns on its axis, it is possible to imagine that the traditional degree, at both undergraduate and masters level, will lose its lustre, and in fact may come to be seen as a sign of risk-aversion, as other means of recognising and rewarding

52 Hoffman and Casnocha 2012: 206

talent become available. This entrepreneurialism will not just extend to the recognition of experience. As the labour market continues its evolution, everyone will need to act as an entrepreneur because employers will take on fewer employees, opting instead for shorter, project-based contracts. This in turn will mean that individuals most closely associated with output and impact will be at a premium. A current example is ODesk, a marketplace for contractors with 2.5 million registered individuals around the world and around 800,000 jobs posted in the past six months. People are hired based on their recent tangible outputs, which are constantly assessed and openly reviewed by employers. To a prospective employer, hiring a marketing executive based in Bangladesh with a demonstrated portfolio of impact will look increasingly attractive when compared to recruiting from a local, more expensive agency.

Faculty at universities are beginning to realise this as well, as this anonymous staff reaction to a paper by Paul Johnson, vice chancellor at the University of Western Australia (UWA) shows:

> 'I think you're right that the current monopoly universities enjoy over degree granting will erode. We've done a good job to date of convincing Governments that an unregulated sector would somehow be 'dangerous' to the public, and hence in need of oversight and strict barriers to entry. I can't see this lasting. The inherent cross-subsidisation of research out of teaching revenues also makes us vulnerable.'[53]

This shift from depending on the government to focusing on the customer – in this case the student – has played out again and again in other sectors as globalisation and technology have changed the rules of the game. There are other potential competitors that hope to create a record similar to the college degree. One potential disrupter is degreed.com, which seems to have a very early prototype of an online certificate that tracks accomplishment of MOOC courses and projects.[54] The ventures into badging by Mozilla could also have the potential to compete.[55] They have created a standard framework and invited communities and organisations to issue their seal of approval for various skills and tasks. The idea is that the individual could collect these badges and use them as demonstration of skill and worth. Additionally, LinkedIn itself could provide a function where the crowd is able to endorse skills and projects and give references.

These developments could offer more accurate and up-to-date assessments of an individual's qualifications and real skills than a stamp of approval from a prestigious institution. Though awarding the degree

53 UWA Response 2008

54 See http://degreed.com/about

55 See http://openbadges.org/en-US/about.html

continues to be the bastion of a university's appeal, chinks are starting to appear in previously impenetrable armour.

3. City prosperity

Cities around the world are trying to emulate the impact of Stanford on Silicon Valley by playing a more active role in creating the conditions and support structure for driving innovation and economic growth. The East London Tech City, for example, is facilitated by the government and has brought together a consortium of corporations and universities to encourage start-up growth in London. This in turn is supported by new measures (championed by Rohan Silva, the British Prime Minister's innovation adviser) to grant visas to entrepreneurs and tax breaks to those investing in them. In essence, the elements of city prosperity traditionally dependent on the presence of universities are now being owned and generated (potentially more efficiently) by the city itself.

To truly achieve this prosperity, a city will need to invest tremendously to win the global war for human capital and to earn its place as an intellectual gathering-spot. Cities are creative centres with spaces to connect, collaborate and learn. But with urban space at a premium, cities have found that educational and start-up incubators can be key to providing new forums for the meeting of minds. General Assembly, for example, an education start-up that also leases office space for other start-ups, was granted money by New York City to promote its facilities there, and has now expanded to London. Innovation Hub and Tech Hub, also in London, provide similar co-networking spaces.

New York City has embarked on another ambitious project to increase the intellectual capital of the city. Together with Cornell and Technion, a top Israeli university, it plans to establish a cutting-edge university with an emphasis on technology and innovation on Roosevelt Island.

Some of the leading entrepreneurs of our times, including Mark Zuckerberg and Steve Jobs, dropped out of college to move to Silicon Valley. As these hubs become more widespread, greater numbers of entrepreneurial-minded 20-somethings will find the ecosystem of a city itself more beneficial to their aspirations than the campus of a university. Driven by the purpose of city prosperity, technology hubs could be the universities of the future.

4. Faculty

For most of the 20th century (and of course before), being on the faculty of a university meant living and working there, and indeed it was not unusual for universities to require their staff to live within a certain radius of the university. It was a community.

Modern technology throws this up in the air. The faculty can be anywhere, teaching via video-conference or online. Students, not surprisingly, would often prefer to be taught by the world's leading

expert on a topic than by their own professor, however worthy. This tendency is accelerating – it reinforces the Ronaldo Effect, mentioned earlier. Moreover, it is increasing the range of possibilities. It's not just leading academics who can teach anywhere in the world, it is also the world's leading practitioners, from film producers to business people, from politicians to civil servants. Lord David Puttnam, the celebrated film producer of such classics as *Chariots of Fire* and *The Killing Fields*, teaches film ethics in three different universities without leaving his home in Ireland.

A really good example of how this can develop is the Mile End Group, part of the Contemporary History programme at Queen Mary University in London. Situated in Mile End, a place redolent with 20th century British history, academic Jon Davis and journalist John Rentoul, supported by the incomparable contemporary historian, Lord Hennessy, have put together a course on 'New Labour in Power, 1997–2010', in which almost all the leading figures of the New Labour governments, including Tony Blair himself (and Michael), have attended meetings of the Mile End Group and, in relaxed and academic surroundings, been willing to reflect on their successes and failures, moments of inspiration and mistakes. All the seminars are filmed, and each new class of students can download an app which makes all of these contributions available to them. The students can still read the books and debate the issues as at any other university, but what a fantastic set of additional material they have. The value of generic content is falling, but tailored content is highly prized. Here, entrepreneurial academics have leveraged their relationships and their proximity to central London – so the politicians and officials can easily make the journey – to build a unique programme.

They have done something else, too; the leading politicians and officials themselves find the network worthwhile and stay connected to the group. As a result of their innovative thinking, the academics here have created something of value to all the participants, including incidentally their own research programme – a planned book on the New Labour years by Davis and Rentoul is likely to be significantly better informed and nuanced than any rival's could possibly be. In short, these are Tom Friedman's 'creative creators' in an academic setting, demonstrating one way forward for traditional universities. Those who stand and wait, by contrast, may find themselves in the path of the avalanche.

The ubiquity of information and the near-zero cost of storing and transmitting it means that universities no longer own the monopoly over the expression of ideas in courses. EdX has made many of the courses taught by Harvard and MIT academics available for anyone in the world to use. As the more 'famous' professors often teach oversubscribed classes with hundreds of students in a large lecture hall, there is little distinction between being there in person or watching on video. This decreases dependence on senior faculty at many less prestigious

institutions, and challenges their value in the classroom. Kepler, a start-up in Rwanda, pairs free online courses with in-person facilitators to deliver arguably better content at lower cost than any traditional university in the region.

Another key role of faculty, at least potentially, is to provide mentorship to students. Students set on a career in academic research often get this from the faculty, but what about the others? Slowly, universities are emerging with programmes to mentor students. Katelyn benefited tremendously as an undergraduate from an economics programme that was both theory-rich and practitioner-driven. She was accepted into a small class with a professor who had worked as executive director of options trading at Goldman Sachs. This course, called Wall Street Demystified, was co-sponsored by Deutsche Bank and included practical, current knowledge of the Wall Street Journal, analysis of long-term trends, participation in a Morgan Stanley-sponsored university-wide trading game, and personalised feedback. In the end, Katelyn's investment portfolio achieved the highest return: she got a second round interview at Morgan Stanley, won the internship and spent the summer on the trading floor in New York – a transformational experience that set her career on its way. Few other classes could have given her the knowledge, confidence, and self-perception to secure that opportunity.

Unfortunately, access to these types of faculty members will be difficult to provide on a larger scale without considerable cost. Just as their role in city or regional prosperity will become increasingly important for traditional universities, so this capacity to provide expert and rounded mentorship for ambitious students will become vital.

5. Students

Traditionally students have needed to be in the same place as the faculty to facilitate the transfer of knowledge and to foster debate and discussion within the class. Today, just as faculty can be anywhere in the world, so can the students. UNISA in Brazil, for example, provides live streaming lectures from a single professor to students sitting in centres across several cities.

The rise of new technologies such as virtual and augmented reality is making it easier and easier to simulate in-person experiences at distance. Even though Michael's generation (eventually) saw the rise of video-conferencing and has developed a familiarity with technologies such as Skype, current and future learners are growing up with it. To many children today, group videoconferencing comes naturally, as the virtual and the real are a continuum rather than a contrast.

This technology, along with ubiquitous content and instant multiple channels of communication, will be able to deliver the experience of rich interactions in a classroom with one's peers regardless of location.

David Glance at UWA has been researching the pedagogy of MOOCs and states:

> 'People will argue that you don't get the same interaction as in a face-to-face environment. But the vast majority of our students elect never to show up on campus as we record our lectures and don't force participation. In terms of project work – they organize themselves digitally – they set up a Facebook group, meet over Google+ hangouts and Skype, and occasionally in person. This really changes the need for face to face interaction.'

This world is changing dramatically. As university becomes less of a differentiator and everyone is expected to be entrepreneurial, whatever their background, so everyone will need to be active learners, prepared to be dynamic as circumstances change. Reid Hoffman and Ben Casnocha lay out this vision well, but others also understand. Several websites and books have tried to change the mindset of young people. For example, TAOTPR is a website started by a young Singaporean and stands for 'the art of taking personal responsibility'. It is an advocacy site which helps young people learn a new mindset to provide for themselves and establish self-identity though action.[56] Young people are also finding that they can learn a lot from each other. Sandbox Network is a network for innovators under 30. They host local meetings and events for their members based on the notion that they can and should learn significantly from each other.[57]

Universities will need to respond to the changing demands and expectations of present and future potential students because, as Bob Dylan said all those years ago (after dropping out of university), 'the old road is rapidly aging'.

6. Governance and administration

As the core purpose of governance and administration is to guide and support the other elements of a university – their focus, operation and indeed overall purpose has to adapt to the changes in other university components. If the students and professors at a university are dispersed across the globe, why shouldn't the administrators be?

In respect of governance and administration, universities are little different from global companies, which succeed perfectly well with dispersed governance and management. Indeed, for the emerging MOOCs this is inevitable. It is also already the case for the major for-profit institutions. Laureate International Universities, for example, is a network of over 60 institutions across 29 countries. Local governance is supported by central exchange of faculty, curriculum and students across the network.[58]

56 See http://taotpr.com/

57 See http://www.sandbox-network.com/

58 See http://www.laureate.net/AboutLaureate

Even for traditional universities, a global perspective is becoming necessary, especially if they have a significant number of foreign or online students, or campuses abroad. However, strong local connections are necessary for those universities committed to seizing the burgeoning opportunities of collaboration with city and regional authorities.

University administration has been a large challenge for western universities as costs and staff numbers have risen faster than enrolment. A study at the University of Minnesota showed that from 2001 to 2012 the system added over 1,000 administrators, growing more than twice as fast as teacher numbers and almost twice as fast as student enrolment. These administrators consume 24 per cent of the payroll, while employees who teach account for 37 per cent. Over a 10-year period, administrator consumption is up and teacher numbers are down.[59] As noted by a recent Bain report, this is part of a wider trend. The report stated that university governance is usually marked by 'administrative inefficiency demonstrated by an inability to close down old programmes, lack of efficiencies of scale across campuses and misaligned incentives of various departments and programmes to manage costs.'[60] As costs rise and competition intensifies, there will be additional pressure for achieving administrative efficiencies.

7. Curriculum

The curriculum of a university, once a prized possession developed by the faculty members for the students, is increasingly becoming a commodity. MOOCs have opened up access to tried and tested curricula for anyone in the world to use. This is especially pertinent for the more basic courses that define a large part of the undergraduate experience. Though some universities are sceptical of the movement, others are calling MOOCs the 'Napster moment' for higher education.[61]

One teacher's response to a question from the vice-chancellor at the UWA of summarises the change succinctly:

> 'MOOC is a real issue. No responsible university today would let faculty members spend time writing a 'purpose built' textbook for their individual units, given books are already widely and cheaply available. It will get hard to justify letting them work up the lecture content for traditional delivery of Econ 101 or Calculus 101 when it's also available online for free, there are only so many ways the material can be taught, and students are already voting with their feet (attendance at some lectures in the Business School is often below 50% by about week 3 of classes).'[62]

59 Belkin and Thurm 2012
60 Bain Brief 2012
61 Shirky 2012
62 Johnson 2012

Three MOOCs stand out: Coursera, Udacity and EdX. All three are closely linked to prestigious American universities. Coursera started at Stanford and is rapidly growing, with over 200 courses, 30 universities and 1 million registered learners. Coursera has also begun to innovate on the accreditation front, by partnering with the American Council of Education to offer course credit on completion. EdX was started by MIT and Harvard as non-profit to open up their courses globally. Udacity was founded by Sebastian Thrun, an ex-Stanford professor and ex-Googler, and offers courses mostly in the science and computer programming fields, aiming to make money through a job board and referral programme. Both EdX and Udacity will use Pearson VUE's 4,500 exam centres around the world to administer end-of-course exams.[63]

There are also online learning equivalents that are less open – universities that offer courses through an online platform. Our employer, Pearson, has acquired two of these companies – eCollege and EmbanetCompass. EmbanetCompass works with colleges and universities in North America to provide online solutions for programme design, marketing and recruitment, student retention and student services. 2U is a similar company, offering a school-as-a-service model to traditional universities so that they can deliver their curricula using online learning tools.[64] Platforms like this work at an institutional level and could offer the best chance for some traditional universities to continue, but that will depend, among other things, on their ability to reduce costs and pass the savings along to the student in the form of reduced fees.

There are also models which disrupt the notions that universities have the monopoly on developing the curriculum, and professors on teaching a course. LearnRev, a British start-up, provides online courses focused on work-relevant skills such as running a meeting, financial modelling or negotiating. These are developed and taught by practitioners who have mastered them at leading corporations such as McKinsey, Goldman Sachs and Microsoft. The idea here is that learning practice rather than theory is what is needed to be successful in the workplace today, and that the brand name of a leading corporation can be more relevant than that of a leading university.[65]

Traditional universities will have to go beyond developing standardized curricula for basic courses in order to stay relevant. This might involve customising MOOC curricula according to local context, needs and languages. A professor in China, for example, might use the Economics 101 course on EdX to develop a version in Chinese using local case studies. Universities could focus their energies on developing curricula that function in a niche space not addressed by

63 Mary 2012

64 See http://2u.com/

65 See http://learnrev.com/

MOOCs. Also, while the MOOC can provide content, it cannot check easily whether students are developing the wider attributes that will ensure success in the 21st century labour market or society – a good professor can. This customisation and localisation are likely to be vital parts of the salvation of universities that are not a part of the elite.

8. Teaching and learning

With world-class content available anytime for free, the ability of faculty to be present anywhere, and the rise of online learning as an alternative to in-person instruction, we need to reflect on the nature of teaching and learning in a higher education institution. Online learning is here to stay – 68 per cent of chief academic officers believe online courses have same or better quality as face-to-face[66] – and a US Department of Education study concluded that: 'On average, students in online learning conditions performed modestly better than those receiving face to face instruction.'[67] The *Chronicle of Higher Education* suggests that employers are still skeptical about the value of online degrees, but this is likely to change over time.[68]

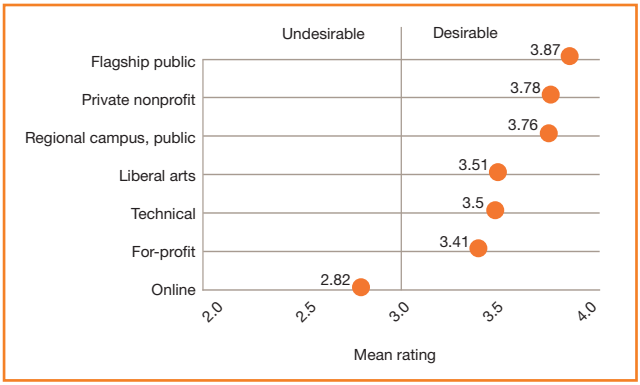


Figure 4
Employers prefer all types of college – except those online

Source: Fischer 2013
Note: Mean rating is determined on a 1-to-5 scale where 1 equals 'a lot less' and 5 equals 'a lot more'.

Moreover, increasingly the student can be an active co-creater of knowledge. The new pedagogy will move far beyond traditional lectures or seminars and technology allows collaboration and co-creation at a distance as well as face-to-face.

Learning no longer needs to follow the traditional model of lectures, followed by homework, followed by assessment. According to Dr Clark Quinn, 'the wiring in our brain has a limit to storing knowledge every day – practice in the real world really helps us retain it.'[69]

66 Allen and Seaman 2010: 14
67 National Education Technology Plan 2010
68 Fischer 2013
69 Quinn 2010

We're starting to see this in practice as well. Western Governors University in the US says on its website's home page, 'You earn your degree based on what you've learned, not how long you've sat in the classroom. We call it competency-based education.' Meanwhile, Professor Daniel Tan leads a programme at Nanyang Technological University in Singapore where 70 per cent of all lectures are recorded for students to review at their leisure. Usage of the lectures is monitored, and sharp spikes are seen right after a class ends and before major exams – reflecting changes in the way students consume content. This is coupled with experimentation with flipped classrooms, with the professors acting as facilitators and activators rather than lecturers. Singapore's National Institute of Education and its inspirational leader, Professor Lee Sing Kong are pushing the boundaries of the flipped classroom idea and then sharing their insights with other universities in Singapore.

Figure 5
The control room at Nanyang Technological University

Another implication is that learning does not have to follow the traditional model of a series of interactions spread across the course of a semester. Students today need skills that can be applied in the real world tomorrow. Innovative start-ups are now emerging to provide these relevant skills where universities are either too slow or too expensive to compete. General Assembly, as an example, provides entrepreneurs with the curriculum they need to make their company successful, delivered through brief lectures.[70] SkillShare, another start-up, allows people to share their expertise, whether it's in cooking or programming, with anyone who is willing to pay a fee for it.[71] These emerging forums potentially provide a much more efficient market for teaching and learning than the university

70 See http://generalassembly.com/
71 See http://www.skillshare.com/

ecosystem – and for many people this might be the best way to improve their lives through learning. Freeformers is an example of experiential learning courses to quickly teach both high school students and senior corporate executives to think like software developers and learn code. Course attendees learn by doing and after a few hours they have built their first programme using multiple API feeds and plate forms.[72]

For traditional universities, a dramatic rethink of how faculty use their time and how they interact with students will be central to future success. Where BYU-Idaho has led, others will find they have to follow. For example, Wharton School of Management at the University of Pennsylvania and Cisco announced in a press release on 25 February 2013 'the learning experience of the future blends life-size visual communication via telepresence with collaboration technologies that significantly enhance the way faculty, students and alumni interact'.

Nor is it just universities. A range of opportunities are arising which use quite different, sometimes intensive, approaches to get students up to what might once have been thought of as university standard. This is how Teach for America and Teach First have successfully prepared teachers in eight weeks or less, rather than a year. Meanwhile, DevBootcamp is a nine-week intensive training programme that produces 'job-ready' software engineers, 90 per cent of whom find jobs within three months of graduating.[73]

9. Assessment

Just as the curriculum and teaching and learning are ready for disruption, so too is assessment. Traditionally, universities have hovered between end-of-course formal exams and either modular assessment or dissertations, or some combination of the three. In some places, especially the PhD, its 'defence' in an oral exam still holds sway.

Meanwhile, in the real world, technology can have a transformational impact. Pilots are assessed through sophisticated computer simulations, for example, not to mention computer games which 'assess' a wide range of attributes including persistence, imagination and collaboration and provide multiple pathways to success as well as instant feedback.

Azerbaijan may not (yet) be a high-profile country, and its leading soccer team, FK Baku, may remain low on name recognition for the moment, but they made history on 22 November 2012 when they appointed 21-year-old Vugar Huseynzade as their manager. He was appointed, in spite of competition from Jean-Pierre Papin, a former France striker with extensive managerial experience, on the basis of his success in the computer game *Football Manager*. 'I've always wanted to work in football and have played Football Manager since 2002,' he said.

72 See http://freeformers.com

73 Staton 2012

Good luck to him! Some will see this as an aberration worthy only of a distant republic, but perhaps, just perhaps, it is a straw in the wind. For certain, the demonstration of success in the virtual world will increasingly be seen as relevant in the real world. Moreover, who is to say that 10 years of success in a computer game is less relevant to this role than if the same young man had just completed a degree in sport science at Loughborough? Then ask the same question about business or finance, both areas in which computer models are fundamental.

The assessment revolution will not just depend on technology though; it will also depend on feedback from the real world. We have seen this already with TopCoder and GitHub for programming talent. What better way to assess a student's knowledge of how to start up a business than to see how they get on in practice? Given low success rates, this need not just be whether they succeed, but also how they respond to failure and what venture capitalists or others they deal with think about them. In England, qualifying as a teacher now involves success in the classroom and comment from practitioners as well as university-based staff. The same is true at Relay Graduate School of Education in America, which has been set up explicitly to break the mould of traditional teacher preparation in the US and to provide teachers for successful charter chains, such as KIPP and Uncommon Schools.

In another example, the University of Wisconsin recently announced a degree that can be achieved on the basis of neither seat time nor credits, but simply by demonstrating competence in a series of tests that can be done online and at home. As the Wall Street Journal points out, they are decoupling the learning from the assessment.[74]

Moreover, there is no reason why these kinds of assessments need to be set or marked by, or even take place in, universities. It is perfectly plausible for specialists in assessment to take on these roles, whether developed by assessment companies such as College Board, Educational Testing Service (ETS) or Pearson or – as with Pearson Vue – at proven assessment centres. Particularly as the labour market becomes globalised, students will want to be sure that their qualification is globally recognised, and while well-known universities can guarantee such recognition, the less well-known might prefer to depend on a global brand. If brands such as G-MAT and GRE work for university entrance, why not for exit? In addition, peer- and self-assessment have shown an 'overwhelming evidence for being as accurate as teacher assessment with a 0.88 correlation at a Princeton Study'.[75] With the right quality assurance mechanisms in place, such assessments could not only substitute formalised assessment, but prove to be more effective by contributing to further learning and sharing of perspectives.

74 Porter 2013
75 Glance 2012

The argument goes further still. Given the gap – sometimes a chasm – between what the labour market demands and universities supply, some employers are taking matters into their own hands. A recent poll in the UK suggests that just 18 per cent of people think that a university education is a good preparation for today's labour market. In response, Wendy Piatt, speaking for the top universities, rejected this perception and said that in fact the education was 'ideal'. If she is right, at the very least she has a major communications challenge on her hands.

Major employers around the world certainly do not see the state of affairs this way. Some of them – Unilever and P&G for example – have developed their own assessments, and many invest heavily in assessment centres. Many more would leap at an assessment process that could guide them to talent that universities have either missed altogether or failed to develop effectively. It has not happened yet, but if – perhaps when – it does, the chasm between universities and the labour market may become unbridgeable.

10. Experience

Increasingly, the experience of a university education can also be provided elsewhere as meet-ups, youth clubs, and learning communities develop. We have seen from apprenticeships mentioned earlier that there can be alternative and sometimes more valuable places to build a network than a university campus. Some of these are now global in nature, such as Sandbox, a selective network for innovative individuals that organises gatherings based on peer learning. Summit, a once prestigious ideas conference based mostly in the US, has acquired land in Colorado to launch a community of thinkers and practitioners. E[nstitute] is a New York City based start-up that helps provide an alternative experience with 'fellows' placed at an early-stage company for two years. The fellows have access to a mentor pool, panel discussions, guest speaker dinners and readings. The students are treated as a cohort and live in a shared townhouse community-building.[76] While these developments tend to focus on the 20- to 30-something cohort, it seems likely that they will trickle down to take in the 18–24 age group too.

Global Citizen Year, an overseas education programme aimed at students finishing high school, provides a year-long experience to learn leadership and global empathy through a series of group programmes, reflective assignments, a homestay and a volunteer placement in a foreign country. Perhaps in the future, programmes such as this will be explicitly expected to form one year of a four-year unbundled course. Similarly, the One World Youth Project connects university classrooms around the world with a unique curriculum of cross-cultural understanding. It is a good example of a low-cost programme that can be built into courses as the need for empathy and cross-cultural

76 Huffington Post 2012

understanding grows. And perhaps the intermural sports of the large colleges in the US could be played within the youth population of a city.

However, in this area, the traditional university still has much going for it compared to competitors. Thus the provision of these experiences, for those students who want them, will remain a source of competitive advantage for some universities.

We freely admit we cannot be sure how the revolution ahead will unfold. This is not uncommon on the brink of radical change. In 1825, one of Britain's leading engineers stated that the idea of a passenger train travelling at over 30 miles per hour was preposterous. Five years later, it happened. We do assert that dramatic change is likely and that, while some incumbents will thrive, either because of their overwhelming strength in the market or because of their strategic insight or good fortune, others will suffer and some will go under.

4. SEIZING THE FUTURE

In this section, we seek to summarise the emerging themes of the paper and then describe some models of the future university after the unbundling and re-bundling has occurred.

1. Relevance is not everything

Much of our argument so far has examined the potential impact of the dramatically changing global economy on the university sector. We believe that impact will be dramatic – but we want to be clear about a key part of the argument. Universities have had, at the heart of their mission for over two centuries now, the pursuit of knowledge for its own sake. Across the globe, students can still study classics, philosophy and medieval history. Universities still employ academics to teach, research and write about these fields, not because they are relevant or practical, but because they are of intrinsic value. When Allan Bloom wrote his despairing account of *The Closing of the American Mind* in 1987, he argued that universities had failed democracy and 'impoverished the souls of today's students'; that the good, the beautiful and the true were sinking in a sea of relativism. In the 25 years since, the themes he raised have been vigorously debated, but the big story is that his despair has proved misplaced. The pursuit of the good, the beautiful and the true has continued. In some fields – historical biography, to take one, archaeology to take another – there have been revivals that Bloom did not foresee and would no doubt have welcomed. Meanwhile, ED Hirsch has popularised cultural literacy and influenced the school curriculum.

Nothing, we argue here, should stand in the way of the study of profound elements of the cultural tradition. We agree with Helen Gardner who quotes CS Lewis in her wonderful tour de force, *In Defence of the Imagination*, that 'we read because we want to see with other eyes, to imagine with other imaginations and feel with other hearts'.[77] Our argument does not imply that these areas of study are doomed, nor because they are not immediately relevant that they should be given lower status or less priority. It does imply that, as with all aspects of study, they will have to change as the world changes – online and blended learning approaches are as relevant to Ancient Greek as they are to modern engineering, for example. It does imply, too, that the

77 Gardner 1988: 50

advocates of these areas of study need to make the case for them not just to government, but to future students and the public.

This should not be hard – we live in an era when future businesspeople and bankers need ethics more than ever; when being taught to think clearly and argue forcefully is as important as ever; and when the ability to distinguish wisdom in the sea of information may be the quality above all that marks an individual out from the crowd. Jonathan Haidt's book, *The Happiness Hypothesis*, which beautifully connects ancient philosophy with modern psychology in a guide to life, is a case in point.

2. Distinctiveness matters

The 20th century saw the rise of the general university. No large or even medium-sized city in the developed world would be without its university, teaching the full range of academic subjects across the arts and sciences. While some of the most elite universities will no doubt be strong enough to continue to do so, for others it may prove more difficult. As they compete for students (and therefore funding), they will need an offer that marks them out from the crowd. Moreover, as students have greater choice and data becomes more transparent, universities will need to demonstrate their quality in whatever roles they choose to play or fields they choose to lead. This may happen at the level of the specific course (as with the Mile End Group at Queen Mary University, London, mentioned above), or it may be at the level of the university (as with Arizona State and its interdisciplinary focus). The distinction may be in subject or theme, or it may be in style or approach – as we've seen, the quality of mentorship, the nature of the student experience and the relationship of a university to its city or region are all areas rich in potential, as are global partnerships and opportunities to study abroad. The Higher School of Economics in Moscow, for example, offers some joint degrees with the London School of Economics, thus making itself distinct in the search for top Russian talent.

Increasingly, we believe university leaders will challenge the university as a whole, and individual departments, to answer the question, 'What's so special about you?'. In other words, universities and departments will need to justify their existence – just ticking over won't be good enough.

This will dramatically affect how universities benchmark themselves and similarly how they are perceived by others. Whereas, 15 years ago, UK universities – to take one example – were, broadly-speaking, thought about in a ranking of 1 to 134, now each is also benchmarked against universities, often in other countries, who have chosen to serve that particular segment of the market. Salvation will come not so much from their position in the national rankings as from their position in the chosen peer group.

3. It's hard to please all of the students all of the time

In the late 1980s, Michael was asked to undertake an independent review of the role and impact of the student union at the Institute of Education in London. Like many student unions at the time, it was dominated by a handful of student activists who were largely in their early and mid-20s. The agenda of meetings (and the music in the bar) reflected that. An analysis of the student body found something quite different – the average student was in her late 30s, taught in school full- or part-time and had children of her own. What she wanted was a student union that would provide a good cafeteria and advocate for teaching quality and for flexibility in the time and location of classes. That was 25 years ago. The trends in this direction across the world have been dramatic – students come in all ages, from all backgrounds, sharing only an aspiration to make progress in their lives and careers through learning.

Universities have become sensitive to these trends – increasingly though they will find it difficult to cater for everyone. They will need instead to find their niche or niches among the potential student groups – the academic elite, the mature, the career-minded, the local, the global and so on.

As students around the world increasingly bear the cost of their studies, they are becoming more discriminating; in response, universities will need to be sharper and clearer about what they offer and to whom. As we said earlier, the student consumer will increasingly be king. This has beneficial consequences, such as a focus on quality, but also raises questions: what if the student consumer demands a degree? Will this incentivise the lowering of standards?

4. Much of the value added won't be content

As content becomes ubiquitous and, in each area, the world's leading universities or authorities become its providers, the content of a course will cease to be a decisive factor. Instead, it will be a matter of what a university and its faculty build around the content – for example, the quality of teaching and mentorship, the nature of facilitated dialogue between students (which could be global), or indeed the type of assessment and the path from university into the labour market. There is tremendous room here for innovation which universities can embark on right away, with limited risk.

5. Close the theory/practice gap

The argument is not that theory and practice should be merged – both are important and both have a place across the university curriculum. Rather the argument is that separation between the two in the way they are delivered can be ended – and both can be taught better. When Professor Michael Fullan coined the phrase 'the learning is the work' he was writing about teachers, but the message is applicable to all sectors of the economy. At BMW now, for example, so much of the building of a car is automated that the current (much smaller) workforce spends

up to half its time on development. Learning and work are becoming inseparable – indeed one could argue that this is precisely what it means to have a knowledge economy or a learning society. It follows that if work is becoming learning, then learning needs to become work – and universities need to become alive to the possibilities.

Certainly top practitioners in business, banking, theatre, film, medicine, law and government can become teachers or visiting professors. This might be – as in the case of Michael's classes at the Higher School of Economics in Moscow – a case of part-time teaching, perhaps from a remote location; it might be a case of recruiting some university faculty from among leading practitioners; but it could also be a case of recording a series of lectures in advance of classes or, at the other end of the teaching spectrum, leading practitioners becoming mentors to a handful of students.

Furthermore, as businesses themselves increasingly understand how the learning and development of their staff is a major differentiator, they too are becoming interested in collaborations with universities, which bring an external perspective, academic analysis, critique and recognition of the learning. Such collaborations can also assist with recruitment of talent.

The learning is the work – and the work is the learning. The combination will provide rich opportunities for universities ready to seize them.

6. The three- or four-year, full-time degree course is no longer standard

As learning and work become entwined, so the idea of full-time study, then work, will lose its appeal for many. Already we've seen the huge rise in part-time and mature students seeking to improve their knowledge, skills and qualifications. Now, though, especially in the context of global economic uncertainty, many 18-to-22-year-olds may prefer to combine work and study, which could reduce the debt they build up, increase their employability and reduce the risk of waiting three or four years to see what is available. Moreover, it increases the pool of potential mentors who are so crucial to a young person's progress in the early stages of a career.

Currently, regulatory regimes and student support arrangements sometimes stand as barriers to change in this respect, but without doubt here is another aspect of the traditional university ripe for innovation aided by modern technology. Since technology can aggregate large amounts of data and communicate it decisively, methods other than the award of the university degree could mark a person as prepared for employment. The rise of badge-driven learning means that skills and learning are assessed by the course and their achievement demonstrated by mastery rather than by completing study over a set period of time.

We have not yet said much about the impact of these forces on masters and professional degrees, but the lines between undergraduate and postgraduate education are blurring in the face of cost and value pressures which bring a rising demand for alternative and more flexible programmes. Even the long-stagnant legal education sphere in the US is beginning to change. The American Bar Association recently held a taskforce on the Future of Legal Education and heard proposals ranging from reducing the required degree from a three-year to a two-year programme through to the establishment of a track for practitioners, similar to the one followed by nurses.[78]

Economic value creators – in the shape of entrepreneurs – are defined by their ability to effectively turn raw resources into a bigger whole. They are increasingly likely to employ fewer full-time employees and instead outsource key deliverables to those that demonstrate the highest competency in a particular task. This competency is measured by their track record in that task, not by their underlying credentials. People will need to learn constantly and increase their skills. It is no longer reasonable to expect that a large upfront investment in schooling will pay back over a lifetime. The economy and technology now change too quickly for students to keep up: a computer language learned in a four-year degree programme might be obsolete by graduation. Young adults will need to prepare themselves for a lifetime of continuous up-skilling and development.

7. Relationships with the city or region are becoming increasingly important

University College London (UCL) is one of Britain's leading universities, with over 25,000 students. Depending on which rankings you look at, it rates between 20th and 4th in the world. Recently, some of its students were forced to end an occupation of some of its buildings by a threat of legal action. The protest was against a plan to move a significant part of UCL's activities to the east of London, close to Canary Wharf and the Olympic park.

UCL's plan, while possibly inconvenient for some current students, is visionary. It wants to expand and renew, and it can see the growth and development in the London borough of Newham – a trend that began with the emergence of Canary Wharf in the 1980s and has continued with the 2012 Olympics, which brought massive infrastructure improvements and human development to the borough. The borough's mayor wants to strengthen Newham and sees – from the work of Richard Florida and others – that the presence of a top university could make a huge difference over the long run, while the university sees the potential of new relationships and a green field site. The improved quality of the transport links between the original Bloomsbury site (which houses the stuffed body of philosopher and social reformer, Jeremy Bentham) and the proposed new site make the project feasible.

78 Bronner 2013

The story illustrates a key point for universities in the modern world. As globalisation occurs, the local becomes more, not less, important. UCL is taking a bet that its new role in London's east will offer a range of advantages that will strengthen the university's research capacity and enable it to make an even-better offer to the students of the future – even if, in the meantime, it has to deal with protests from the current crop.

Cities and regions benefit, too, because universities make a massive contribution to the local and regional economy as employers, innovators, researchers and, perhaps above all, attractors of talent. A recent Milken Institute study[79] reinforces this point. It suggests that 'for American communities, the returns to investment from higher education have never been greater'. Paying attention to this agenda will be increasingly important for the salvation of universities.

Building relationships with cities, putting in place the virtuous circle of good university, close links with business and public authorities, collaborative research and development, spin-offs and start-ups, the attraction of talented students and faculty, the development of 'cool' places to live – with good coffee, wine and music, for example – and then the further development of the university and the city should now become central to any traditional university. This is a role a classic university can play. An online university or a MOOC cannot.

8. As the monopoly over awarding degrees breaks down, universities need to consider their true value

Generally-speaking, universities were founded to be regional or national institutions, but they find themselves operating, thanks to the mobility of talent and the ubiquity of technology, in a global market. The power to award a degree is conferred by state or national governments and the restrictions on access to this power have enabled universities to protect their position – until now. With students shopping globally, with online degrees – which might be offered from any country – becoming widely available and with commercial organisations seeking the power too, this protection is weakening, perhaps vanishing.

As a result, universities will have to look at what they offer – the curriculum, the teaching, the mentorship and the wider experience – and seek to ensure it has real value both intrinsically and as a preparation for work, life and citizenship.

As we saw earlier in this paper, in the past two decades pressures have driven up both cost and price, but in the new world this is likely to become unsustainable for many universities. While those with major endowments (and therefore the ability to offer needs-blind admission) may remain secure, others will struggle.

79 DeVol et al 2013

The warped logic that has locked price and quality together needs to be broken. Universities need to find ways to reduce cost while increasing quality, and crucially they must ensure that this is understood by present and future customers.

When BYU-Idaho faced up to this question, they consciously broke the mould.[80] They mixed face-to-face instruction with online learning. They focused on key disciplines. They abolished the long summer recess and moved to year-round teaching. They chose not to have a graduate school, competitive athletics or externally-funded research. They also rejected selectivity in admissions.

The mix they chose would not be for everyone. That is not the point. The message is that they drastically changed the model in response to the modern world and kept on changing. It has worked for them but, as Christensen points out, few universities in the US have chosen to be so bold, and the same is true globally. In the face of an oncoming avalanche though, adopting a bold and urgent strategy would seem to be advisable.

With these factors in mind, one can envisage a range of possibilities for the future development of universities. There will be no single successful model; on the contrary, diversity will be the key. As with transformations in other sectors of the economy, university leaders will take some risks and by definition some will fail and others fly. One strategy doomed to failure, however, is the choice to wait and see and hope that perhaps the avalanche is not coming after all.

Before outlining the models, it is worth pointing out that the ecosystem universities operate within is constantly changing too. In a segmented market, there are, by definition, different models of excellence. While university lecturers are often aware of these shifts, staff, students, alumni and governors may not be, which could lead to confusion or flawed strategy.

New models

Here are five possible emerging models. We admit that we are not certain about any of them. Moreover, the answer in any given case might be a mix of these options – they are not mutually exclusive. The idea is to provoke thought and stir action.

Model 1: the elite university

With a global brand, a strong endowment, a stellar track record, a history reaching back centuries and stock of famous alumni, a small number of elite universities will continue to attract the stars of the academic firmament, the lion's share of prestigious research grants and the world's most talented students.

80 Christensen and Eyring 2011: 351-352

This is not to say they won't have to change. Teaching and learning will need to adapt. Technology will need to become an ever-bigger part of the learning process and each of the schools and faculties will need to continue to benchmark themselves against their peers globally and ask themselves what their source of global leadership is and how they can stay ahead of the game.

Decisions about partnership with other universities globally and with major institutions or businesses will continue to be profoundly important and, as with any major global enterprise, the quality of leadership and management will continue to be decisive.

These universities will expand globally through partnerships with local institutions and establish remote campuses that strive to deliver the same quality of experience as the original. Yale's expansion into Singapore in association with National University of Singapore (NUS), and New York University's Abu Dhabi campus are prominent examples of this. The fact that the latter received over 15,000 applications for the 150 places in the class of 2016 is an indication of the demand these will generate.[81]

Additionally, elite universities will need to ensure that they personalise students' development to prepare them for leadership and influence. They will also need a robust ecosystem of extra-curricular and incubated real-world experiences where students can learn and demonstrate leadership. To maintain their elite status, they will need to ensure top-quality peer networking for their students by attracting the world's best and brightest candidates. And, as Gillian Tett, the notable Financial Times columnist reminded us, the matchmaking function of universities, particularly for the elite, will remain important even with the proliferation of online options. Mentorship for students will also be critical as students will increasingly expect these highly personalised interactions to form part of their education. This will mean a large commitment of resources, but is absolutely necessary if these universities are to produce world-class graduates, maintain their relevancy and remain elite.

Further still, it may be that through MOOCs and the Ronaldo Effect, these universities extend their reach and influence by becoming the primary source of content and curriculum for other universities around the world. Their reach could extend far beyond the small global elite of students they educate directly.

Model 2: the mass university

By taking advantage of globally-developed content and adapting it for their own students, mass universities will be able to provide a good education for the rapidly growing global middle class (and others) who

81 New York University Abu Dhabi 2012

recognise that a high school education is not enough to provide a passport to the jobs of the future.

These universities will use predominantly online or blended approaches (provided perhaps in traditional collaboration with respected institutions) and cater to hundreds of thousands of students at a time. These students will increasingly see that greater value for money and time is offered by these institutions compared to attending a mid- to low-tier university. The variety of courses and learning opportunities will extend far beyond what is offered at a traditional bricks and mortar college, allowing students to customise and build their learning according to their personal interests and passions over a period of time that suits them best. The mass university offerings will also increasingly extend into the realm of real-world workplace skills, supplementing their faculty with practitioners from business and other fields who will see the relationship with a university as bringing prestige, but also access to well-educated talent.

Due to the nature of the industry, there will be rapid consolidation of the online providers, with only the strongest players left standing. At the same time, many middle- to low-tier universities will have to disband or adapt as they become irrelevant.

Some mass universities will emerge from among the classic 20th century universities in the developed world – shutting their physical doors and moving entirely online as we've seen happen in the newspaper business. Others will be found in the newly-developed world; perhaps, for example, in Brazil which has placed itself at the forefront of developments in online higher education. Some will be for-profit, others not. Some will be predominantly vocational, others will be broader.

Model 3: the niche university

By definition, of course, each niche university will be different from the others. There are many possibilities. The classic US liberal arts colleges, such as Williams, or Oberlin or Lewis and Clark, surely have a future – the small town, the beautiful campus, the high-quality teaching and the community feel will appeal to some students and it does not take many for them to thrive.

The New College of the Humanities, a new private, for-profit university in the UK, is seeking, in a way, to replicate this experience in central London. Charging fees roughly double those of England's public universities (£18,000 as compared to £9,000), it has attracted some talented full-time faculty and a handful of global stars such as Niall Ferguson, and promises 'a broader liberal arts curriculum with significantly more content than a standard undergraduate degree'. It promises too, 'a more personal learning experience' with staff 'committed to helping you achieve your academic, professional and personal potential'. It is still in its first year of operation, so it is too early

to say whether it will succeed, but this could turn out to be exactly the kind of niche venture that will succeed. It is also worth noting that the concept is barely dependent on modern technology.

Another recent venture in the UK is the College of Law, which has traditionally had degree-awarding powers but was recently sold to a private equity house, which clearly sees the potential for profit in niche higher education.

Minerva University, based in San Francisco, is a bold attempt to cater for elite niche market, but online. It aims to deliver high-quality education from top professors at half the price of traditional schools. Lectures will be delivered through video to students in seven countries and supported by debate and discussion facilitated by the professors. The niche here is the top echelon of students in emerging markets who can't study at elite institutions owing to cost or visa issues.

Model 4: the local university

Around the world there are many universities which play a key role in the constant renewal of the local or regional economy through the opportunities they provide for the development of skills in the workforce and for applied research.

The Institute of Business Management (IOBM) and the Institute of Business Administration (IBA) are two examples from Pakistan. Together they have provided many of the highest-calibre business professionals leading the corporate and services sectors in Karachi, the economic hub of the country. Their contribution to the economy of the country is undoubted and will continue to be vital in the future.

In India the India Institutes of Technology (IITs) play a similar local function. These were set up in 1961 to support the Indian economy, and remain closely connected to government today, with the president of India holding the top role in their governance structure.[82] While the IITs are globally recognised by employers as top engineering schools, they are not considered globally elite institutions, and most do not appear in worldwide university rankings. This is, in part, due to the local nature of the schools, which attract an almost entirely Indian undergraduate community and at which all professors must be Indian citizens. However, no one can doubt the impact of IITs: they are among the country's most important and prestigious institutions.

In a similar vein, it may be that in the future much of the content or certification comes from a few, large elite universities, but the local universities are the deliverers and organisers of the local student experience. Universities which teach subjects that require in-person practice and training will also remain important. Medical schools will always be needed to train doctors. Vocational training institutes will

82 Indian Institute of Technology Madras 2009

continue to train technicians and engineers for industry. For example, universities such as Wolverhampton, in the British Midlands, play a vital role in their local and regional economies.

Model 5: the lifelong learning mechanism

Nandan Nilekani, one of the founders of the highly successful Indian company Infosys, has taken on a project for the Indian government with immense implications. Its goal is to register as many of the 1.2 billion people in India as possible on a database in the cloud. Already around 300 million are registered. Now imagine that those 300 million could add their educational and career achievements and qualifications to the database. Imagine, too, that some of them sign up for a mentoring programme with an organisation that specialises purely in that. Imagine that others take a series of modules from different academic institutions around India and the world and find yet another institution to accredit that combination of courses as a degree, perhaps because yet another organisation has provided an assessment, using the best computer game technology, that really tests not just deep learning of content, but problem-solving and leadership skills and/or potential.

Here we would have people who had successfully completed higher education without ever attending a university, who draw on a range of services, most of which are not provided by a university. It is a plausible scenario, and there are others. Universities around the world have been awarding honorary doctorates for exceptional performance in a wide variety of fields for decades – it's plausible to think that this idea could be extended for bachelors and masters degrees as well. Many successful business entrepreneurs, for example, have proven themselves in the real world and acquired more relevant knowledge than that conferred by a traditional business degree.

Take Natalie Warne, whose story was told in the *New York Times* in November 2012.[83] Natalie, the paper says, is:

> 'A poised 22-year-old from Chicago, she stepped off the college track after high school to "hack" her education which to her meant travelling the country to protest atrocities in war-torn Uganda. It started with a gap-year internship after high school with a charity called Invisible Children where she acquired experience in public speaking, event co-ordinating and film editing (she eventually appeared on Oprah). Finding satisfaction, she stretched her gap year into two, and two became three. While speaking at a TED conference, she met Dale J Stephens, the founder of the group called UnCollege that champions 'more meaningful' alternatives to college. Her plans for college are off for now. "Experience has proved to be a far better teacher in my life than any book, classroom or educator," she said.'

83 Williams 2012

Maxim Gorky would have been proud of her.

There are countless other success stories of college dropouts, from Richard Branson to Steve Jobs to Mark Zuckerberg, none of whom completed a university programme, but who have changed the world. But in each of these examples of success, the entrepreneur made a significant lifelong investment in learning.

The possibility of unbundling the classic university opens up numerous possible options for rebundling the elements. No doubt there will be numerous experiments globally – some will fail, some will flare and die down, others will endure. Ultimately, parents, young people and governments will need to make difficult choices about how to allocate resources to ensure development, growth and learning that results in value creation for the individual and society.

5. IMPLICATIONS

The very big picture is clear. By mid-century, there will be 9 billion people on the planet. As an ever-larger proportion of the global population becomes healthier and the global economy continues its transformation, so the demand for higher education will continue to rise. The next 50 years could see a golden age of higher education, with more people learning a greater variety of subjects to higher standards than ever before, and developing the highly complex social skills required to lead and to empathise with diversity.

Our argument is that this potential cannot be fulfilled if we collectively depend on the classic 20th century university. On the contrary, strategy at the level of the university, the country and the global university sector as a whole needs radically rethinking as the avalanche comes.

The prospects for disruption and reinvention raise important questions for every stakeholder in the system. Here we raise some of the central questions for each of them, but don't pretend to have all the answers.

Government

The state's role as a funder of higher education – for both research and students – remains, but given the pressures on public finances around the world, is likely to diminish significantly as a proportion of total funding.

The likely priorities for government spending are support for talented students in areas such as STEM, equity (or ensuring that family background is not a barrier to access) and research in a variety of fields crucial to the country's economy. Increasingly, governments will use funding to incentivise or catalyse changes that the market left to itself would not bring about fast enough. In Australia, for example, government is using research funding to incentivise collaboration between universities and business, while in Israel the chief scientist doubles up, in effect, as a venture capitalist.

Meanwhile, all governments keep the framework for student fees and support under review. The 2010 Browne Review of higher education funding in the UK[84] (in which Michael was involved) proved highly controversial, but its analytical framework of dividing funding for students into Learning (fees), Living (student support) and Earning and Paying

84 Browne 2010

(repayment arrangements) enabled the government at the time to make an informed decision. It also revealed a figure that was missing – while it was able to demonstrate the case for higher education from the student perspective, it was less able, because the information is not available, to put a value on specific degrees from specific universities. Nor did it fully anticipate the speed of globalisation and the implications this would have.

This raises a wider challenge for government regulation. It has been a key role of government traditionally to legislate and give degree-awarding powers to certain institutions. Governments have also, over a 30-to-40-year period, sought to regulate or assure quality. In the Browne Review, the basic approach was to make quality a matter for the student and the university. By creating a direct funding relationship between student and university and ensuring more and better information was made public, it aimed to create student pressure for higher quality.

There is some evidence that this is working, but the pace of globalisation raises more fundamental questions. How does government ensure quality or recognise or accredit a degree from an online university based in another country? Or a course from a MOOC? Should government be willing to pay a share of the student fees in such courses? Or student support? If so, why? If not, why not?

Clearly, any national government has an interest in ensuring its labour force is well-qualified, but does it also have an interest in supporting its own universities as opposed to those elsewhere? If so – and the case is easily made – how is this different from offering subsidies that in other sectors of the economy would clash with WTO rules?

Universities

Much of this paper applies to universities and the dilemmas they face. The only additional point that needs making here is that universities collectively need to make the case for higher education in all its diversity. Given the growing range of institutions and activities and the tendency of any guild to seek to prevent competition springing up, collective advocacy often breaks down into sectional interest groups. Maybe therefore the overall case should be made by employers, governments, students and individual academics rather than by overarching organisations. Certainly in an era of highly-constrained resources and economic transformation there is a need for the case to be made in a way that is heard above the clamour.

Universities themselves could pursue a new system of rankings which puts greater weight on outputs and outcomes and less on inputs. While this would have risks, it would shift the nature of the argument onto the impact of higher education on a society and away from the apparently ever-burgeoning costs. This would make the overarching case to the general public much sharper than it is currently.

Another implication of an era where access is free is that a brand matters, perhaps sometimes more than the accredited degree itself. In a world where employers make snap judgments to prioritise candidates, students will need every advantage to get ahead. Thus the signalling power of the university degree as determined by the strength of its brand will prove of great value to the student.

Businesses and organisations

In the traditional sense, businesses and other large organisations are the primary customers of higher education institutions. As we noted earlier, currently they are highly dissatisfied customers. But the implication is also that they can't sit on the sidelines any more and simply complain about their needs not being met. They need to be more actively involved in telling the sector what their exact requirements are, from course development to shaping policy. Many businesses engage with universities only when it comes to recruitment. That is too far downstream to have any real impact. Businesses should be connected to what students learn from their first day on campus if they don't want to be disappointed by a lack of skills upon graduation.

Businesses only recruit students for structured summer internship programmes or for full-time opportunities. As we move away from the traditional, four-year programmes to more flexible learning models, this recruitment will need to change as well. There are three clear models that could be used here:

1. Part-time opportunities: students work at real businesses while also in full-time higher education.
2. Work for university credit: work is recognised as part of learning and contributes to accreditation.
3. Blending of work and university: a student can take a semester or more off to work at a corporation and seamlessly merge back into the programme.

Some business and professional bodies have started along the path to shaping employees they need. In particular, the employment/skills gap in the Middle East has created a wide variety of partnerships, such as the Technical and Vocational Training Corporation that develops managers and drivers for the Saudi Railways Company and includes Pearson's own TQ Holdings Ltd. In the US, the North Carolina Community College system has partnered with the Manufacturing Association to tailor the content and curricula of its degrees to the needs of companies in the association.[85] The highly customised pathways and certifications include apprenticeships at local partners and the system has been lauded as extremely successful example of collaboration. Similarly, the Lahore University of Management Sciences, based in Pakistan, was founded by a prominent businessman who wanted to generate managerial talent.[86]

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Ayala, one of the largest conglomerates in the Philippines, is considering how to shape low-cost universities to produce higher quality graduates to fill jobs for the Philippines service sector and their own business processing outsource centres. Ayala has developed a programme for students at the local José Rizal University called the Professional Employment Programme (PEP). Selection for the programme is not based on grades, but on motivation as determined in an interview. There is no traditional grading, no textbooks, only learning by practice. The students in the programme rave about it. They are taught how to think proactively and are encouraged to speak up and risk making mistakes, so long as they learn from them. These courses offering practical, professional skills are likely to continue to boom in popularity since they raise a student's employability.

Additionally, there is an increase in training programmes inside big companies. McKinsey has its Engagement Manager College held annually in Cambridge for new managers, General Electric has its famed rotational management programme. As mentioned earlier, Deutsche Bank sponsored a course on financial markets at Duke University at the same time as Morgan Stanley provided a mock trading game.

The other implication for universities is that they need to take the employability of their graduates much more seriously than they have in the past. Michael was impressed on a recent visit to Exeter University by its Employability Centre, symbolically located at the heart of the campus in a spectacular new building. No student could possibly miss it (unlike the classic 20th century careers centre tucked away in a dowdy corner of a university and exuding lack of status). Any student accepted for a place at Exeter receives a calendar of the key milestones in achieving employability on graduation before they even start their course. Moreover, Exeter has the most successful volunteering programme of any university in England, and the administration of this is housed in the Employability Centre. The university has understood that an undergraduate degree programme on its own is simply not enough to guarantee employment on graduation.

Increasingly, there are two key differentiators for businesses: talent (who they can recruit and retain) and innovation. Both are potentially enhanced by strong partnerships with higher education institutions.

Entrepreneurs

From music to computing and beyond, entrepreneurs have reshaped entire industries in the space of a few years. As we've noted throughout, many of them have now set their sights on education. This emphasis is critical and is yielding promising results. In the future, getting the brightest entrepreneurial minds working on the challenges of higher education and providing them with the right support and guidance will be critical.

We would encourage innovators in other industries to shift their focus towards what their products and knowledge could do for higher education. The cross-breeding of ideas could yield some surprisingly innovative solutions. As an example, what implications does 3D printing have for how mechanical engineering is taught in universities?

The other implication for entrepreneurs is the need to reflect on education research and best practices that are already apparent and identified. They don't have to ground their thinking in traditionalism – in fact the most innovative solutions might come from defying conventions altogether. But a knowledge and understanding of what's worked in the past and what hasn't will be important. This could be done through partnerships with universities or through universities themselves as they help to set up incubators for new ventures, particularly for entrepreneurs looking for social impact. As the cost, value and employment pressures have increased significantly for universities, so have the opportunities for entrepreneurs to step in and provide for the market needs ignored by traditional models.

Students

In the past, 'students' have been passive players on an education pathway. In the future they will need to be self-motivated, active agents prepared to take responsibility for their own learning and skill development. They will need to understand how to create value to receive value and act as the entrepreneur of their own career, as Casnocha and Hoffman point out. As Jay Altucher another prominent start-up thinker, says, people need to have 'an ability to fail, an ability to have ideas, to sell those ideas, to execute on those ideas, and to be persistent so that even as you fail you learn and move onto the next adventure. Deliver some value, any value, to anybody, to somebody, and watch that value compound into a career.'[87]

Additionally, students should seek out to learn and practice the skills associated with being innovative. They should seek to be on innovative teams, in innovative organisations and part of an innovative society as these are the places where they will grow and develop the skills needed to be globally competitive. The framework below from our publication *Oceans of Innovation* indicates the key characteristics, way of working and mission-orientation needed to be truly innovative. We believe that education and learning holds the key to unlocking the human potential to solve the challenges of the 21st century. Just like K-12 education systems, universities have a role to play in the shaping of global leaders.

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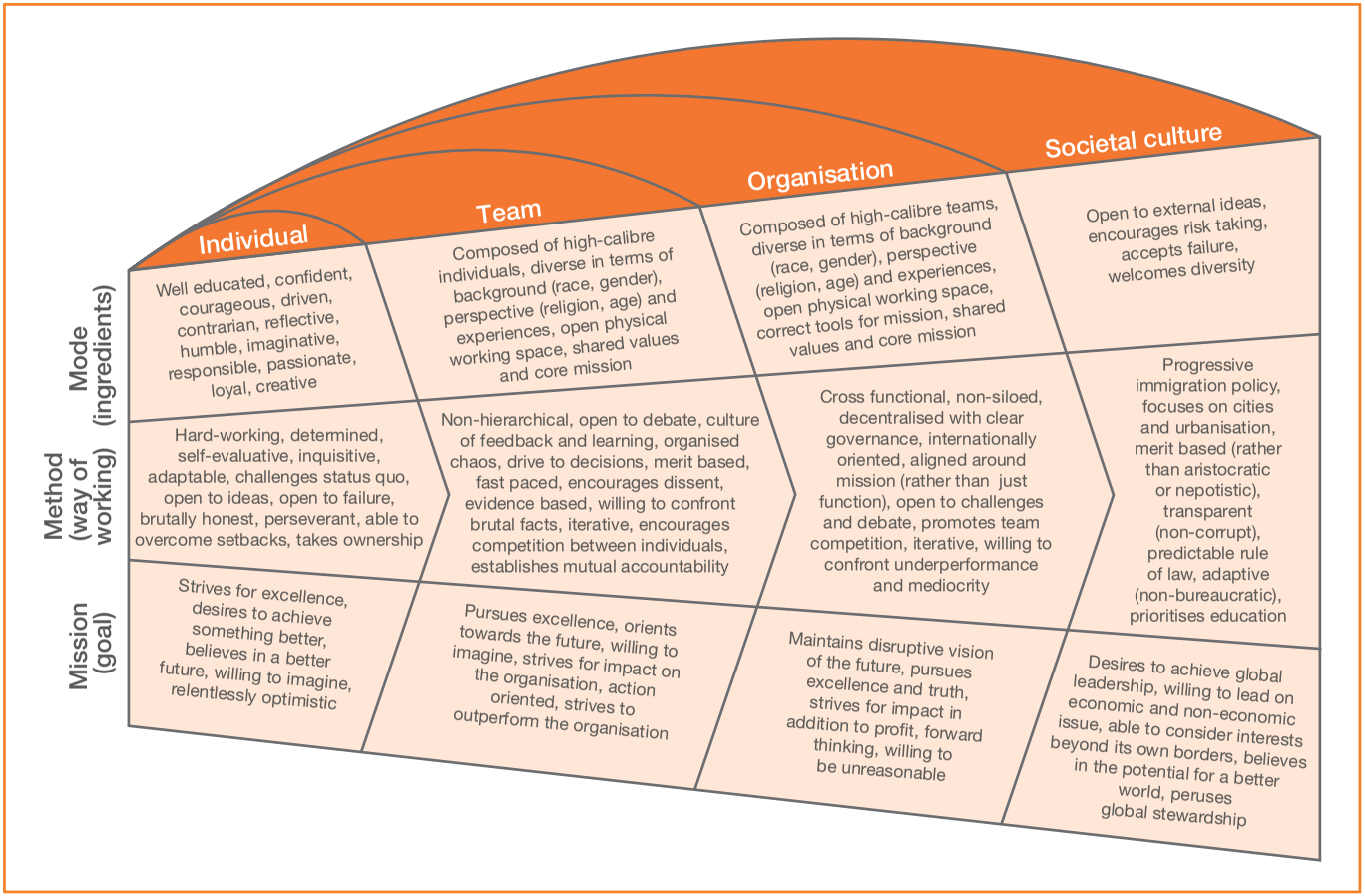
Figure 6: The innovation framework



6. THE AFTERMATH

In conclusion, the combination of marketisation – the student consumer as king with options outside universities for talented students too – and globalisation will lead to universities being less and less contained within national systems and more and more both benchmarked globally and a leading part of the growth of knowledge economics – collaborating and competing. In the new world the learner will be in the driver's seat, with a keen eye trained on value. For institutions, deciding to embrace this new world may turn out to be the only way to avoid the avalanche that is coming.

Just as an avalanche shapes the mountain, so the changes ahead will fundamentally alter the landscape for universities.

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‘This argument about unbundling needs to be studied and acted on by university leaders around the world.’

From the foreword by
Lawrence Summers
President Emeritus, Harvard University

BOLD IDEAS for CHANGE