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# **RESHAPING UNIVERSITIES FOR SURVIVAL IN THE 21ST CENTURY**

## **NEW OPPORTUNITIES AND PARADIGMS**

**Christina Chow  
Clement Leung**

**Bentham  Books**

**Reshaping Universities for  
Survival in the 21<sup>st</sup> Century:  
New Opportunities and  
Paradigms**

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## **Reshaping Universities for Survival in the 21<sup>st</sup> Century:**

*New Opportunities and Paradigms*

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## FOREWORD

This book presents an excellent and compelling account of the current landscape of modern universities and higher education. It provides an impartial, comprehensive view of the challenges which have affected universities in the last few decades. Dr Chow and Professor Leung clearly explain these challenges surrounding higher education systems in the developed world.

The authors have a real and intimate understanding of the problems facing our modern universities, as well as their historical context. From the globalisation of finance and human resource to the disruptive innovation of technology transfer and digital revolution, they elucidate how these converging trends pose critical challenges for universities. Factors such as neoliberalism, marketisation and global competition undermine the monopoly previously enjoyed by esteemed universities. The emergence of disruptive technology and the current attitude of national governments towards university funding threaten the survival of this centuries-old tradition of higher education.

Tracing the roots of university missions from the Middle Ages to the present day, the book looks at how the dominance of marketisation, global competition, and neoliberalism collide with the traditional idea of universities. It analyses the impact of global trends on universities in the 21<sup>st</sup> century, such as university rankings, competition for funding, and the threat and opportunities of new entrants into the sector.

While the book explains the problems facing global higher education, it also contributes some valuable suggestions which universities can take to achieve distinction and success in the 21<sup>st</sup> century. Written in clear, easy-to-understand language, this book is a must-read for anyone who studies or works in the higher education sector.

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## PREFACE

Every university wants to be world-class. In this knowledge-driven global economy, every nation wants to have the top-ranked universities in the world. Every parent wants to send their child to a top university. And most people want to have a good university degree. Why do universities have such an impact on our lives – and can they continue to exert such influence? What is the role of universities in the 21<sup>st</sup> century?

Universities are facing unprecedented challenges in the 21<sup>st</sup> century. The international landscape of higher education is undergoing profound changes. These ancient institutions which represent the ultimate manifestation of human civilization are now confronted with dramatic changes as a result of globalisation, the knowledge economy and rapid technological advances. The traditional role of the university is forced to transform to meet these new expectations and challenges.

In 1997, one of the pioneers of modern management predicted that "thirty years from now, the big university campuses will be relics. Universities won't survive." As we head into 2017, that threat has not receded. In 2012, an Ernst & Young report repeated the warning that the current university model was not viable.

Once revered as ivory towers which reigned supreme over their students, today's universities are forced to regard their students as consumers and customers. While the traditional university could pursue knowledge for its own sake, nowadays it must answer to the demands of its funding masters. Universities are now expected to be responsive and innovative, rather than rocks of stability and esteem. Governments expect universities to generate not only intellectual capital, but economic and social capital as well. Universities are regarded as engines of innovation and required to contribute to the national economy and international standing of their countries.

Within the cloisters of universities, the current climate is tumultuous. Mass redundancies and department closures have become routine. Mistrust is rampant, and there is widespread interference from governments and funding bodies. Such unrests are occurring in many countries - from Australia (Evans 2014), Finland (Sulkunen 2010), France (Lichfield 2015), Japan (ICEF Monitor 2015), Germany (Keim & Keim 2010), United Kingdom (Boffey 2013; Morgan 2015; Murray 2014), to United States (Economist 2012; Hutner & Mohamed 2013; Kingkade 2012; Kuttner 2013; Sager 2014; Selingo 2013). Universities are buffeted by uncertainty and the rapidity of change: they are torn between market forces and increasing public expectations and accountability. They struggle with declining funding and increased cost scrutiny. Quality assurance and auditing exercises are relentless. Challenged on multiple

fronts, universities are faced with conflicting agendas. They are expected to develop world-class reputations in research while teaching increasing numbers of students. They are required to serve as engines of economic development while maintaining comprehensive scholarly profiles.

This book examines the three overriding trends which impose far-reaching effects on universities in the 21<sup>st</sup> century. They are: the knowledge economy (an innovation-driven economy based on knowledge as a commodity); the globalisation of financial and labour markets; and the digital revolution. These converging trends pose critical challenges for universities, who must meet the demands of new research and learning imperatives, respond to new forms of competition, and explore new modes of operation.

The rise of the knowledge economy erodes the supremacy previously enjoyed by universities and necessitates new methods of knowledge transfer and engagement. Universities are driven by globalisation: they are in competition and collaboration with other institutions and nations. Technological advances oblige universities to employ new ways of interacting and serving their students and community.

Tracing the roots of university missions from the Middle Ages to the present day, this book looks at how the dominance of marketisation, competition, and neoliberalism collide with the traditional idea of universities. It analyses the impact of global trends on universities in the 21<sup>st</sup> century. Global competition between universities has become unrelenting, with contests such as university rankings, competition for funding, and the threat of new entrants into the market. The international expansion of the knowledge industry has eroded the monopolistic position previously enjoyed by universities. The liberalisation of higher education services under the World Trade Organization has radically changed the relation between the state and its public universities. Universities are increasingly regarded as service providers, and they face competition from new types of suppliers.

Rapid advances in information and communication technologies transform teaching and learning, fundamentally altering the way that universities offer and deliver programs. Universities are faced with growing expectations to deliver services, content and media to mobile and personal devices in order to meet students' expectations of 'anytime, anywhere' access.

In addition, the trend of corporatisation has resulted in university management imposing greater controls over academic work and behaviour, to the extent that academic freedom is threatened. The age-old principle of institutional autonomy has become tenuous, since governments closely steer universities through performance funding, research priorities and funding criteria, all in the name of accountability.

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This book provides an impartial insight into the challenges faced by higher education in the 21<sup>st</sup> century. It also suggests possible paths which universities might take to survive.

## **ACKNOWLEDGEMENTS**

Any historical, critical and integrative research depends on the research, analyses and observations of previous scholars. We are greatly indebted to each and every source cited in this eBook and we hope that we have made every effort to cite them appropriately.

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### **CONFLICT OF INTEREST**

The author confirms that author has no conflict of interest to declare for this publication.

## ABOUT THE AUTHORS

**Dr Christina Chow** has an Honours degree in Microbiology and Immunology from Canada's McGill University, a Master of Management from the Norwegian School of Management, and a Doctor of Business Administration from the University of Newcastle, Australia. She is a Fellow of the Australian Institute of Company Directors, a Fellow of the Australian Institute of Management, and a member of Ausbiotech. She has teaching, research and management experience at institutions including McGill University, University of Hong Kong, University of Melbourne, Royal Children's Hospital and RMIT University. She also has extensive experience in corporate governance and financial, project and risk management in the tertiary education sector. At RMIT University in Australia, she has worked with the former Vice-Chancellor and Chancellor in establishing RMIT's Campus in Vietnam, the first foreign-owned campus in the country and Australia's largest offshore campus. She is currently a Principal Advisor to the Pro Vice-Chancellor and Vice-President of the College of Science, Engineering & Health at RMIT University. Her previous publication includes "Mission Possible? An analysis of Australian universities' missions".

**Professor Clement Leung's** academic experience spans four continents. Professor Leung obtained his BSc (Hons) in Mathematics from McGill University, Canada, an MSc in Mathematics from Oxford University, and a PhD in Computer Science from University College London. He has an outstanding record of research achievements and extensive experience in the building up of academic units and international engagement. He has held several academic appointments in Europe, including an Established Chair and Head of Department at the University of London. His Australasian academic appointments include the Foundation Chair in Computer Science at Australia's Victoria University, and full professorships at the National University of Singapore, Hong Kong Baptist University, as well as currently serving as an Associate Dean for Science & Technology at United International College. He holds two US patents, and his publications include four books and well over one hundred research articles in top high-impact journals. His services to the academic community include serving as Program Chair, Program Co-Chair, Keynote Speaker, Panel Expert, and on the Program Committee and Steering Committee of major International Conferences. In addition to serving on the Editorial Board of ten international journals, he has served as Chairman of the International Association for Pattern Recognition Technical Committee on Multimedia and Visual Information Systems, as well as on the International Standards (ISO) MPEG-7 Committee responsible for generating standards for digital multimedia, where he played an active role in shaping the influential MPEG-7 International Standard. He is listed in *Who's Who in Australia*, *Who's Who in the World*, *Great Minds of the 21st Century*, *Dictionary of International Biography*, and *Who's Who in*

*Australasia & Pacific Nations. He is a Fellow of the British Computer Society, awarded a Chartered Fellow by the British Computer Society, and a Fellow of the Royal Society of Arts, Manufactures and Commerce.*

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## **The Shaking of Foundations**

*“In any moment of decision, the best thing you can do is the right thing, the next best thing is the wrong thing, and the worst thing you can do is nothing.”*

*Theodore Roosevelt*

**Abstract:** This chapter outlines the challenges which have affected universities in the last few decades - from the globalisation of financial and labour markets to the knowledge economy and the digital revolution. It explains how factors such as neoliberalism, marketisation and competition undermine the monopoly previously enjoyed by universities. It traces the roots of university missions from the Middle Ages to the present day, and looks at how the dominance of marketisation, competition, and neoliberalism collide with the traditional idea of universities. It analyses the impact of global trends on universities in the 21<sup>st</sup> century, such as university rankings, competition for funding, corporatisation, and the threat of new entrants into the market. The globalised economy and global expansion of the knowledge industry has also eroded the monopolistic position previously enjoyed by universities. Advances in information and communication technologies is becoming critical as they transform teaching and learning, and fundamentally alter the way that universities offer and deliver programs. Neoliberalism has been embraced by governments throughout the world to reform and re-position their national economies to respond to global competition. The resultant neoliberal reforms corporatised the public sector, especially universities because of their potential economic contribution through development of human capital, research and innovation. With corporatization, increased accountabilities and competition, university managements impose greater controls over academic work and behaviours. The chapter also provides a summary of the changing landscape in higher education which includes: growth in student enrolments, increased student diversity, new sources of revenue; and new types of activities.

**Christina Chow & Clement Leung**

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**Keywords:** Academic freedom, Competition, Consumerism, Corporatisation, Diversity, Entrepreneurial university, Globalisation, Internationalisation, Knowledge economy, Marketisation, Neoliberalism, Quality, Sustainability, Third mission, Universal access.

### 1.1. SKYFALL: UNIVERSITIES IN CRISIS?

"Thirty years from now, the big university campuses will be relics. Universities won't survive," predicted Peter Drucker, one of the founders of modern management, in 1997 (Kenzner & Johnson 1997). As we move towards 2017, that threat is still looming. In 2012, an Ernst & Young report - *University of the Future* (Bokor 2012) cautioned that the current university model was not viable: "Over the next 10 - 15 years, the current public university model in Australia will prove unviable in all but a few cases". In Pearson's "*An avalanche is coming: Higher education and the revolution ahead*" (Barber, Donnelly & Rizvi 2013), the writers warned that the 20<sup>th</sup> century "models of universities are broken. Unless universities are transformed, an avalanche will sweep the system away."

What these predictions point to is the fact that the university as we know it is not viable. The traditional model of broad-based teaching and research, with large campuses and an enormous administration and bureaucratic structure, is unsustainable.

Warnings about the sustainability of the current university model are becoming increasingly urgent. This is due to a number of developments:

- Inadequate funding by governments
- Marketisation of the higher education system
- Global competition
- Loss of monopoly by universities
- Disruptive technology destroying the current business model
- Rise of the MOOCS (Massive Open Online Courses) phenomenon
- Rising costs in university education and ballooning of student debts
- Low staff morale in the academic community
- Falling "wage premium" for graduates
- A mismatch between actual skill shortages and the skills of graduates seeking



employment causes people to question the value of a university education

- Rise of graduate unemployment while faculty vacancies are unfilled

The reasons for these developments will be explored in subsequent sections of this book.

### **Changing Landscape of Higher Education**

The 2008 OECD's Thematic Review of Tertiary Education (Santiago *et al.* 2008) found that the scope and impact of higher education has changed drastically in the last few decades. Tertiary institutions are much more diversified and include new types of institutions to cater for labour market needs. There is a diversification of funding sources for universities, and public funding has been increasingly tied to competitive performance. There is a growing focus on accountability, performance and quality assurance. In line with these changes, new forms of university governance and academic leadership and management have been introduced. Universities are much more connected with the wider world through regional integration, formation of networks, research collaboration, student and staff mobility, and transnational education (Santiago *et al.* 2008). Based on an extensive review of 24 countries, a number of new trends in higher education have been identified: growth in student enrolments, increasing diversity, diverse funding and activities (OECD 2008; Santiago *et al.* 2008).

In an international study involving 125 organisations in seven countries, Brown, Lauder and Ashton (2008) identified a global doubling of university enrolments in both developed and developing nations. The explosion in graduate numbers, along with the globalisation of labour markets, has put pressure on universities to provide for growth, to prepare graduates for a globalised workforce, and to adopt less nation-centric views (Brown Lauder and Ashton 2010).

Globalisation, universal access and growth in higher education have resulted in changes to the composition of student bodies. The student body has become more heterogeneous with respect to gender, age, and socioeconomic and cultural backgrounds. There is greater participation by women and an increase in the number of mature-aged students, leading to a rise in the average age of student bodies (OECD 2008). Such massification of higher education places significant

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## A New World Order

*“Nothing more difficult to carry out, nor more doubtful of success, nor more dangerous to handle, than to initiate a new order of things.”*

*Machiavelli*

**Abstract:** This chapter highlights how the increasingly knowledge-driven global economy has made university education ever more important. In the knowledge economy, employment security has been disappearing. The kinds of workforce needed must be flexible, adaptive and multi-skilled, able to keep up with the pace of global changes. However, due to the slowness of replacement of the existing workforce with a new generation of workers, lifelong learning is the only practical way to create the required new skill-sets. As such, the employability of individuals depends on their transportable knowledge and skills gained through a high level university education, which enables them to be flexible and have an increased propensity to learn continuously. Universities are themselves transformed by the knowledge economy with growth of student enrolments and increasing internationalisation. The growth of university enrolments is not limited to onshore students; there are various forms of transnational education and growth in universities’ international branch campuses. The United States has the longest tradition of setting up branch campuses with recent developments from Australia and United Kingdom. While there has been a proliferation of international branch campuses, there has been a shift in host countries from the Middle East to Asia, especially in China and Singapore. Globalisation, universal access and growth in higher education have placed significant demands on universities to develop new models to service growing and diverse student needs at a time when resources are strained. With increasing competition, there are unintended consequences such as escalating tuition fees, rising student debts when universities are increasing their spending on marketing and branding activities.

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**Keywords:** Branding, International branch campus, Knowledge society, Knowledge workers, Life-long learning, Marketing, MOOCs, Student loan debts, Transnational education (TNE), World-class universities.

## **2.1. TIDES OF CHANGE**

The previous chapter outlined the profound changes sweeping the world during the final decades of the 20<sup>th</sup> century. These include the growing importance of knowledge, globalisation, information and communication revolution, and the spread of neoliberalism.

Knowledge has become the new capital of the 21<sup>st</sup> century, especially for the generation of wealth. The world is increasingly globalised and interconnected, particularly in relation to the flow of goods, services, capital and labour without the barriers of national borders. Economies, societies, and cultures have become more integrated through a global network of communication, transportation, and trade. Advances in information and communication technologies are driving the globalised economy.

As a result, the increasingly knowledge-driven global economy has made university education ever more important. Advanced technologies are transforming teaching and learning, and fundamentally altering the way in which universities offer and deliver programs. These include the changing nature of the education experience and the expansion of the virtual environment. Higher education systems are also urged by governments and international agencies to adopt an economic and market model, with a commitment to globalisation and to more private funding. This results in a growing importance of market forces in higher education systems, and a rising tension of the academic mission in the business environment.

Society has gone through a number of stages of transformation: from agrarian society to industrial society to post-industrial society. Since the Second World War, the world has been undergoing another social transformation with the integration of national economies and free markets. Drucker named this period the ‘post-capitalist society’ (Drucker 1969), where the critical resource for the generation of wealth is no longer determined by basic production factors such as

human labour, land and capital.

Knowledge has become the new capital in the post-capitalist society. Wealth-creation and value-add potentials now reside in the applications of knowledge to work, to increase productivity and the rate of innovation. In essence, what the world needs in the 21<sup>st</sup> century are knowledge workers who can utilise knowledge and apply it to work, to improve output and innovations. Knowledge is being viewed as a utility as well as the means to obtain social and economic outcomes.

## **2.2. LIFE-LONG LEARNING**

Technological development and globalisation have radically changed the nature of work in most OECD countries in the knowledge economy. Employment security has been disappearing. The kinds of workforce needed in the knowledge economy must be flexible, adaptive and multi-skilled, able to keep up with the pace of global changes. To adapt to this new environment, organisations require corresponding changes in their workforce to capitalise on the full exploitation and productivity of the new technologies. However, due to the slowness of replacement of the existing workforce with a new generation of workers, lifelong learning is the only practical way to create the required new skill-sets. Accordingly, workers need to adapt and update their knowledge and skills continuously in order to operate effectively in a world of employment instability and uncertainty. This kind of continuous learning can enhance an individual's employability and career advancement.

## **2.3. KNOWLEDGE WORKERS**

In the knowledge society, the employability of individuals depends on their transportable knowledge and skills gained through a high level of education, which enables them to be flexible and have an increased propensity to learn continuously. Education is not only able to help improve economic productivity, standards and quality of life; it can enhance social mobility and equality, and enrich the life of communities. As the post-industrial world becomes more reliant on knowledge as a vital part of economic growth and development, the importance of highly skilled workers who can create, disseminate and use new knowledge becomes critical. The role of workers with skills and competencies

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## The Ranking War

*“Anyone who conducts an argument by appealing to authority is not using his intelligence; he is just using his memory.”*

*Leonardo da Vinci*

**Abstract:** The increasing focus on international university rankings reflects the fact that global competitiveness is ever more driven by knowledge. The ranking systems condense a vast amount of information and data collected to measure the knowledge-producing and talent-catching capacity of universities. Easy-to-recall league tables facilitate communication to stakeholders and customers. However, ranking systems emphasise vertical differences between institutions while masking their horizontal differences. There are enormous differences in methodology in ranking criteria, weightings, proxies for quality, choice of indicators, data sources, and use of surveys. The more prominent ranking agencies include the Times Higher Education which focuses more on international reputation, combining subjective inputs, and quantitative data. The ARWU focuses exclusively on objective indicators. The validity of some of these measurements is sometimes questionable, and there appears to be a bias towards larger institutions which have greater resources and stronger reputations. Nevertheless, the rankings have highlighted reputational differentiation and intensified competition for students, faculty, funding and researchers. More importantly, rankings impact on institutional strategic policy and direction as well as university missions. Increasingly, the visibility and influence of a global university is measured less by the size of its physical campus or the importance of its home city, than by its presence and prominence on the Web. The Webometrics Ranking of Universities offers an alternative ranking system that rates universities based on their Web presence and accessibility.

Christina Chow & Clement Leung

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**Keywords:** Activity, City Ranking, Data sources, Indicators, Inlinks, Maximum rank difference, Proxies for quality, Ranking analytics, Ranking criteria, Surveys, Visibility, Webometrics, Weightings.

### **3.1. RANKING ANALYTICS**

The attention in university ranking was highlighted in the 2003 Lambert Review of Business-University Collaboration in the United Kingdom. The Review came across a number of cases where departments had deliberately decided not to collaborate with the business sector in order to focus their efforts and maximise their outputs in raising their Research Assessment Exercise (RAE) rankings.

The increasing focus on international university rankings reflect the fact that global competitiveness are ever more driven by knowledge and that universities play a critical role in building sustainable economic systems (World Bank 2002). The intense competition in the global tertiary education marketplace leads to universities declaring themselves world-class universities or aspiring to be such. However the world-class title cannot be achieved by self-declaration but by international recognition. This has led to a growth of ranking agencies capitalising on the perception and trend (Salmi & Saroyan 2007).

The ranking systems condense a vast amount of information and data collected from a huge number of international institutions. Rankings attempt to measure the knowledge-producing and talent-catching capacity of universities (Hazelkorn 2009). Easy-to-recall league tables facilitate communication to stakeholders and customers. Ranking also allows less well-known universities and departments to emerge and possibly creep up to the top echelon, sometimes threatening the reputation-driven supremacy of top universities in certain areas. However, ranking systems emphasise vertical differences between institutions while masking their horizontal differences.

There are enormous differences in methodology when it comes to ranking criteria, weightings, proxies for quality, choice of indicators, data sources, and use of surveys. Ranking agencies use different systems with different emphases and weightings for teaching and research performance. Some rankings focus on input and subjective factors, reinforcing the power of the markets and students as

consumers. Some agencies misrepresent the work of universities for their own commercial interests, even reporting performance in universities in non-existent academic areas. Worse still, some universities have resorted to using unprofessional methods to secure nominations and votes to boost their ranking position (Baggersgaard 2014; Jump 2014; Gingras 2014a & 2014b; Hill & Beerkens 2010; Pérezpeña & Slotnik 2012). The widespread use of university rankings has become influential in setting institutional policy objectives and strategies. Universities devise strategies to enhance their position in the rankings, intensifying the battle for talented academics and students (Hazelkorn 2011).

The more prominent ranking agencies include the Times Higher Education (THE) which focuses more on international reputation, combining subjective inputs (such as peer reviews and employer recruiting surveys), and quantitative data. The Academic Ranking of World Universities (ARWU, formerly the Shanghai Jiao Tong University ranking system) focuses exclusively on objective indicators. Despite the serious methodological limitations of ranking systems, world-class universities are recognized mostly for their superior outputs and performance such as producing well-qualified graduates who are in high demand on the job market; generating cutting-edge research published in top scientific journals; and contributing to innovations and knowledge transfer.

From 2004 to 2009, the Times Higher Education (THE) published the university rankings in conjunction with the company Quacquarelli Symonds (QS). Subsequent disagreements over methodology and the relative importance attached to natural sciences and humanities led THE to produce its own ranking in conjunction with the company Thomas Reuters, separately from QS. QS continues to use six indicators including two surveys, while Times Higher Education uses five broad categories with 13 individual performance indicators. The Academic Ranking of World Universities focuses on institutional research performance including alumni and staff winning Nobel Prizes and Fields Medals, highly cited researchers, papers published in *Nature* and *Science*, the Science Citation Index and Social Sciences Citation Index, as well as the per capita academic research performance of the university. The scoring criteria for these three popular ranking systems are outlined in Table 3.1.

## Watson - the Next Professor?

*“Any sufficiently advanced technology is indistinguishable from magic.”*

*Arthur C. Clarke*

**Abstract:** This chapter looks at the explosive increase in the creation of data in recent decades. The digital universe is estimated to be of the order of a billion trillion ( $10^{21}$ ) bytes. All the advanced knowledge required for undergraduate, postgraduate and research degrees is housed somewhere inside the Web. Not only does the Web become an indispensable supplement to the part played by lecturers, in some instances, it constitutes the core curricula of some university degrees. With the Web housing virtually unlimited amounts of knowledge reachable by a variety of devices, the key is to find efficient means of identifying and accessing them. While search engines help to narrow down the right kind of knowledge on the Web, the ability to produce answers from them still requires considerable human judgement. Consequently, these engines are still not designed to be used directly and automatically for instructional purposes. The chapter also looks at the possibility of developing an automatic system which is able to answer questions, and so replace the role of the human lecturer. A recent breakthrough which seriously threatens the job of the university lecturer has arrived in the form of Watson. The Massive Open Online Courses have the advantages of ubiquitous anytime learning offering great flexibility but they do not have the capability to fully replace the conventional physical lecture room with its face-to-face interaction and hands-on laboratory experiments.

**Keywords:** Analytic query, Big Data, E-Learning, MOOCs, Online-to-Offline, PageRank algorithm, Question Answering (QA) system, Semantic Web, Web.

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#### **4.1. DISCOVERING KNOWLEDGE IN BIG DATA**

It has been estimated that a week's worth of the New York Times contains more information than a person was likely to come across in a lifetime in the 18th century (Bryan 2013). The creation of information has seen an explosive increase in recent decades. The amount of new technical information is doubling every two years; for students starting a four-year technical degree, much of what they learn in their first year of study will become outdated by their third year of study. The digital universe is estimated to be of the order of zettabytes [IDC], where the prefix zetta indicates twenty-one zeroes, or a billion trillion ( $10^{21}$ ). To put things into perspective, one zetta seconds equals 31.71 trillion years or roughly 2,300 times the age of the universe.

The term Big Data is often used to describe data sets which are so large that they cannot be managed or processed by conventional means, so that new mechanisms are required to handle them effectively. It is estimated that digital data is created at the rate of several exabytes ( $10^{18}$  bytes) a day (Wang 2015), and Big Data is usually characterized by the 3Vs – big volume (quantity of data), big velocity (of data coming in and out), and big variety of different types of data. A key challenge of Big Data is how to make sense of it, extracting useful information and insight from the data. The advances in technologies in capturing and analysing big data enable us to decode human genomes, prevent the spread of epidemics, identify causes and find cures for cancers, catch the insider-trading culprits, and thwart terrorist attacks.

The Web and its effective deployment have owed their existence to a combination of Science, Technology, Engineering, and Mathematics (STEM), enabling a vast amount of digital information to reside there. All the advanced knowledge required for undergraduate, postgraduate and research degrees is housed somewhere inside the Web. Not only does the Web become an indispensable supplement to the part played by lecturers, it in some sense surpasses them. In addition to the availability of comprehensive central knowledge reference sources such as Wikipedia, computational engines such as Wolfram Alpha are able to carry out highly complex mathematics and quantitative analysis which often constitute the core curricula of some university degrees.

Admittedly, technology has been playing an indispensable role in education, particularly higher education, for some time. Even at the beginning of the century, it would have been extremely difficult to avoid the use of technology in a course delivery process. E-Learning tools – including mobile ones – are now pervasive and come in a wide variety, serving different purposes such as knowledge sharing, the administration of course rooms, anti-plagiarism checking, self-learned courseware, lecture capture, and instantaneous analysis of student performance. Indeed, some lecturers are quick to embrace mobile technology by encouraging their students to bring their smart phones to classes to facilitate interaction and feedback.

With the Web housing virtually unlimited amounts of knowledge reachable by a variety of devices, the key is to find efficient means of identifying and accessing them. There is no doubt that search engines in general constitute a valuable educational tool, allowing the recovery and discovery of facts and knowledge. University professors often turn to Google as a first option when students ask questions for which they do not have the answer, or sometimes when they have not even heard of the terms mentioned. Many view the PageRank algorithm as having revolutionised the learning experience, since it provides a mechanism to target the right kind of knowledge on the Web. The PageRank is a trademark of Google and is patented, with the patent assigned to Stanford University, while Google has exclusive license rights on the patent from Stanford. With PageRank, each web page essentially has a rank which indicates its relative importance, and a page that is linked to by many pages with high PageRank also acquires a high page rank. In doing so, significantly improved accuracy in search results can be achieved. While search engines help to narrow down the target web pages, the ability to produce answers from them still requires considerable human judgement and manually clicking on the right links. Consequently, these engines are still not designed to be used directly and automatically for instructional purposes. Even looking up complicated facts cannot be done with current search engines.

For example, to find the name and qualifications of the head of an academic department of a particular university cannot be answered without manually clicking a number of links, even though such information is available on the Internet: that is, the information cannot be found in one step. This kind of simple

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## Academic Capitalism

*“I have come to believe that a great teacher is a great artist and that there are as few as there are any other great artists. Teaching might even be the greatest of the arts since the medium is the human mind and spirit.”*

*John Steinbeck*

**Abstract:** This chapter looks at the changing relationship between the students and the universities with increased marketisation of higher education. As students are increasingly viewed as customers, academic education is reduced to student satisfaction surveys, quality control, performance measures, quantification of the student experience, and ranking and league tables. Critics have argued that commodification of education leads to standardisation, formulaic teaching, and reducing quality into quantity, intellectual rigour into customer service. Universities have embraced the market logic of growth, competition and commercial techniques in promoting and encouraging academic capitalism and entrepreneurship. There is also a change in university governance reflecting the change in the dynamics of the three determining forces: the *state authority*, the *market* and the *academe*. The spread of neoliberalism and new public management have resulted in a market-oriented model of governance. In this model, the institutional balance of power resides with the senior management who has greater control in the selection and appointment of academic personnel. With the strengthening of managerial control and weakening of academic affiliation, universities are moving away from the traditional idea of academic self-governance and the Humboldtian idea of a university. Universities are increasingly required to align institutional priorities with national economic and social goals. Consequently, there is a mixture of demands, including clearer accountability to society; contribution to equity and expanded access; ensuring quality of teaching and learning are relevant to learner and market needs; research feeding into industry and community engagement; and contributing to internationalisation and international competitiveness. As a result, academic freedom is under threat from this new form of institutional governance.

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**Keywords:** Academic capitalism, Academic self-governance, Customer relationship management, Customer satisfaction, Grade inflation, New public management, Positive marking, Power dynamics, Republic of scholars.

### 5.1. CUSTOMER RELATIONSHIP MANAGEMENT

Nobel Prize winner Dr Penzias has observed that "...companies will throw away nothing about their customers because it will be so valuable. If you're not doing this, you're out of business." Since students are increasingly viewed as customers, and universities are run as businesses which certainly do not want to be out of business, the management of the customer relationship – as widely practised in commercial companies – becomes highly relevant. But the question has been raised as to whether the marketisation of higher education has actually led to a situation whereby an academic education can be purchased. In one sense, marketisation is seen as a commodification of academic education, in that academic education is reduced to student satisfaction surveys, quality control, performance measures, quantification of the student experience, and ranking and league tables.

It can be argued that national governments are complicit in promoting student consumer awareness, in emphasising student choice, student-centred learning, and student demand. Hence, according to the logic of the market, students as consumers are always considered to be right. Consequently, in ensuring customer satisfaction, universities have become defensive in minimising student disputes and complaints. Academics have also learned to become more circumspect about their views and student feedback. As a result, the marketisation and commercialisation of the system encourages universities to provide students as customers what they want, rather than what they need to be truly educated. To illustrate, in the same way that consumers are surveyed about their experience with goods and services they have purchased, students can rate their professors in the online *RateMyProfessors.com* to give their teachers a rating. Another example is Australian Government's *MyUniversity* website which provides students with a variety of information about Australia's higher education providers. The website provides course information and fees, student demographics, student satisfaction and graduate destination survey results, student services and campus facilities, and

research student numbers and scholarships. Some students, whose intention is simply to purchase an academic credential, go to the extent of using the information on the internet to select the programs or subjects that have the least amount of homework and are easiest to pass the assessments.

While student satisfaction has been generally used as a performance indicator of universities, it is feared that the commercialisation of education threatens the integrity of academics and encourages a culture of positive marking and grade inflation. Critics have argued that commodification leads to standardisation, formulaic teaching, and reducing quality into quantity, intellectual rigour into customer service. On the other hand, students should be protected from the risks of misinformation, low-quality programs and qualifications of limited validity. Thus it is essential that program information and qualifications should be intelligible in order to increase their international validity and portability to facilitate cross-institutional recognition arrangements.

The trend of attempting to recast the relationship between academics and students along the model of service provider and customer has alarmed many academics. Universities have embraced the market logic of growth, competition and commercial techniques in promoting and encouraging academic capitalism and entrepreneurship.

## **5.2. ACADEMIC CAPITALISM**

The term ‘academic capitalism’ was first coined by Slaughter and Leslie in 1997 to describe the engagement of universities and their staff in market-like behaviours. This is a result of the effects of globalisation and the ascendancy of the neoliberal ideology that the marketplace is the ideal catalyst for advancing economies and improving social conditions. Consequently, government investments in higher education have decreased, with increasing emphasis on universities’ economic role and cost efficiency. As a result of declining public funding, universities engage in market-like efforts to obtain external funds in the form of research contracts, commercial activities, partnerships with industry and government, knowledge transfer, and recruitment of more fee-paying students. However, the profit motive has become increasingly explicit and central in

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## **New Academic Paradigm**

*“A cost crisis, changing labour markets and new technology will turn an old institution on its head”*

*Economist*

**Abstract:** This concluding chapter offers solutions to universities to help students to succeed in the 21<sup>st</sup> century. To this end, universities have to create real value for students - equip them with employable skills to be entrepreneurial, innovative, and adaptable in the volatile job market. And above all, universities have to help students to learn how to learn in order to keep up with the technological race and develop the critical abilities to respond to continuous changes in the labour market and technology. For example, universities need to integrate new-media literacy into education programs; introduce experiential learning which helps students to develop the soft skills, such as the ability to collaborate, work in groups, read social cues, and respond adaptively. Furthermore, universities need to integrate interdisciplinary training that allows students to develop skills and knowledge in a range of subjects. For their part, universities should take lessons from other industry leaders, embrace technology, and benefit from neuroscience research. Above all, universities should get leaner and more productive with administrative efficiency, agility and responsiveness to trim their cost structure. They need to transform their old business model to meet the challenges of the 21<sup>st</sup> century. They may also have to look at the global market to remain relevant. While the current climate uses higher education as a means to enhance global competitiveness, universities must maintain their critical business, promoting critical thinking, self-reflection and critical action and stay true to their academic missions.

**Keywords:** Business models, Credential society, Future Work Skills, Gainful employment, Graduate wage premium, Internet of Things, Neuroplasticity, Operational efficiency, Reversed innovations, Technology leadership, World-class universities.

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## 6.1. MENDING THE BROKEN DREAM

“The staid higher-education business is about to experience a welcome earthquake” reads the headline of the leading article of the Economist of June 28<sup>th</sup> 2014 on “*The future of universities-The digital degree*” (Economist 2014). Forbes Magazine also warned of a “Disruption: Coming Soon to a University Near You” (Fischer 2012). It stated in the 2012 article:

*“It’s becoming a familiar story, university experiences are increasingly being characterized by: impractical learning, out-of-touch faculty, exorbitant tuitions, time-wasting requirements and diminishing probabilities of employment”.*

### *Forbes Magazine*

In the preceding chapters we have examined the challenges faced by the traditional universities. What we have to realise is that universities are still using that ancient elite university model for mass education in the 21<sup>st</sup> century. But this model is now broken. Universities have been offering the same value proposition for decades without coming to terms with the new reality, creating new and innovative values for their students. That model was working during an era when universities were for the privileged elite, and when universities monopolised the higher education market.

Yet we all know that the world has become globalised, digitised and consumerist. Universities no longer enjoy the monopoly for knowledge production and dissemination. Competition can come from anywhere, anytime, and it is getting more and more intense. Student expectations have since changed, and their learning is no longer confined to rigid timetable-driven classroom lectures. Instead they expect their learning materials to be delivered to their mobile devices anywhere, anytime 24/7. Many of the students nowadays are products of the *credential society* where what they really want are the qualifications, not the pursuit of knowledge. While they have been willing to pay for ever-increasing university fees, students are starting to question the benefits of an overpriced

degree. All the while, universities are obliviously driving up their costs in bloated administration, marketing and reputation-building exercises to become the next Harvard or Oxford. In fact, the high fees charged bear no relationship to the program quality and student experience. Rather, it is based on the perception that a high-priced university degree indicates quality. But this myth is being dispelled. A case in point is that in the United Kingdom, the majority of universities are charging the maximum fees (£9,000) allowed by the UK Government in 2014, as they fear that any lower fees could result in their being regarded as substandard. On the other hand, universities are charging much less for postgraduate-taught programs, since these programs do not attract government subsidies or loans, and students have to pay out of their own pockets. Therefore a large number of universities who target this postgraduate market compete by undercutting their fees. But this does not apply to international students, who must pay double or more of the regular fees in any case.

It is unfortunate that many universities have allowed their bureaucracies to proliferate and stymie efficiency and productivity. What's more, universities keep on raising fees and imposing students with enormous debts while continuing to construct grand buildings and facilities in an arms race, using taxpayers' money and tuition dollars. These bloated bureaucracies and grand campus buildings do not necessarily benefit the students. Some universities even turn to bond markets to raise money for their campuses and facilities when they do not get enough revenues from student fees and government subsidies. Such universities seem to be more concerned with their own image and brand rather than their students.

On the demand side, the massification of higher education has seen an oversupply of graduates, resulting in rising graduate unemployment and a falling graduate wage premium. The gap between average tuition fees and average earnings of graduates has doubled over the last 10 years. Yet there is skilled shortage in some industries. Apart from not getting employable relevant skills, students have been sold the *University Dream*: that a university degree is a meal ticket to a well-remunerated job, to the extent that graduates are unwilling to take on lower-level work (Holmes & Mayhew 2015; O'Brien 2015). At the same time, students are burdened with huge debts. This has led to more and more students and their parents questioning the value of over-priced degrees. In fact, there has been



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**CHRISTINA CHOW**

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Dr Christina Chow has an Honours degree in Microbiology and Immunology from Canada's McGill University, a Master of Management from the Norwegian School of Management, and a Doctor of Business Administration from the University of Newcastle, Australia. She is a Fellow of the Australian Institute of Company Directors, a Fellow of the Australian Institute of Management, and a member of Ausbiotech. She has teaching, research and management experience at institutions including McGill University, University of Hong Kong, University of Melbourne, Royal Children's Hospital and RMIT University. She also has extensive experience in corporate governance and financial, project and risk management in the tertiary education sector. At RMIT University in Australia, she has worked with the former Vice-Chancellor and Chancellor in establishing RMIT's Campus in Vietnam, the first foreign-owned campus in the country and Australia's largest offshore campus. She is currently a Principal Advisor to the Pro Vice-Chancellor and Vice-President of the College of Science, Engineering & Health at RMIT University. Her previous publication includes "Mission Possible? An analysis of Australian universities' missions".



**CLEMENT LEUNG**

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Professor Clement Leung's academic experience spans four continents. Professor Leung obtained his BSc (Hons) in Mathematics from McGill University, Canada, an MSc in Mathematics from Oxford University, and a PhD in Computer Science from University College London. He has an outstanding record of research achievements and extensive experience in the building up of academic units and international engagement. He has held several academic appointments in Europe, including an Established Chair and Head of Department at the University of London. His Australasian academic appointments include the Foundation Chair in Computer Science at Australia's Victoria University, and full professorships at the National University of Singapore, Hong Kong Baptist University, as well as currently serving as an Associate Dean for Science & Technology at United International College. He holds two US patents, and his publications include four books and well over one hundred research articles in top high-impact journals. His services to the academic community include serving as Program Chair, Program Co-Chair, Keynote Speaker, Panel Expert, and on the Program Committee and Steering Committee of major International Conferences. In addition to serving on the Editorial Board of ten international journals, he has served as Chairman of the International Association for Pattern Recognition Technical Committee on Multimedia and Visual Information Systems, as well as on the International Standards (ISO) MPEG-7 Committee responsible for generating standards for digital multimedia, where he played an active role in shaping the influential MPEG-7 International Standard. He is listed in Who's Who in Australia, Who's Who in the World, Great Minds of the 21st Century, Dictionary of International Biography, and Who's Who in Australasia & Pacific Nations. He is a Fellow of the British Computer Society, awarded a Chartered Fellow by the British Computer Society, and a Fellow of the Royal Society of Arts, Manufactures and Commerce.