Constructing Future Higher Education Scenarios

Insights from Universiti Sains Malaysia

Celebrating 50 Years of Nationhood

Compiled by Universiti Sains Malaysia

Constructing Future
Higher Education Scenarios

"It's not the strongest of the species
that survives, nor the most intelligent;
but the one most responsive to changes."

Charles Darwin

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Foreword

from the Minister of Higher Education

Malaysia is entering an exciting phase of national development. During the first fifty years of independence, we saw the country grow from an economy predominantly based on agriculture and natural resources, to one which now features the advancement of high-end manufacturing and services. Along the way, we have expanded our global presence and today are the 18th largest trading nation in the world. We have in other words successfully moved up the value chain and established ourselves as a global player.

While there is much for us to be proud of, we must continue to build our momentum and march towards achieving the goals set out in Vision 2020. The way forward was outlined in the Ninth Malaysia Plan, launched in 2006 by YAB Dato' Seri Abdullah Haji Ahmad Badawi, where he made it plain that having established first class infrastructure in the country, Malaysia must now turn its attention towards enhancing its human capital.

Universities and institutions of higher education in Malaysia must heed this as a call to action. Today, they are responsible for almost 700,000 students in tertiary education and this number will continue to grow as we strive towards our goal of having 40 per cent of the 17 to 23 year old cohort gaining such education. Through research, universities also play an important role as fountains of knowledge creation and innovation.

Clearly, universities must be attuned to the ever changing needs of society and industry if they are to remain relevant and contribute towards human capital development. Strategic plans of action should also mirror Malaysian values and ethics, and embody our aspirations, particularly those for the younger generation.

Foreword from the Minister of Higher Education

I am therefore pleased to note that Universiti Sains Malaysia (USM) has taken a proactive step to analyse the role of the university in order to accomplish this. The initiative in identifying alternative scenarios in which a university might exist, and the development of a roadmap arising from this, will help USM remain relevant to the needs of society and industry, and future challenges both locally and globally.

The Ministry of Higher Education welcomes these efforts by USM and it is my hope that this publication will pave the way for leaders and scholars within the higher education fraternity to consider the impact of future scenarios on existing strategies that they may have.

I wish USM well in charting its path forward and bringing about a form of higher education that best matches its vision and the betterment of the nation.

DATO' MUSTAPA MOHAMED
MINISTER OF HIGHER EDUCATION MALAYSIA

Foreword
from the Vice-Chancellor

As economies become increasingly sophisticated and the commodification of knowledge more prevalent, institutions of higher education need to reevaluate their roles and strategies as purveyors of knowledge beyond the existing educational frameworks.

The changing nature of higher education and that of its clients, namely students, due to shifting demographics, economic paradigms, technological innovations and patterns of learning, in turn suggest that higher education reforms are sorely needed to cope with the demands foisted upon universities by the advent of the knowledge-based economy. As economies become increasingly sophisticated and the commodification of knowledge more prevalent, institutions of higher education need to reevaluate their roles and strategies as purveyors of knowledge beyond the existing educational frameworks. Such reevaluations must take into cognisance that universities continue to power economic growth, social and technological advancements through the provision of quality education.

When formulating goals and strategies for a university of tomorrow, in the future planning process, it is critical that such activities be guided by thorough assessment of the trends and major forces in our external environment that shapes the context in which an institution will operate. They present both opportunities and challenges, encompassing developments in the social, political, economic and technological arenas. Proper attention to these dimensions will enable the formulation of strategies that are relevant and effective. Within the Malaysian context, this calls for any future scenarios to be pivoted on at least two main philosophies, namely the democratisation of knowledge and the transition to k-economy within the current trend of globalisation.

Foreword from the Vice-Chancellor

The main challenge confronting us at this point is how to accurately anticipate and most effectively foster innovation in research and teaching in the university. In particular as the nature of knowledge, its methods of acquisition and dissemination as well as funding changes at unprecedented speed. While this question is not altogether new, it raises institutional questions that a decade ago might not have been anticipated. This is because the degree by which multidisciplinary work as well as the organisation and funding of universities have become increasingly fluid and less discipline-centred. For example, will university-industry partnership rather than the traditional departments/schools/faculties be best suited to stimulate, support, promote, nurture and evaluate quality teaching and research? This is in view of the emergence of diverse faculty who may or may not employ traditional methods and theories heretofore common to "disciplines" at large. Can the traditional "major", for example, based upon the concept of "knowledge" as a neatly bound, discipline-specific, discrete and tangible commodity, be able to deliver diverse curricular trajectories that can fulfill the demands of industry and society in general?

If, indeed, in the next decade or so, the nature of knowledge acquisition, its organisation and the productivity of new scholarship require different and more eclectic sets of assumptions, conventional wisdom, student experiences and research processes. We need to review the traditional answers to questions such as: how best to teach students, and organise them into groups for teaching, and how best to nurture and support faculty through institutional interventions and support programmes? Instead a more flexible system that is capable of fast response and delivery may need to be put in place.

It is with this in mind that Universiti Sains Malaysia (USM) has initiated several workshops and a series of consultations with the aim to challenge intellectual thought on the future scenarios of the university within a constantly evolving socio-economic environment. In line with USM esteemed motto of "We Lead" this project is the first of its kind in Malaysia and we are indeed proud to be pioneering a new paradigm in advancing a new future of higher education in Malaysia.

This report is a succinct compilation of all possible scenarios that were elicited during the many fun-filled yet mind-blowing sessions from committed groups of USMers, be they academics, professionals or administrators. Indeed each strived to fashion practical solutions to meet the future challenges forecasted by the groups. This publication symbolises the hard work and commitment invested in the genuine attempt to create a university of tomorrow today!

Our heartfelt thanks to all involved in realising this new vision for USM and sincerely hope the readers will gain new insights about what the future of higher education is all about.

DZULKIFLI ABDUL RAZAK
PROFESSOR DATO'
VICE-CHANCELLOR USM

Foreword
from a Futurist

This is not an easy time for higher education in general and the university in particular. Academics feel under threat by globalisation, truth being denigrated by the corporatisation of the university. Ministries of higher education, while seeking to preserve the integrity of the university, know that foundational changes must be made if they are to compete with other nations. Students continue their search for jobs and prestige, generally less concerned with the foundational challenge to the nature of the university. Corporations are seeking in-roads to a previously closed environment hoping to catch a major share of the growing knowledge economy market. The public desires research and teaching that solves the problems local communities face and training that can help students find future employment. Social movements argue for knowledge that transforms the current social and economic conditions. And the planet itself calls for healing, in desperate need for solutions from the university.

In this environment, universities can deny the dramatic changes facing them and attempt to create "back to the past" futures, or they can opt to blindly follow "the used" futures of the industrialised nations, or as USM has attempted, to map out alternative futures, unpack the divergent views of stakeholders and then move toward a desired future. The question that remains unanswered is whether current changes are merely a temporary window wherein alternative futures for the university are possible; or whether the future signals the creation of an entirely new university; or whether the university as we have known it in the last few hundred years, will co-exist with the new modes of learning at personal and institutional level.

Foreword from a Futurist

The extent of the transformation higher learning is undergoing is yet unknown and may remain so for years to come. However, what we can be sure about is that the challenges that higher learning is facing are not going to go away. Globalisation, privatisation, virtualisation, democratisation (peer to peer learning and assessment), among other drivers, are turning business-as-usual into business-was-usual. Dramatic changes in the world economy – from the rise of East Asia and potentially India – to climate change, not to mention revolutions in genomics, nanotechnology and the brain-mind nexus, all augur for more and not less change in the future.

Universiti Sains Malaysia (USM) certainly deserves a great deal of credit for publishing *Constructing Future Higher Education Scenarios*. However, it is not just the publication of this book that is important, but also the university's attempt to use the futures approach as part of transforming the culture of the university. Universities all over the world will be looking to learn from USM, from what they have done so far as well to see how USM manages to move from anticipation to invention. Success creates more success and innovation breeds more innovation. The entire USM university community is to be congratulated for taking the first steps forward in what promises to be a promising long journey ahead.

SOHAIL INAYATULLAH
PROFESSOR
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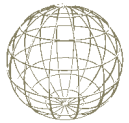
TAIPEI

Executive Summary



The constant ebb and flow in higher education paradigms is closely entwined in the modern era with transformations that constantly occur in the politico-economic sphere. The recent changes from a production-consumption model of the Fordian era to a knowledge-based model based on Schumpeterian philosophies has necessitated a concomitant shift in the delivery systems of the capitalist economy of which the university is an important component. When previously the university was an exogenous extension of the economic model, now it has become a part of the endogenous core. The rollback in welfare statism and the diminishing role of government in university funding has necessitated many universities to fashion new growth models so as to remain relevant and competitive in these challenging times. The twin impacts of globalisation and technological advances has forced universities to devise innovative strategies and systems to maintain their foothold on the educational landscape. It was in cognisance of these rapid transformations and in keeping with Universiti Sains Malaysia's (USM) motto of leadership and innovation that we have initiated the Future of Higher Education project to conceptualise our very selves in future tertiary education landscapes. Futures scenario is an imperative for our survival as it allows us to map out where we are heading and what are the software and hardware we should equip ourselves with in order to confront the challenges ahead. The ultimate aim is to choose the best possible model that is tailored to our strengths and exploits our intrinsic innovative potentials in order to forge ahead in an increasingly competitive educational environment.

The greatest gains from the project was the arousal from our cocoons of self-comfort and complacency to a multifarious future fangled with all its uncertainties and lurking dangers. We also gained valuable insights into our strengths, versatility as well as the general preparedness of our citizenry to welcome and embrace change, not forgetting the fact that the exercise also sensitised us to our inherent weaknesses and the external constraints that are obstacles in our pathway to future progress. As a knowledge building exercise, the project did enlightened us on how to visualise our journey into uncharted waters.

The project has indeed galvanised us to put on our thinking caps and think out of the box. From the dining metaphors to enchanting garden concepts, hardnosed business models and even an invisible university thrown in for good measure, we have indeed conceptualised several fascinating scenarios that could be the basis for further distillation and improvements. It is indeed a testimony to our prowess that mouth-watering recipes and virtual cyberscapes, not forgetting corporate board-games and lush, tranquil gardens, could be trawled from our mindscapes and visualised for all to savour and contemplate.

The five scenarios we have conceptualised will surely have implications on the way we operate and approach the business of providing quality education. In a nutshell, these five alternative scenarios describe three main paradigms on the possible future of higher education in USM: (1) the market-centred paradigm, as envisioned in the student-led a' la carte university, invisible university, and state-led university, (2) financial-centred paradigm, as envisioned in the corporate-led university, (3) and creator-centred paradigm, as envisioned in the scholar-led (autonomous) university.

In the deliberations with the stakeholders (USMers), the feedback received point towards the need to complete our images of the future of higher education with a fourth paradigm: the ethical-centred paradigm. The ethical-centred paradigm would define the whole notion of the reason of existence for the university. Ethical rationality is perhaps the only sustainable solution for which, would mark USM's competitive existence in the future. Current inertia towards incorporating the role of religion and ethics in scientific endeavours, corporate social responsibility, workplace employee well-being, and corporate accountability in organisational pursuits, reflects that as we move forward into the future, religion, ethics, and spirituality is coming back to lead science.

An ethical-centred paradigm would provide answers to issues such as feminisation of society and the inherent assumptions of values residing within each of the alternative scenarios.

An ethical-centred paradigm, when deliberated at length, could point towards a more encompassing future of higher education which USMers would really like to create, how the mission of USM could transform further, and in that process, would allow us to closely examine the kind of ethical-related changes we would like to make for ourselves, within the current state of higher education.

The major obstacle confronting us is in transforming mind-sets. Apart from that, we will also need to sell whatever product to our stakeholders and clients, to balance the needs of industry and community, to embrace innovations in teaching and learning and to reengineer and reinvent ourselves as we strive to maintain our cutting-edge lead in research. Most of all, we need to grapple with the fact that we need to move forward in unison and not be straight-jacketed by prejudices, suspicions and fears.

The project is not without its limitations in that the future is maddeningly unpredictable as it is enshrouded in a fog of uncertainties. The main concern is that will we react to changing paradigms in old guises titivated in new clothes or retreat shell-shocked into our cocoon as the winds of change buffet us. Will we adapt by evolutionary mutation or perish by ossifying intransigence is something no future scenarios can ever accurately predict. Yet we should not perish without trying for the greatest hindrance to progress is the death of the spirit to innovate, the crumbling of aspirations and the demise of hope.

The future of higher education in Malaysia is bright despite being fraught with many challenges and uncertainties. A zestfully expanding economy, a passionate thrust towards value-added services, a whole-hearted push for scientific endeavour and a passionate embrace of technology and new modes of production allied with a skilled and educated workforce all augur well for national development and prosperity. Within this new economic seascape, USM can and should play a leading role in steering our ship of prosperity through the roiling waters of uncertainty. If in this process, we succeed in generating a practical scenario that balances the material and the spiritual within a humanistic and egalitarian framework then we would be a beacon of hope and be worthy of emulation by our sibling varsities. We have nothing to fear but fear itself as we strive to attain that cherished target. With that, we leave you to ruminate over the contents of this publication.

AHMAD SOFWAN NATHAN ABDULLAH
ELLISHA NASRUDDIN

Acknowledgements

This publication draws heavily from the future of higher education workshops as well as dissemination exercises with the USM community between the middle of 2005 and early 2006. A special tribute goes to all the USMers who had voluntarily given their time, energy, and inspiration, in various capacities as leaders, coordinators, facilitators, stakeholders, respondents, writers, rapporteurs, technical assistants, editorial team members, graphic designers, and support staff.

It is no doubt that the Future of Higher Education project owes its gratitude to the Vice-Chancellor for his foresightedness and sincere interest in promoting refreshing as well as new paradigms of thinking amongst the USM community. Hence, through the Vice-Chancellor's stewardship, USM is proud of the opportunity of being the first university in Malaysia to have embarked into the process of developing future scenarios of higher education.

The professional expertise and inputs of academicians and administrators as workshop participants, writers of various alternative scenarios, and as facilitators of the dissemination exercises are duly acknowledged. And of course, the university is grateful for the moments of knowledge-sharing with Sohail Inayatullah, the facilitator of the two workshops in May and December, 2005.

The leadership and coordination by Ramli Mohamed, Omar Osman and the Futures Secretariat from the Corporate and Sustainable Development Division, and Unit Latihan USM during the workshops and dissemination exercises are duly noted. Equally important to mention is the leadership support by the deans and deputy deans, head of centers/departments, as well as the technical/administrative support of all staff from the various schools/departments of the three campuses.

The USM stakeholders who participated in the dissemination exercises stand alone too with deserving recognition. Without positive responses, inputs, and interests from the over 400 academicians, administrators, support staff, and students, as well as the USM alumni, this publication would have lost its main reason for existence.

It is also with heartfelt gratitude that this publication owes its form today, to the graphic layout and designers, Nor Khairi Baba, Rozita Ilamdin, and Suandi Md Kamari, who laid the foundation for further progress and improvements in the final stage of publication. Their efforts at dabbling in the designing-cum editorial work since the beginning of late 2005 were instrumental in bringing the publication towards the final stage where improvements were able to be made with heightened clarity.

Finally, the professionally outstanding and sophisticated touch to this publication would not have become a reality without the expertise of Salamiah Mat Sah and her team members from Penerbit USM. The dedication and meticulous effort of Salamiah Mat Sah at assisting with the finishing touch to this publication is much appreciated.

ELLISHA NASRUDDIN

Chapter 1

Introduction

Chapter 1
Introduction

HIGHER EDUCATION: THE ADVENT OF A NEW PARADIGM

The future of higher education especially the role of universities within the construct of the new economy has been a subject of intense debate and speculation. The commodification of knowledge (Jacob, 2003) and the impact of globalisation (Carnoy, 2002) and the rapid pace of technological advancement (for instance, the digital revolution) have all impacted on the role of universities and prevailing systems of higher educational delivery. The preceding external agents of change are also mediated by other factors that have had an impact upon tertiary education. Among them are politicisation and multiculturalism. Within the Malaysian context, the reduction in public funding for higher education, the increasing push for industry-university collaboration, the transition to a high-tech economy where knowledge workers, value-added and innovation are assumed imperatives, the advent of private higher educational institutions and the establishment of branch campuses of foreign universities have put an additional stress on public universities such as Universiti Sains Malaysia (USM) to reengineer and reinvent themselves or face the inevitable fate of irrelevancy. This reengineering requires a visionary view, a keen sensitivity to the ongoing process of social and economic change, and how new and appropriate educational paradigms that are tailored to exploit the strengths and opportunities while minimising the weaknesses and ameliorating potential threats can be conceptualised. This is especially pertinent if universities are to continue playing their role in societal and economic change as well as technological advancement by functioning as incubators of innovation and entrepreneurship as well as of skilled and highly flexible and creative knowledge workers. Failure to analytically analyse the prevailing socio-economic environment is a common affliction of academia as noted by Peters (2003) with few exceptions. They present both opportunities and challenges and consist of developments in the social, political, economic and technological arenas and proper attention to these developments enable strategies to be relevant and effective (Zubboff, 1988). Within the Malaysian context, this calls for any future scenarios to be pivoted on the main prevailing Kondratiev i.e. the transition to a k-economy/k-capitalism within the current trend of globalisation.

The main challenge confronting us here in this Kondratiev is how to most effectively nurture and promote innovation in research and teaching in the university of the future, as the nature of knowledge, its acquisitional and dissemination modes are in constant flux. Furthermore, the contraction in government funding and the thrust for more linkages between business and academia have called for a reevaluation and the potential realignment of the public university's mission and vision. The questions raised by such reappraisal are both highly complicated and institutional in nature as they impinge upon the very existence of the university's philosophy as we know it today. Before we proceed to examine these issues within the Malaysian context in general and the USM context in particular, we need to first elucidate the changing paradigms of higher education particularly in the West and assess the impact of these transformations to Malaysia and USM in particular. This section will first outline a transformational change sweeping through society and its repercussions for the future higher educational landscape i.e. the advent of the k-economy. Next, a brief explication of factors in particular to the developing countries in the South

is provided. Additionally, a snapshot of the winds of change blowing through the local educational vista is also elaborated upon and the impact of these changes and factors on the tertiary education scene in Malaysia in general and in USM in particular is delved into.

The Advent of K-economy

The premise for future scenarios in higher education posits on the redefining of the current paradigms of knowledge. Based on the literature relevant to changing paradigms of knowledge formats and applications (Allee, 2003; Amidon, 2003; McElroy, 2003), knowledge can be defined as the purposeful use of information to meet the needs of the market while innovation can be defined as the purposeful and creative application of knowledge in new contexts to drive the market. The manifestation of knowledge formats and their applications is the knowledge economy paradigm conceptualised by Freeman et al. (1982). Freeman and his colleagues drew on Schumpeterian evolutionary economics, in particular the notion of innovation as a driver of economic growth, to underpin their attempts to theorise the dynamics of technology, growth and trade in the 1980s (Freeman et al., 1982; Freeman, 1987; Freeman & Perez, 1988).

Their work has influenced the conceptualisation of the knowledge economy in two key areas. First, it associates the characteristics of the social and economic change that occurs during each business cycle or Kondratiev with the dominant "factor" industry or technical innovation which characterises it. For instance, the fourth Kondratiev or long wave was Fordist. It was typified by mass production and consumption, and its dominant factor industry was electromechanical technology. In the current fifth Kondratiev, the major factor industry is microelectronics and the "key 'carrier' sectors" include computers and software, telecoms, computer-integrated manufacturing/new materials, information technology (IT) services, biotechnology, space/satellite and environmental technologies (Perez, 1985). It is this emphasis on technological innovation as a driver of economic growth which underpins the emphasis on techno-scientific knowledge in the knowledge economy.

The second key contribution to the knowledge economy is the conceptualisation of national innovation systems – "networks of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies" (Freeman, 1987: 4). As the Organisation for Economic Cooperation and Development (OECD, 1996: 7) explains, "The configuration of national innovation systems, which consist of the flows and relationships among industry, government and academia in the development of science and technology, is an important economic determinant".

More recently, new growth theory (Romer, 1990, 1994) has reinforced these views. Romer also contends that economic growth is driven by technological progress or innovation. He argues that it involves the input of existing knowledge and human capital to make new and improved knowledge products. Also known as endogenous growth theory, new growth theory differs from classical economic theory, which acknowledges the importance of knowledge to economic growth but regards knowledge as exogenous – i.e., external to the economic process or growth model (Solow, 1970). In endogenous models of macroeconomic growth, knowledge is internal to the model, and growth is the result of maximising the "behaviour" of knowledge workers and knowledge resources. National systems of innovation operate to facilitate knowledge flows that will accelerate technological innovation and orient knowledge production to commercial application. They operate to coordinate knowledge production with macroeconomic goals. In short, they are designed to maximise the behaviour of knowledge workers. Rather than suggesting that one era of production was superseding another, writers such as Foray & Lundvall (1996) and David & Foray (2002) elaborated a profoundly different argument. They claimed that

knowledge, interpreted in its widest sense, now constituted the key factor that determined economic success.

These writers acknowledge the unevenness of the trajectory of change that had been occurring for some time across different industrial societies, industrial sectors and organisations, a development that led many writers to express scepticism about the claims made about the long-term implications of the new economy (Gordon, 2000). Nevertheless, they argued that this trajectory of change, based on a combination of endogenous and exogenous modes of innovation, was beginning to constitute a gradual acceleration of the transition to a knowledge-based economy (Foray & Lundvall, 1996). The gathering momentum of this transition was partly attributed to the benefits of the fusion of computer technology and telecommunications, which had begun a decade or so earlier, and to the gradual maturation of the new digital information processes [David, 2001(a)].

One distinctive feature of the fusion of computing and telecommunications had been the creation of an electronic infrastructure – the World Wide Web – that supported the global flow of communication. This development was perceived to have a number of consequences. In the first place, it enabled the knowledge production system to become more widely distributed across a host of new sites and agencies and thus, enhanced creative interaction among scholars and scientists and equally, among networks of product designers, suppliers and end customers, with the result that new hybridities of cultural products, services and lifestyles were emerging across the world. In the second place, the new technologies had the potential to facilitate the exploration and analysis of the contents of gigantic databases to support research and development in universities and private research institutes, as well as within enterprises, and to create large scale decentralised systems for sharing the fruits of such exploration and analysis amongst networks and clusters of producers and users (David & Foray, 2002).

K-economy and the Newly Industrialised Countries

In the enthusiasm to communicate a vision of the role of information and communication technology within the knowledge economy, overtones of technological determinism sometimes crept into the debate and, in the process, masked one extremely important issue about technology i.e. information and communication technology is not a neutral technology. Depending upon the strategic choices made by an organisation, it could either be employed to informate or automate organisational practices (Zubboff, 1988). These different possibilities for the use of information and communication technology, in turn, presupposed fundamentally different demands for knowledge and skill. Pursuing the former approach tended to result in a demand for a new type of skill – "intellective skill" – i.e., the ability to work collaboratively with others to input, access, monitor and interpret symbolic data (Zubboff, 1988), a development that, in theory, required educational institutions to rethink the relationship between new curriculum, technology and pedagogy. In contrast, if the second option was pursued, it tended to result in information and communication technology being used to reinforce traditional Fordist and Taylorist work practices (Thompson & Warhurst, 1999). For example, automated data processing systems were designed to fit with extremely routine-based systems of vertically divided labour or to reinforce managerial regimes of control and supervision of work, developments that did not require additional levels of knowledge and skill, let alone new forms of knowledge and skill.

In the context of much of the Western world and newly industrialising countries such as Malaysia, the former route was the preferred choice. Nevertheless, such a choice necessitates a reconfiguring of the role of the universities in the emerging knowledge economy. Such a reconfiguration is apparent in the way that national innovation systems policies are reshaping knowledge production and exchange in and beyond the university

in many countries around the world including Australia, the UK, the European Union (EU) countries, Singapore, Korea and India. According to a recent OECD (2003: 107) report, higher education reform in New Zealand, for example, "Sets out a five-year approach for a more collaborative and cooperative tertiary system, contributing to national goals and more closely connected to enterprises and local communities". The Danish Ministry of Science, Technology and Innovation was established in 2001 "to enhance interaction between business and the worlds of research and education" and "A new university bill introduced a reform of governance designed to enhance universities' exchange of knowledge with economy and society" (OECD, 2003: 104). A recent Australian higher education reform document indicates the new positioning of the university within this framework when it states, "Research and innovation play a vital role in building Australia's competitive strength in a global knowledge-based economy. Universities clearly have a central role to play as major producers of basic and applied research" (Nelson, 2003: 31). Universities have become central to innovation systems and so, too, potentially, have their academic staff, assuming they can be reshaped in the appropriate manner. This is especially so with innovation systems that typically promote particular versions of technoscience, knowledge networks and research commercialisation. Nelson (2003) identifies three types of ideal academicians in the k-economy namely the technoscientist, the knowledge networker and the technopreneur.

K-economy and its Impact on Higher Education

The flow-on effects of knowledge economy policies and innovation systems for the university are indicated by such things as the provision of incentives to increase enrolment in the so-called "enabling" sciences (mathematics, physics and chemistry) to feed the applied sciences; the promotion of information and communication technology (ICT) skills and online learning; and the technoeconomic orientation of national research priorities. National research priorities typically promote university research in those areas seen to characterise the fifth Kondriatiev – IT services, biotechnology, space/satellite and environmental technologies (Perez, 1985). These innovation policy initiatives are already underway in much of the industrialised world, see for instance, the Canadian Innovation Strategy, Knowledge Matters: Skills and Learning for Canadians (Government of Canada, 2002) and the UK white paper entitled, "Our Competitive Future: Building the Knowledge Driven Economy" (Department of Trade and Industry, 1998). Within the Malaysian context, the emphasis on the fifth Kondratiev can be seen in the Vision 2020 statement, the National Education Policy, the Industrial Master Plan (IMP) and the New Development Plan (NDP).

Several strategists, among them Moravec (2004), envision that the emphasis on a knowledge-based economy will inevitably lead universities to adopt a market-driven approach towards knowledge creation. Moravec (2004) foresees that inspired by the methodology of MBA and other professional programs, traditional disciplines will begin to emphasise practice-based learning, problem-based learning and other collaborative techniques.

Distinctions between disciplines will begin to blur and interdisciplinary programs will begin to emerge to meet growing demands for new forms of education in a globalised market. For instance, he opines that the Education Faculty could partner with the Carlson School of Management to create a graduate-level business program with international and cross-cultural components, enabling the school to compete in the field of international management with schools that have traditionally dominated the market.

Similarly, Waks (2004) envisions the advent of corporate universities that educate employees on the specific skills they need to succeed in their jobs, promote company values, create intracorporation networking

opportunities, and increased company loyalty. It is foreseen that these market-driven universities will exhibit characteristics of knowledge production, as detailed by Gibbons et al. (1994). Universities will be driven to design and prescribe solutions for customers in the marketplace which Roebuck and Brawley (1996) refer to as academic entrepreneurship.

Despite the many benefits associated with the K-economy in terms of higher educational innovations and their concomitant social transformation, several researchers caution on the effects of the k-economy on the traditional role of the university. Among them, Delanty (2003) highlights seven contradictions that confronts higher education.

The role of the university in the new k-economy particularly in the Third World is also impacted upon by four main factors. Inayatullah (1996) outlines them as

- globalism – the freeing of capital and the taming of labour and nation-states, particularly those in the South;
- multiculturalism – an understanding that while reality is socially constructed and we create gender and culture through practice, cultures, civilisations, and women and men know the world differently, and that a good society must authentically reflect this diversity;
- the Internet – in all its meanings from the site, the form, the delivery system to the content of the new universities, particularly in the possibility of the creation of the virtual university and decentralised publishing; and
- politicisation – in the South this refers to increasing attempts to use the university for repressive measures as well as the university as a site of dissent, and in the North it relates to the university being part of the economic rationalisation of society, of the post-industrial problem.

Inayatullah and Gidley (2000) explain that these four general drivers operate at different levels. Globalism and politicisation are long-term historical trends and now fully developed, while multiculturalism and the Internet are more emergent. They further note that the drivers that will impact upon the configuration of the university, include (p.13)

- the university as a corporation (which globalism enhances);
- the university as a site of academic leadership (the model of knowledge as philosophy);
- the university as the ideological arm of the nation-state (politicisation);
- polyversities, multiversities and diversities – the creation of a range of alternative universities, all based on the idea of difference, of finding knowledge niches (multiculturalism);
- the emerging global electronic university, which will overcome the "tyranny of disciplines, replace hierarchy, and through reduced costs and flexible access reach enormous numbers of people", (Internet); and
- the community-based university, whose main function is public service, using the university to help the community thrive, seeing the student as an active participant instead of consumer or rote learner and seeing professors as active and reflective practitioners instead of experts. This last dimension of the university is about the role of the intellectual in society: as beholden to state and capital or serving community/global planetary interests (the expanded public).

The Local Context: USM

A brief overview of the tertiary educational scenario in the country and USM will reveal their own transition to the k-economy paradigm. The government for instance has initiated several moves that have implications for the tertiary educational scene as well. As noted, the Industrial Master Plan launched in 2001 places a heavy emphasis on developing knowledge-based products with a concomitant shift from low-tech manufacturing output to high-tech value-added production. The thrust towards the k-economy is very much evident in the Multimedia Super Corridor (MSC) initiative in 1998, the launch of the bio-technology initiative in 2005 and the emphasis placed on the production of skilled human capital in the New Development Plan (NDP). The move to encourage the specialisation of universities and the call for increased university-industry collaboration indicate an increased urgency on the part of the authorities of establishing a highly skilled and innovative workforce in line with the aim of attaining industrialised status as envisaged by the Vision 2020 policy document. Further, the decision to allow the entry of foreign students into undergraduate courses and the targeted upgrading of staff qualifications at the tertiary level are also new variables thrown into the mix. Furthermore, the establishment of the Higher Education Ministry in 2003, the design and proposed use of Key Performance Indicators (KPI) and accreditation powers conferred to independent bodies, all underline the government's efforts to upgrade standards and prepare universities for the challenges of globalisation.

For its part, as a constantly innovating university, USM itself has not remained inured to the changes both in the local and international environment. It is a testament to a proactive stance to developments that certain scaffoldings of the future university scenario have been put in place. For instance, the university in a garden concept introduced in 2001 and the healthy campus initiative are two examples of innovations that we have embarked upon. University-industry collaborations have been further augmented through the signings of MOUs promoting interlinked research activities and product commercialisation. Additionally, MOUs have also been signed with both foreign and local institutions to foster interdisciplinary and transdisciplinary research and exchanges. The introduction of cluster platform for research activities and cross faculty collaborations has germinated numerous innovations that have received numerous accolades at prestigious events such as ITEX and MOSTI. In short, we have put in place a skeletal framework for the future and this exercise is another initiative in determining our future in a holistic and comprehensive manner.

It can surmised from the above that the advent of the k-economy is increasingly having a transformational effect on the role of the university throughout the world and USM will not be exempted from this new wave. Such a transformation implies that the future philosophical and functional framework of the university itself would have to undergo a metamorphosis to ensure its continued role as an incubator of innovation and a driver of social change. Any such transformation can be visualised through scenario-building which can help inform decision making and strategising by the relevant stakeholders (see Figure 1.1).

Within the USM context, this scenario-building in the academic environment would entail the consideration of a number of issues that are linked closely to academia. Among these issues include intellectual proprietary rights, pedagogical approaches, evaluation models, curricula design, accessibility, good governance, social and economic relevance, acceptance of change, and bureaucratic miasma. By far, the most important question to consider is whether to posit the future university in the k-capitalist framework as envisaged by Alan-Burton Jones (2003) or the more humanistic worldview. Will USM dispense with the humanistic heritage of the gift economy in the knowledge arena or will it be able to skillfully

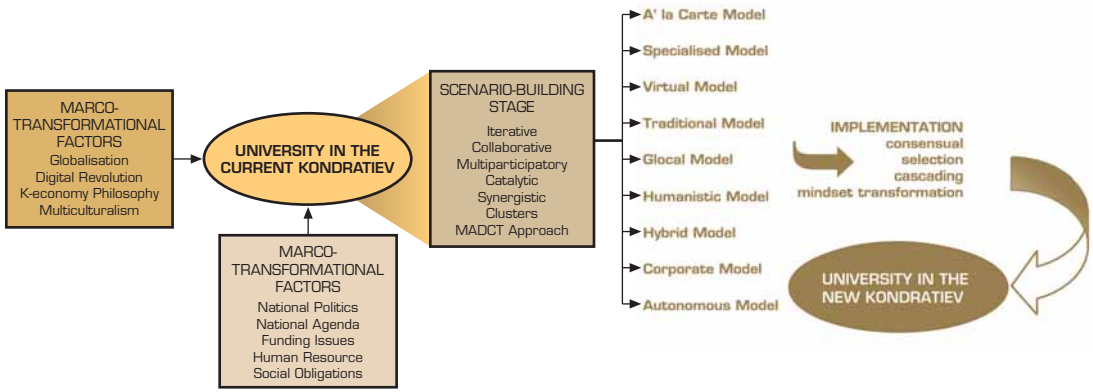


Figure 1.1. Transformational Model of University Change

mediate a compromise? Will we forego our social obligations as we pursue a more business-oriented approach?

Will future budgetary constraints force us to close down non-k-economy viable courses? In light of these impending changes, what are the visions of the future?

Where would any model proposed be posited in the disciplinary continuum (Figure 1.2)?

These and other related issues need to be resolved as USM grapples with the challenge of establishing itself as the premier tertiary institution in the country.

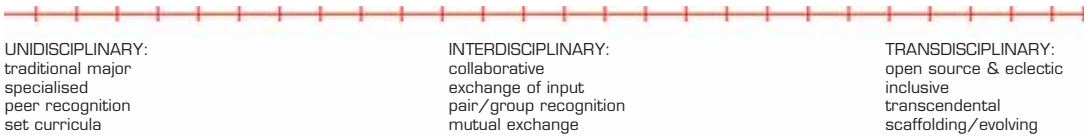


Figure 1.2. The Disciplinary Continuum

THE FUTURE OF HIGHER EDUCATION: IMPLICATIONS FOR UNIVERSITI SAINS MALAYSIA (USM)

It is evident thus far from the brief overview above that USM needs to reengineer itself in line with the new higher education paradigms taking root elsewhere. As we move further into the new millennium and the fifth Kondratiev firmly ensconced in the global economic sphere, the need to reexamine our approaches to the provision of quality tertiary education that is relevant to social and economic needs has become increasingly imperative.

Second, the need for reevaluation of our approach has become even more pressing in recognition of the fact that future government funding imperatives dictate that we need to source for alternative financial sources as the burden of subsidising tertiary education is increasingly placing constraints on the government's coffers.

Third, the move towards specialised university status as envisioned by the Cabinet implies that we need to refashion our current curricula, staffing, research and facilities so as to confront the challenges that such a sea of change will wrought.

Fourth, the increasing prevalence of virtual universities, innovative twinning programmes, branch campuses of foreign universities and corporate funded private institutions are posing a challenge especially in staff and student recruitment and has called for a rethink in our strategies.

Fifth, the increasingly symbiotic relationship between universities and industry as espoused and promoted by the government necessitates an evaluation of our academic and research fundamentals so as to enable us to provide quality education to meet industrial needs more efficiently.

Sixth, in keeping with our motto, "We Lead", the need to reinvent ourselves in light of an ever changing socio-economic environment is of paramount importance. The realisation that knowledge, according to Amidon (2003), is the source of new economic wealth signifies that we need to strategically realign ourselves to actualise and capitalise from this concept.

Seventh, we need to build on our recent successes in both the local and international arena to foster an image of constant innovation and transformation in line with our image as a leading university in the region in a variety of academic areas.

Eighth, the pervasive influence of technology in our daily affairs, the impact of globalisation and the accelerated entwining of our economy with the global economy calls for a reappraisal of our present role and approaches both within the local and international arenas.

Last but not least, paradigm shifts occurring within our national boundaries especially in the economic and scientific areas (hightechnology, biotechnology, ICT etc.) require us to constantly explore new areas of knowledge and pioneer new fields of intellectual endeavour in order to remain a leader and innovator in the realms of academia.

Within the context of the background discussed above, the remaining parts of this chapter will briefly introduce the Future of Higher Education project initiated early this year within USM, its main outcomes, as well as the remaining chapters of this report.

This Future of Higher Education project could be viewed upon as continuing from the several innovations that have been institutionalised into USM's framework in recent years, namely, cluster research, transdisciplinary and multidisciplinary collaboration, the university in the garden concept, as well as the research university paradigm. We are optimistic thatby nudging further the frontiers of the future and venturing

into the unknown we are simultaneously opening our minds to a diversity of scenarios. The uncharted territory can be the fertile ground for blossoming of our ideas as we firmly believe that the future undetected is a future given to us, and thus taken away from us. A future contoured, alternative futures mapped, means that the possibility of influence can increase at the very least; it means that there is a possibility that the futures being shaped are done more thoughtfully, more creatively, and with more urgency.

THE FUTURE OF HIGHER EDUCATION PROJECT WITHIN USM

The Future of Higher Education project began with a two-day workshop entitled "Creating the Future of Higher Education: Implications for Universiti Sains Malaysia", which was held at the Hotel Grand Plaza Park Royal Penang on 30 May – 1 June 2005. About 20 top-level leaders, senior administrators, officers and academicians representing various schools from USM participated in the two-day workshop that was facilitated and navigated by Professor Sohail Inayatullah, Professor at Tamkang University, Taiwan and Sunshine Coast University, Australia, and visiting academic at Queensland University of Technology.

Based on multiple forms of pedagogy-short lectures, working groups (which applied the futures methods), Power Points, roleplaying, questioning, reflections, and presentations, an experiential journey (with unlimited boundaries) into the future of higher education unfolded for the USMers.

The aim was to move discussions of policy away from current problems to emerging issues, alternative future scenarios and preferred visions. Thus, it seeks to move from problem-oriented policy making to future- and vision-oriented policy-making.

The specific aims of the workshop were to: (1) map the future of higher education, (2) anticipate events and trends likely to disturb this map, (3) explore impacts of these events and trends, (4) deepen understanding of the future of higher education by focusing on myths and metaphors, and linking these to worldviews, systems and litanies, (5) developing scenarios of the future and (6) vision of the future, with next steps to realise this future.

Specific objectives of the workshop were to: (1) map the future education in Malaysia, (2) gain exposure to futures methods and tools, (3) gain a preliminary understanding of the emerging discipline of Future Studies, and (4) use futures methods and tools to enhance the capacity of USM to become a learning organisation.

During the two-day workshop, participants were introduced to a comprehensive process on creating alternative scenarios for the future of higher education for USM. A multitude of concepts related to futures studies were analysed. They include the Futures Triangle, Emerging Issues Analysis, Futures Wheel, Macrohistory, different methods for creating alternative scenarios, Causal-layered Analysis (CLA), incasting, backcasting, metaphors of the future, four-quadrant mapping, and inner mythology. Certain concepts were discussed and deliberated at length during the two-day workshop.

Participants were introduced to a framework and methodology for mapping the future scenarios. Based on the concept of Mapping, Anticipating, Deepening, Creating, Transforming (MADCT), the two days workshop unfolded with the end output, the creation of alternative scenarios. The acronym reflects a comprehensive framework/methodology in developing concrete alternative scenarios. A second workshop was held at the same venue from 4–6 December 2005 facilitated by Inayatullah. At this workshop, the emerging vision, eventually named "4S" (Symbiotically Sustainable Study Space), was developed.

OUTCOMES OF THE FUTURE OF HIGHER EDUCATION PROJECT

Based on the brainstorming sessions and closed workshops as well as mining the personal viewpoints and experiences of the respective participants and allied with the relevant methodology and approaches to future building, five scenarios of higher education were conceptualised. These scenarios, presented in Chapter Three, constitute a detailed write-up of five possible alternative future images of higher education: (1) The A' la Carte University, (2) The Invisible University, (3) The Corporate University, (4) The State University, and (5) The University in The Garden. The sixth scenario was The Dead University. For obvious reasons, this option was not exercised. These scenarios were developed hand-in-hand with their respective future triangles. The futures triangles went through several transformations and detailed elaborations, before culminating with the detailed write-up of alternative scenarios.

Another main outcome is that following the workshop, within a six-month period, several consultations and discussions were held with various stakeholders within the USM community. The alternative scenarios and respective futures triangle were presented to an audience comprising heads of departments (deans and other senior administrators). The purpose of the activity was to begin an iterative process of cascading the outcome of the two-day workshop to the USM community. An elaborate presentation was put forth, using skits, video presentations, multimedia aids, and demonstrations. The main aim was to paint a vivid image of each of the alternative scenarios.

Subsequently, a series of presentations and focused group discussions were carried out with the deputy deans, senior administrators, academicians, and student readers in order to gain further inputs, feedback and reflective thoughts that would be of added value, in preparation for the final phase: the creation of the preferred scenario of higher education for USM.

A significant aspect of the project is the survey findings reported in Chapter Four. The findings of the survey highlights the inputs of stakeholders (heads of departments) vis-à-vis the alternative scenarios. The survey findings were shared (and deliberated) during dissemination exercises.

In line with its aims of reaching a wider campus audience and of eliciting feedback from the various segments of the campus community, a USM future website was created. The website contained details of the theoretical framework, the procedures involved in deriving the respective scenarios, narrative/descriptive details of each scenario, and various relevant literature.

Below is a summary of milestone moments of The Future of Higher Education project within USM.

SUMMARY OF MILESTONES

1. Creating the future of higher education: Implications for Universiti Sains Malaysia Workshop (30 May–1 June 2005)

2. First presentation: Dialogue between heads of departments and Deputy Vice Chancellor of Academic during a Heads of Department Workshop (11 June 2005)

3. Second presentation to deans, deputy deans, and senior administrators (1 July 2005)

4. Solicitation of stakeholder's feedback through surveys (July–Mac 2005)

5. Establishment of USM Futures Secretariat (August 2005)

6. Dissemination exercises: Presentations and focused group discussions with academicians and administrative staff and student leaders (October–November 2005)

7. Creating the futures of Universiti Sains Malaysia: Backcasting and visioning of the Scenarios Workshop (4–6 December 2005)

8. Future of USM documentations are made available on the web in 2006 at: http://www.rce-penang.usm.my

ORGANISATION OF THE CHAPTERS

The following chapters proceed with the details of the Future of Higher Education project within USM. Chapter Two discusses the concept of Future Studies, the MADCT conceptual framework and the actual processes undergone during a two-day workshop. This chapter is followed by a detailed discussion of five alternative scenarios in Chapter Three. Chapter Four proceeds with the survey findings and Chapter Five delves into the preferred vision for USM. The conclusion chapter reveals some afterthoughts about the project.

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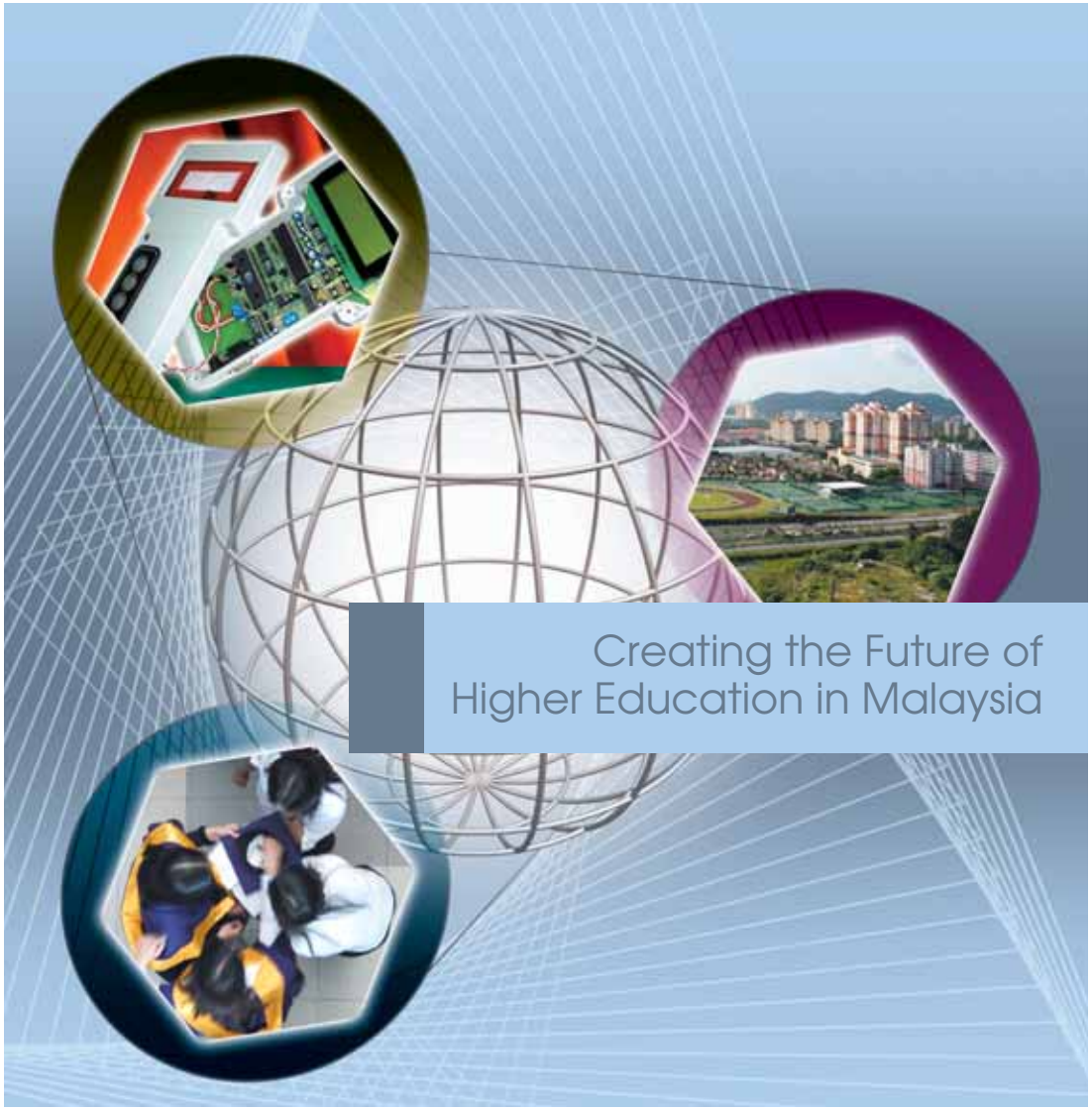


Chapter 2

Creating the Future of Higher Education in Malaysia

Chapter 2

Creating the Future of Higher Education in Malaysia

INTRODUCTION

Futures studies is a study about goals and purposes; where we are going, how we get there and the problems and opportunities we will encounter en route. It involves among others, making a critical assessment of current ideologies (and future issues) and understanding cultural biases. The point is that we are always in the process of creating the future–our unconscious images, societal drivers and weights daily create particular futures.

Futures studies is also a systematic study and exploration of possible, probable and preferable futures (Figure 2.1). The major tasks of futures studies include the study of possible futures–that, which requires breaking out of conventional thinking and taking unusual perspectives in order to identify possibilities in the real world and to bring them to the attention of people. The study of probable futures focuses on the question of what most likely future of some specified phenomenon would be within some given time frame

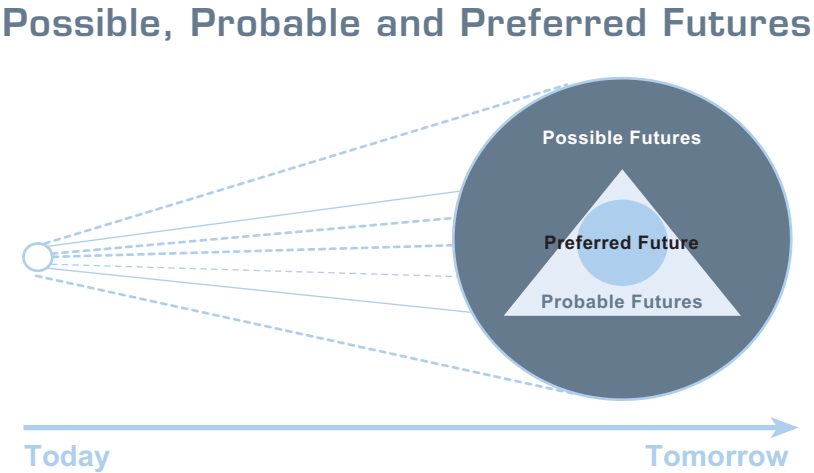


Figure 2.1. Future Studies: Possible, Probable and Preferred Futures
Source: Presented at USM Workshop on Creating the Future of Higher Education (30 May–1 June 2005)

and under specified contingencies. While in preferable futures, futurists assess the desirability of alternative futures and the ethical foundations of their judgements.

Another way to dichotomise futures studies is to divide them into "hard" and "soft" approaches corresponding to the distinction between user methods and perspectives of the so-called exact sciences and those of the humanities. Hard approach is favoured by scholars engaged in economic and technological forecasting and the soft approach, by those primarily interested in cultural and political changes (Wagar, 1992: 5). We need both hard and soft futurism to capture the full range of human possibility. We need a synthesis of the two (Wagar, 1992: 16).

EDUCATIONAL FUTURES

Contemporary futures movement was said to have flourished in the sixties and by early 1970s, futures studies were already being institutionalised in universities. Today, perhaps hundreds of futures studies and foresight courses are being taught in many developed countries. The futures movement encompasses work on social trends, economic planning, technology assessment, operational research and the "think tanks" (Bell in Wagar, 1992: 21). Not only that, a concised history on futures studies development has also been written. However, our case in point is educational futures. Under changing societal conditions there is a need to restructure, reform and improve the education system (Glines & Long, 1992) to meet the challenges of the new era.

Educational futures is about education in the future. In the case of higher education, since the university is one of the most (if not the most) important institutions in civilised society, it is perhaps crucial to figure out the answer to the question: "What might higher education look like 25 years from now?"

However, a fundamental issue has been debated that educational futures thinking is slow to take off among educationists. According to Inayatullah, this may be due to a number of reasons such as strong resistance from academics and the "centers of power", the obsession with daily actions that are not seen to lead to a particular future, an infrastructure that is old fashioned, and the need for a cycle of image, practice and then institutional change which then transforms the image.

Skeptics like Lanning (1994) has made an argument against educational futures stating that it "reflects an obsession with prediction while exhibiting tacit agreement that the future cannot be mapped definitively". His contentions are derived from some statements issued by the economic Council of Canada and he argued that "the focus on the future ought to be governed by recognition that we are dealing with the futures of persons as agents of economies" and not merely restating "abstractions of yesterday's unrealised aims" to educate for speculative economic and social conditions.

However, a selected literature on educational futures has been well documented in Inayatullah & Gidley (2000). In this book, the authors have laid out the full process of futures studies beginning from emerging issues through to creating alternatives and envisioning transformation. The trends and emergent issues, among others, include globalisation, multiculturalism, virtualisation and politicisation. According to the authors, globalisation and politicisation are the current factors, but the emerging issues of multiculturalism and virtualisation will continue the dismantling of the university (Inayatullah & Gidley, 2000:13). Through all these changes, according to the authors, there are still choices to be made to the shape of future universities. (Inayatullah & Gidley, 2000:13).

Another example is illustrated by Tierney (2003) when he tried to think about higher education in 2027. His

approach began by first outlining where higher education might be in a quarter century, then he discussed the rationale behind it by paying particular attention to the important issues concerning education. Finally, he outlined recommendations about how to overcome the problems. Tierney said, "The point is not merely to paint a futuristic portrait; rather if the scenario is plausible, then one needs to consider the steps those of us in academe might take either to change the portrait or to ensure that the picture comes into being" (Tierney, 2003).

In Austin's (2003) work, her approach is to picture the academic work in the near future. She has summarised some of the "strong forces" of change: public skepticism and demands for accountability, fiscal constraint, the rise of the information society and new technologies, the increasing diversity of students, new educational institutions, the increasing emphasis on learning over teaching, the emergence of post modern ways of knowing, and dramatic shifts in the nature of faculty appointments. Her concern was toward preparing the aspiring new faculty members.

As from the Queensland educationists meeting which was facilitated by the Sohail Inayatullah in 2005, what has emerged is that, firstly, change is expected in the educational system and in the external world; few individuals have argued for business as usual. Secondly, participants saw that creativity and innovation is central to capacity building and to the system. Otherwise, without innovative individuals, the system would remain stuck. Yet, through all the challenges such as "formidable weights", "fear of change", "overwhelming tradition", the participants believed that the future would see even more change.

THE METHODOLOGIES OF FUTURES STUDIES

In applying futures methods, futurists take their ideas from many sources. What futurists do is to construct visions of plausible alternative futures: plausible in terms of the best currently obtainable knowledge of nature, earth, and humankind (Wagar, 1992: xviii). In the process, they may often avail themselves of scientific methods. The basic methodologies of futures work include environmental scanning, scenario analysis, cross impact studies, the Delphi survey method, forecasting and strategic management, national and global modelling, and last but not least, positive critique and analysis of discourse (Hicks & Slaughter, 1998: 44). Futures tools include time lines, futures wheels, space/time grids, simple technology assessment, strategies for responding to fears and so on (Hicks & Slaughter, 1998: 45).

Polak (1961) as reported in Hicks & Slaughter (1998:134) highlighted the importance of images of the future in our own reflexive responses to our social works and to the worlds of our children's imagination about the future. The approach of imagining it (the image) first, would lead us to acknowledge the history that has brought us to this point, before moving on into the future.

Inayatullah states that thirty years into the future is the best time span, far enough so that the present is not in control, but close enough not to become pure speculation. The image of the future becomes a goal, an objective, according to which we decide in the present.

Alternative Scenarios

The term scenario was first used in dramaturgy to mean the synopsis or outline of a play and later became synonymous with the script of a motion picture – a scenario is always first and foremost, a story line. By contrast, the scenarios of the futurists are about threadbare, focused sharply on the projection of a sequence of hypothetical events to test how a given set of promises might play in a given future world (Wagar, 1992: 8).

Analysts have turned to techniques such as scenario planning because state of the art computer models and their predictions could still go wrong – "decisions made today will affect the world 50 to 100 years hence, but no one can credibly predict what life will be like then regardless of the quality of the science" (Popper et al., 2005: 50).

In the context of future research, we might define a scenario planning as "an exploration of alternative futures" (Hicks and Slaughter, 1998: 225). Another way of viewing it, is by understanding it as a hypothetical sequence of events constituted for the purposes of focusing attention on a causal process and decision points (Kahn & Weiner, 1967 in Fowles, 1978: 225). Some of the essential characteristics of scenarios are that they are hypothetical-only a sketch, multifaceted and holistic in their approach to the future (Fowles, 1978: 226). Inayatullah clearly states it as such "scenarios focus in alternatives, seeking to broaden the investigation of the future. It assumes there is not one future but a range of alternative futures. Since the future is not yet empirically created, scenarios help us to consider alternatives and divergent possibilities".

Futures studies based on scenarios is a science that has evolved into an established field. For instance, there are different sorts of scenarios: world scenarios, archetypal, structure, and process-based. In addition, as the construction of scenarios is aimed at determining future environments, a policy maker using the scenario technique must provide distinct and comprehensible descriptions of alternative futures (Allen, 1978: 147).

The main point of a scenario methodology is in the interaction rather than conclusion. The main purpose thus, becomes one of exploration and explanation; prediction is secondary (Wagar, 1992: 156).

As a tool for logical analysis much of its power comes from its communicative ability. All assumptions and elements that go into the method are spelled out for everyone to see. The reliability of the method can be measured in the sense that all scenario users can evaluate the quality of the assumptions and the relevance of the elements that compose it. The validity of the method can also be evaluated because the user is now in a position to argue that all contingencies have been considered (Wagar, 1992: 157).

Hence, the beauty of scenario-building is in the creation of markers and sketches (images, story, and data on culture, citizenship, friendship, love, etc.); they are exploratory, it is another form of work-in-progress (WIP) that allows us to evaluate and ask ourselves what is missing and provide us with the opportunity to develop it, making it more real through the engagement of various stakeholders.

The exercise of developing scenario alternatives allows us to distant ourselves from the present, and contour the unknown and find new opportunities. In that process, we would be moving from the zone of certainty to uncertainty; hence, we would be entering a zone of change where there is no agreement, where it becomes uncomfortable, and may even be chaotic.

Nevertheless, by engaging creatively with the appropriate futures methods and pursued exhaustively, the process could help us to decide on the future of higher education which we want and do not want while bringing some order to the foreseeable chaos. The aim is to find a good solution, not necessarily a perfect solution about the future. Thus, we explore the possibilities of understanding and managing uncertainties and complexities about the future.

The futures landscape has four dimensions, namely the jungle, the chess set, the mountain and finally the star. The first represents the daily organisational struggle, the second represents strategy, the third represents alternative futures, and finally the fourth the preferred future: vision of the future. The ultimate aim is to link vision to performance.

Hence, the true worth of the scenario is that it allows us to see the pathways through which the system can be changed to achieve its goals. If it can tell us what needs to be done, and where and the costs, then the scenario has made it possible for us to invent the future (Wagar, 1992:156). What is most gratifying is that this exercise could assist us to innovate our future by "moulding" the alternatives, and in that process, perhaps, change the present situation. It provides us a locus of control: the capacity to engage, act and manipulate in making better decisions today and develop our organisational capacity.

MADCT Approach

MADCT represents the "five pillars" or "stages" of scenario-building. Each of the pillars captures a particular aspect of possible and probable futures, and adds to the other progressively in a sequential manner. As part of a five-part workshop exercise, individually, each pillar contributes rich content material to the alternative scenarios.

1. Mapping of the future (M) – A mental-trigger session that looks into: (a) the futures landscape through shared history and shared futures, and (b) the development of futures triangle.

2. Anticipating the future (A) – A perturbating session that aims to disturb the map using: (a) emerging issues analysis (EIA), (b) the futures wheel, and (c) a macrohistory analysis.

3. Deepening the future (D) – A truth-bearing session that opens the pathway for understanding about the future based on: (a) causal layered analysis (CLA), and (b) the four quadrant mapping.

4. Creating Alternatives (C) – An indepth session which develops the details of scenarios, complete with manifestations of concepts such as metaphor, myth and incasting.

5. Transforming the future (T) – A visioning session which involves backcasting. While scenarios outline alternatives, vision points to where individuals personally and collectively wish to go. This is the idealistic framework, the hope of the future. The vision inspires. The vision enables. The vision brings out the best in us.

The rest of this chapter will explain each of the pillars, as experienced in the two-day workshop.

MAPPING

To have an image of the future, this stage requires two main types of exercises: first on creating the futures landscape: creating shared history and shared futures, and second, the futures triangle.

Creating Shared Futures: Questions about the Future of Education

The process begins with each of the participants sharing his/her thoughts about the future of education, by forwarding questions, to which they would like to seek answers. These questions are as follows:

USM leadership

- Could USM be a role model in 2020? How so?
- Who would be the VC? What sort of leadership would we experience?

Higher education

- Would there be higher education?
- Would Malaysian higher education be competitive? What is the scenario vis-à-vis globalisation?
- Would it be an open entry policy? Any age any time?
- What is the concept of higher education?
- What sort of knowledge will be emphasised? Could this knowledge contribute towards the development of better human beings?
- What kind of books would be shelved in the library?

Human resource
- Do we need lecturers? Would they be redundant?
- How about the support staff?

Organisational structure
- Would the various schools/department/centres still exist?
- Would current organisational structure change/be maintained? More hierarchical/flat/matrix-like, etc.
- Would new schools/departments/centers be created?

Teaching methods/philosophy/pedagogy
- How would lecturers teach?
- Would university exist in every home?
- Would the learning mode (eg. in workshops) be face-to-face or high-tech (eg. teleconferencing)?
- What could future research on pedagogy be?

Technology-driven
- Would there still be books? Would a truly paperless environment exist?
- Would technology play an influential role in higher education?

Research
- Would specific types of research like brain research influence education?
- What types of innovative research would exist within the university?

University Culture
- How would students learn about life, the community, the environment, and about each other? What kind of extracurricular activities would students participate in?
- What types of students would we face? What would the relationship with lecturers be like?
- Would the education system be informal?

Politics
- Would university be independent from the state/government? Autonomous?
- Who would be the stakeholders of the university?
- Would USM still be around?

Finance
- How would the university be financed? Will it be self-funded?
- Would the schools be self-funded?
- Would it be fully privatised?

Some of the highlights of these questions are: (1) concerns on political-financial issues pertaining to self-funding for a university, (2) pedagogical issues pertaining to the teaching medium: face to face or through the use of ICT, and (3) philosophy and values in higher education: concept of knowledge, types of future research, leadership in the society/community/nation.

An overriding question which surrounds all these questions described below is: "How much of the past and current trends would influence/create the future?"

Creating a Shared History of Higher Education in Malaysia: Mapping of the Past/Present Landscape of Education

This process was followed with an exercise tracing the history of higher education in Malaysia, mapping the past and its evolution towards the present stage. Looking at it from a shared historical perspective, participants jotted their personal memories as follows:

1960s – 1970s
- Teacher training centres were among the earliest
- Literature, history, languages
- Mastery of the English Language
- Only one university existed in Malaysia
- One well-known professor in the country
- Racial amity

1970s – 1980s

- No personal computers; memories of punch cards
- Ragging by seniors was fun and interesting; everyone wanted to go to UM
- There was only the library to depend on
- Spinning wheel night
- Most professors were 60 years and above (no young professors)
- Late nights doing projects in studio, followed by supper
- High standards of entry into university
- Teachers commanded respect
- Saturday night parties
- Playing table football during lunch break
- Computer programming at USM
- Education allows you to explore and deepen your interest but was only for the elites
- Science was more important than arts
- Good friendships were nurtured (no polarisation)
- Speaker's corner in USM campus ("freedom of expression")
- Intellectual dissent
- Sense of freedom and responsibility
- Learnt a lot from laboratory works
- Senior lecturers were good in the fundamentals
- Interaction amongst student societies of different backgrounds
- Freedom from regimented boarding secondary schools

1980s – 1990s

- Free condoms distributed
- The library / the books; the durian valley; going back to sleep at 5 a.m.
- Introduction of ICT
- How I was challenged to study Computer Science - just because I'm FEMALE
- Completing my first research and having it accepted for publication entirely on my own
- General education were the best subjects
- Typed thesis using typewriter
- Loved taking all economics subjects
- Card catalogue system for the library
- Tianamen Square
- There were more male than female students
- Public universities

1990s onwards

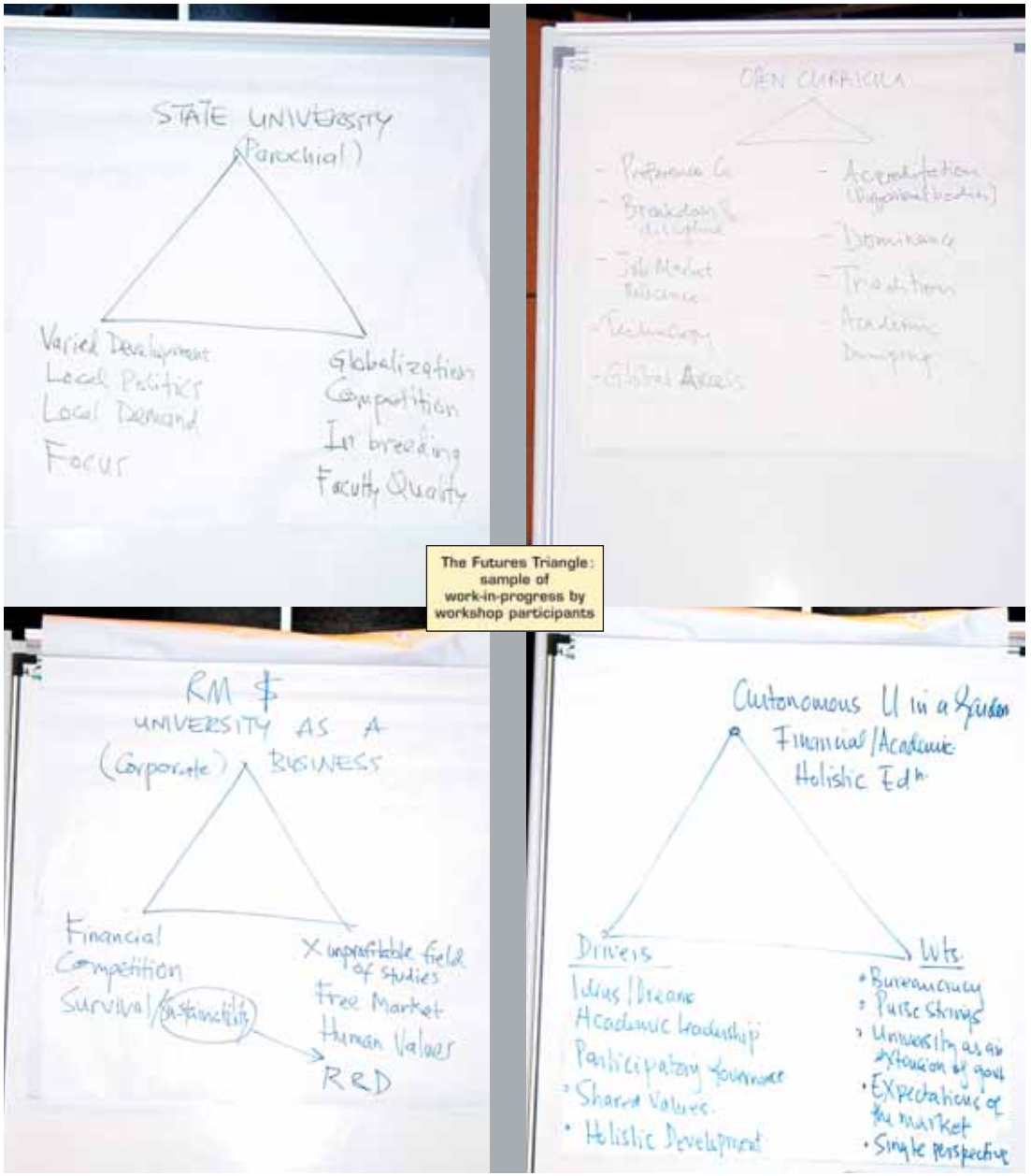
- Higher education in the USA was fun & challenging
- Learnt totally new things in pharmacy
- Got promotion – Yahoo!
- Attended many conferences overseas
- Students only academically inclined
- Poison control
- Many private universities/colleges were set up
- Higher education became more interesting when I was 49 years old

Common amongst the jottings are that: (a) the memories were traced up to twenty years back, (b) back then, the liberal arts were appreciated, (c) university life evoked happier times, (d) the memories related to personal stories about community life, (e) the library was a big part of the students' life, and (f) how the absence of high-technology influenced learning.

Some important points were raised out of this exercise: (1) if we could remember 20 years back, we could go forward 20 years, (2) mapping scenarios would inevitably be personal, and (3) would the university of the future be learning about sociocultural issues.

The Futures Triangle for Alternative Scenarios

The futures triangle maps the future along three factors. The pull(s) of the future are the images–visual, big picture, archetypal–of the future. The other two factors affect the outcomes: (1) the push(es) (or drive) of the future–quantifiable trends such as demographic change, and (2) the weight(s) (or barrier) to change–structure worldviews, that inhibit particular futures from being created. For example, an image of the future of higher education could very well be an image that reflects virtualisation. The push could include new technology,



The Futures Triangle: sample of work-in-progress by workshop participants

digital natives, half life of knowledge careers, while the weight could include traditional mode of teaching, hierarchy-based profession, and classroom environment.

The creation of the futures triangle was based on small group discussions of images or pulls of the future. These images represented five working alternative scenarios: (1) a corporate-led (commerce-based) university, (2) a state-led university, (3) a market-student-led open curricular university, (4) a market-student-technology-led (non-formal/invisible) university, and (5) a scholar-led (autonomous) university. Samples of the work-in-progress were later further refined, and the final output of scenarios are described in Chapter Three.

Some main insights gained from this exercise are:

1. The pulls, pushes, and weights allowed participants to look at a full range of what is possible vis-à-vis the manifestation of each alternative scenario, to ask these questions: (1) How strong are the pull and push factors?; (2) How heavy are the weights?

2. The present state of higher education is considered to be "gloomy" and none of participants felt that the image of today would continue. Rather, the focus was on how the world of higher education would change.

3. An important question was whether participants felt inspired or hopeless about the future of higher education. Although the actual weights would paint a gloomy image of the scenarios, participants were excited about scenarios by looking at the middle ground between futility and inspiration.

4. Given the future scenarios, formal as well as experimental platforms would need to be explored.

5. The triple point of the futures triangle show that no one point can stand on its own; the question centres on how to reduce certain weights, which part to intervene, and which part to emphasise.

ANTICIPATION

Emerging Issues Analysis (EIA)

At this stage, we want to disturb the image. Emerging issues are pushing the current boundaries. We assume that all processes have patterns and usually the pattern is often the S-curve. The S-curve can be divided into three phases: emerging, trend and problem (see Figure 2.2). At the emerging level, there is no quantitative data; at trend level, there is quantitative data but often contested; at problem level, the issues have emerged and there are strong emotions on all sides of the issues.

Emerging issues should be provocative, controversial and perhaps ridiculous. The realisation of such issues could be currently low in probability but they have high impact possibility. These are seeds of change which may transform the trajectory of educational futures. If there is immediate agreement, most likely it is not an emerging issue, but a trend.

Emerging issues analysis was first triggered with discussions of possible visions of the future: the nano technology, domestic household robots, robot dogs as pets, designer babies, children as digital natives and gaming, car-free lifestyle, smart and green city, smart and adaptable buildings, smart health system/smart food nutrition, nano-bots brain enhancers etc.

ASSUMPTIONS	AT EMERGING LEVEL	AT TREND LEVEL	AT PROBLEM LEVEL
• All processes have patterns • Pattern is often S-curve • S-curve can be divided into 3 phases: 1. Emerging 2. Trend 3. Problem	• There is little or no quantitative data • Issue has low likelihood of occurring • If issue matures then impact will be dramatic • There is little or no quantitative data • If issue matures then impact will be dramatic • Great ability to influence direction of issue • Issue is often first evident to those marginal to dominate way of knowing	• There is quantitative data, but often contested • Issue has medium likelihood of fully becoming a problem • Trend is evident to research units	• Issue has emerged • Strong emotions on all sides of the issue • Great deal of quantitative data • Policy Institutes conduct research on the issue • Ability to transform direction of issue limited

Figure 2.2 Three Phases of Emerging Issues Analysis
Source: Presented at USM Workshop on Creating Future Higher Education Scenarios (30 May–1 June 2005)

In this deliberation, some possible emerging issues of higher education are:

1. Customised learning/democratisation of education
2. Full-emerging civil society
3. Robotised lifestyle
4. Early onset of adulthood
5. Clustered community: cluster clashes/diversity of clusters
6. Population control (via a bio-diagnostic toolkit)
7. Global policing of issues
8. Questioning of one's own identity
9. Competition for utility: limited access and the need to maximise resources
10. Total access: office mobility, technology-enabling, virtual libraries, on-line digitisation of knowledge
11. Transdisciplinary programmes
12. Open source/free knowledge leading to a need to ascertain full-costing of open source
13. Creation of a hub of knowledge
14. Feminisation of society

Futures Wheel

The futures wheel is a powerful method of exploring the future. Invented by Jerome C Glenn in 1971, it is best known as a method of identifying and packaging secondary and tertiary consequences of trends and events. Futurists, trainers and consultants have used this method for policy analysis and forecasting. Subsequent variations of the futures wheel have been called mind mapping and webbing, among others. The process starts by choosing one emerging issue and focusing on that issue by planning it in the centre.

From the centre, we would determine the first order of impact; if this happens, what are the consequences of the consequence? This leads to the second and third order debates, hence moving from first to secondary effects. Through this exercise, key points to the patterns can be ascertained. An example of the futures wheel concept is shown in Figure 2.3.

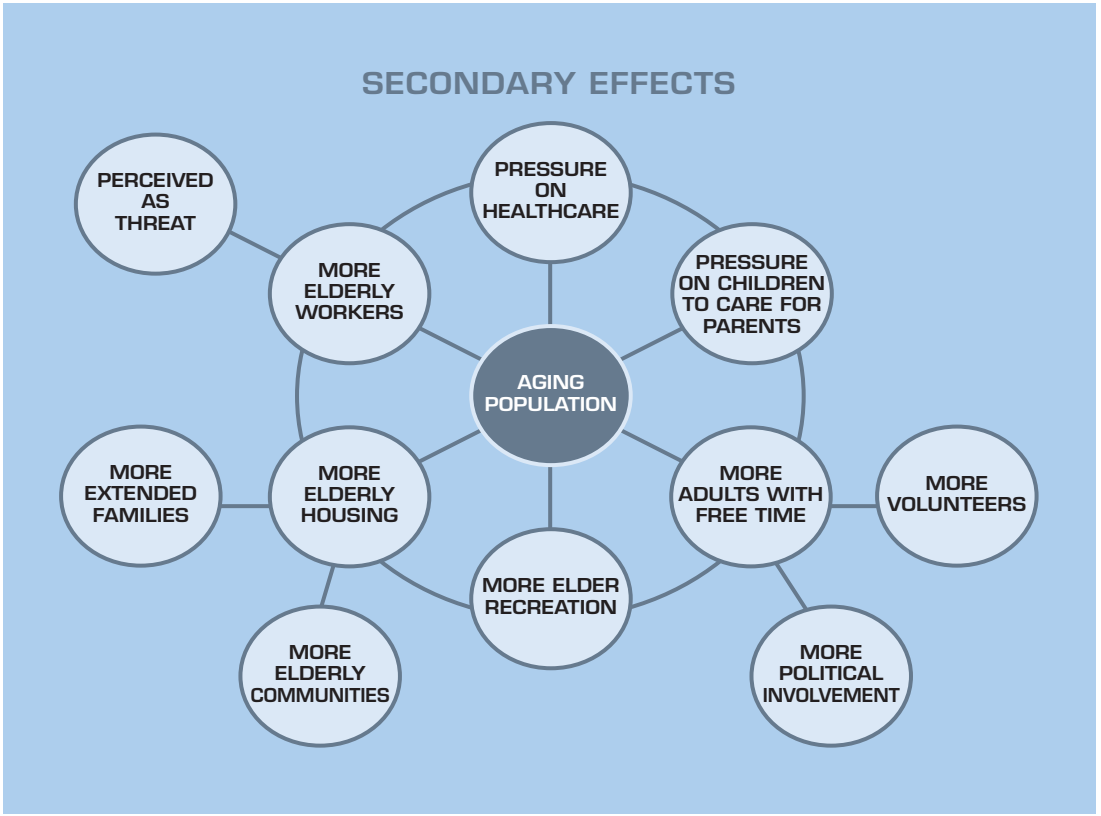
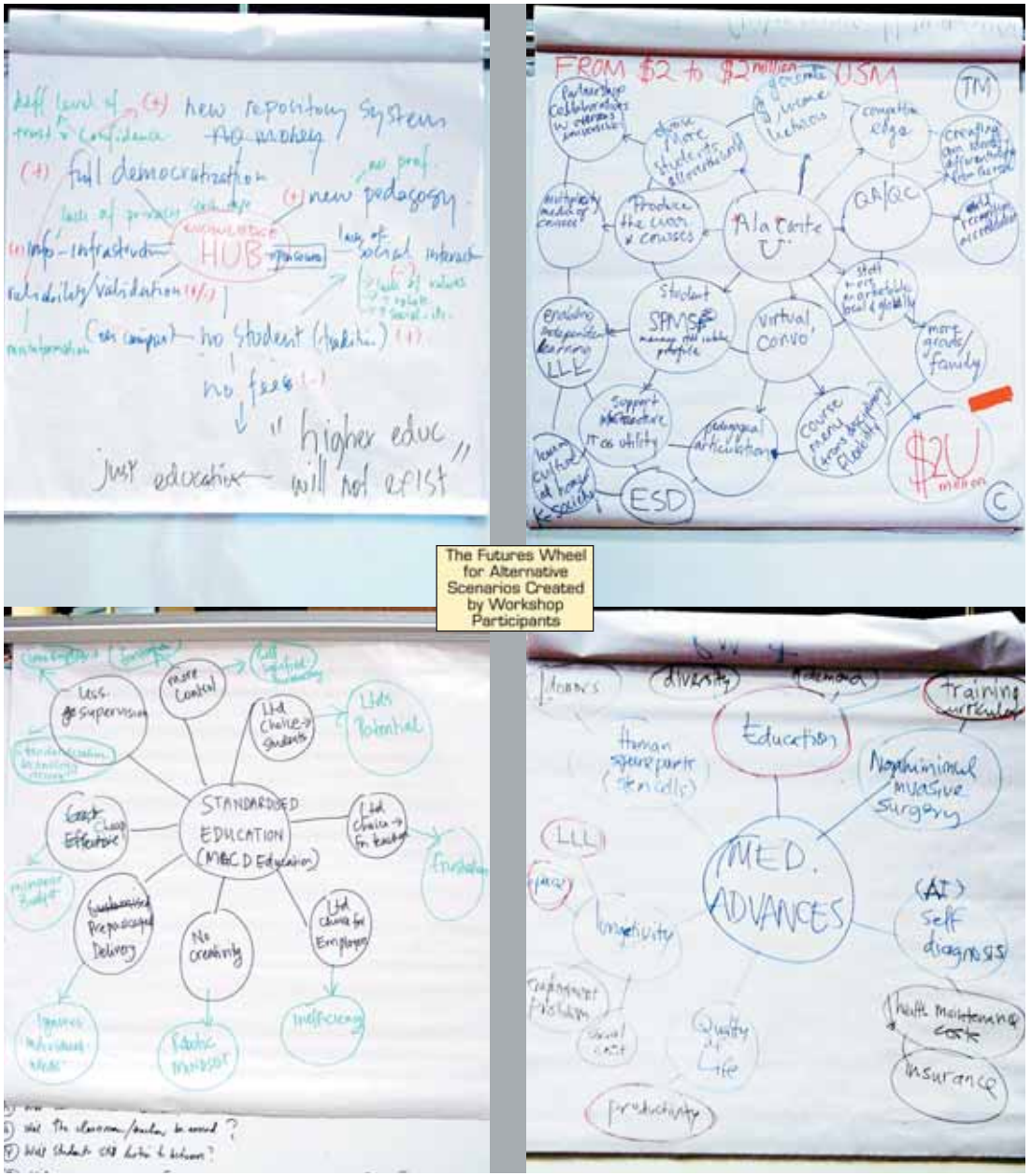


Figure 2.3. The Futures Wheel
Source: Presented at USM Workshop on Creating the Future of Higher Education Scenarios (30 May–1 June 2005)

The futures wheel activity goes beyond the pulls, pushes and weights of the scenarios. Through the futures wheel exercise, first order, second order, and third order impacts (also known as positive/negative consequences) of the alternative scenarios were examined.



The Futures Wheel for Alternative Scenarios Created by Workshop Participants

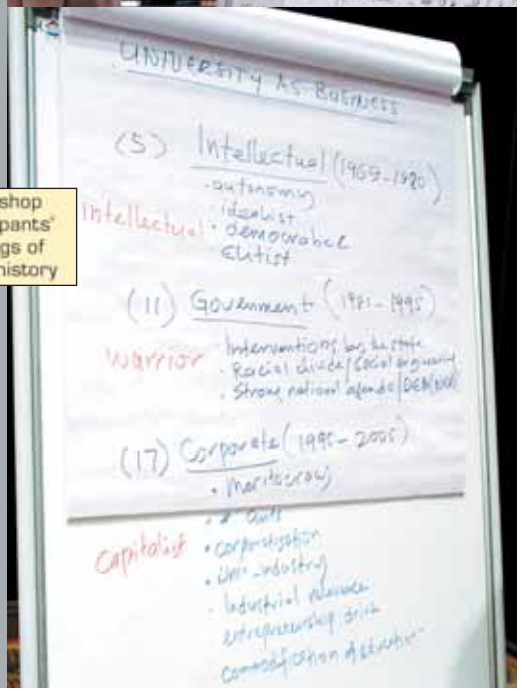
Macrohistory

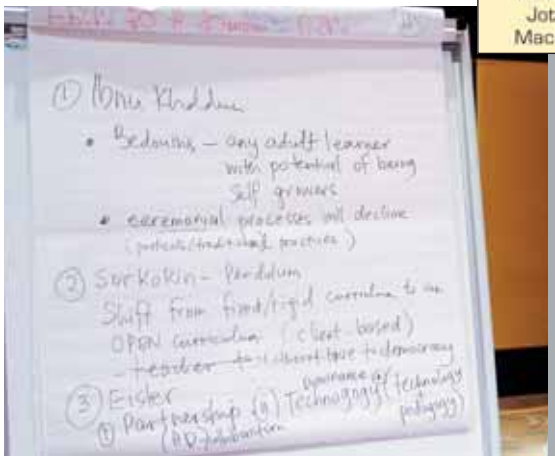
At this stage, the aim is to use macrohistory as a theoretical framework to understand the patterns within the alternative scenarios.

Macrohistory is the search for the grand patterns of social, civilisational and institutional change through time. It is the search for both the phases of history and the causes and mechanisms of change.

Four macrohistorians and their philosophies were considered: (1) Ibn Khaldun: the bedouins and decline over generations, (2) Pitirim Sorokin: pendulum shifts – principle of limits, (3) Sarkar: varna and the new leadership, and (4) Riane Eisler: Partnership Society.

Based on the grand theories purpoted by these historians, for each of the alternative scenarios, participants pondered on five main questions: (1) Where is the decline?; (2) Who are the Bedouins?; (3) Is there a pendulum?; Which phase of the pendulum is the scenario in?; (4) Which part of the cycle is the scenario situated? Is there intervention for a new leader to emerge in the cycle?; and (5) What model are we in: patriarchal or partnership?





Workshop Participants' Jottings of Macrohistory

DEEPENING THE FUTURE

Causal-layered Analysis (CLA)

CLA takes an in-depth view of the future, exploring multiple levels of the future and the trail of the depth leads to the historical story. The levels are: (1) litany: visible and disconnected news events, (2) systemic: social, technological, economic, environmental and political causes, (3) discourse analysis: stakeholders, ideologies, worldviews, and (4) myths and metaphors: stories, legends, and myths of trauma and transcendence. The myths provide the emotional level experience to the worldview under enquiry. The metaphors constitute how we see social reality and are culturally specific and must be derived from how people inside an organisation see themselves.

The Inner Mythology

Through the CLA, the discussion embarked into the inner mythology, i.e. the inner psyche in higher education.

Leadership in organisation should address the inner mythology such as core values, unconscious stories; inner myth which dictates the present state of mind; and inner psyche that we cannot see. Inner story can define what strategies are possible. The framework of thinking on inner myths include Feudal, Class, Communalism, Colonisation, and God-fearing.

The essence of this exercise is that the myth of higher education in Malaysia is the inner template where future change is needed. Hence, the deepest change resides with the inner mythology, which goes beyond the surface of the alternative scenarios.

Some possible myths of education that was put forth for consideration is the Malay patriarchal culture, the notion that students need to be punished, and that wisdom resides with the academicians, not students. The point of this exercise was to revisit the myth(s) of higher education in Malaysia: "What is the new story? What does it mean to be a student?"

CREATING ALTERNATIVE SCENARIOS

Single and Double-variable Methods

Four possible methods for creating alternative scenarios were discussed: (1) single-variable, (2) double-variable, (3) archetypal, and (4) organisation. The emphasis was placed on single vis-à-vis double-variable method.

The initial development of the future triangle made use of the single variable method which led to five images (also known as variables) of the future: (1) a corporate-led (commerce-based) university, (2) a state-led university, (3) a market-student-led (A' la Carte) university, (4) a market-student-technology-led (non-formal/invisible) university, and (5) a scholar-led (autonomous) university.

Based on these five images of the future, a double-variable method was initiated by answering the question: "What are the two most crucial uncertainties; what are the huge debates from the single loop images?" Out of this question, four new possible variables were presented: Face-to-face teaching vs. virtual knowledge navigator; and Autonomous academic intellectual vs. non-autonomous ministry-led (see Figure 2.4). These four variables form four quadrants, which reflect the future of higher education in Malaysia. The upper-right quadrant, tech-scholars-network, represents an outlier (an emerging issue in the future).

Based on the single and double-variable methods and upon further reflections, seven final alternative scenarios were identified:

1. a corporate-led (commerce-based) university
2. a state-led university
3. a market-student-led (A'la Carte) university
4. a market-student-technology-led (non-formal/invisible) university
5. a scholar-led (autonomous) university
6. a scholar-network-technology-led university
7. a declining/collapsing university

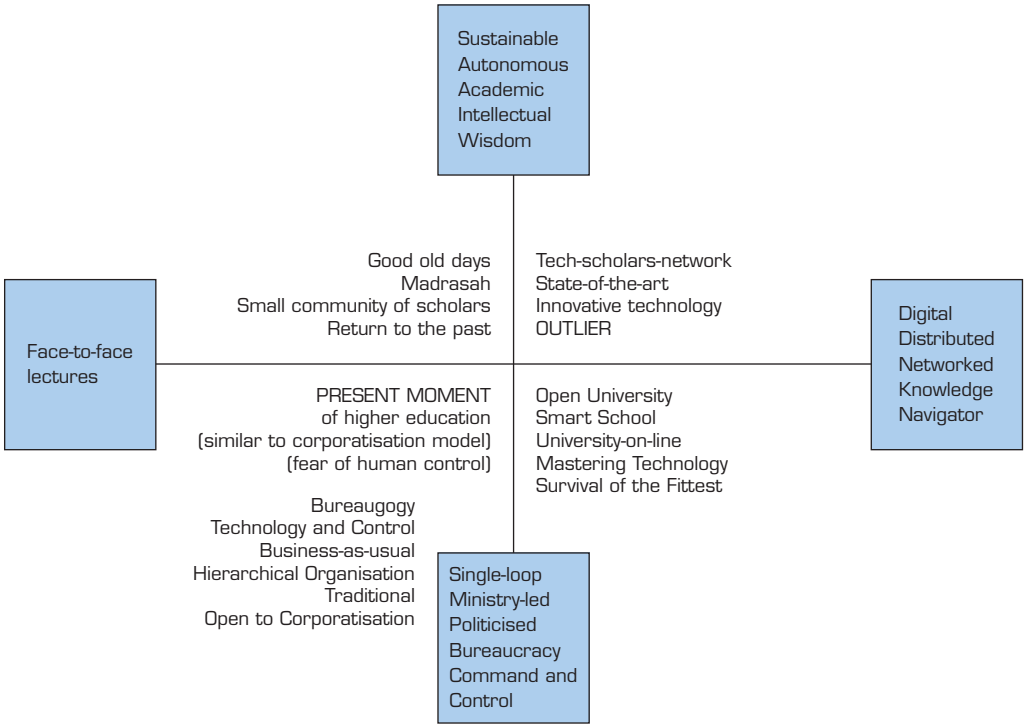


Figure 2.4. Four Quadrants of the Future Higher Education in Malaysia
Source: Presented at USM Workshop on Creating the Future of Higher Education Scenarios (30 May–1 June 2005)

After examining these alternative scenarios, which reflect the notion of multiple lenses, workshop participants evaluated what was important, and what was not. It was especially felt that the seventh alternative scenario "the collapsing scenario of education" would be put aside. The notion of negative image of the future of higher education such as absence of funding and scholarship, brain drain, ageing society, or the onset of dramatic decline of Malaysian education (due to politics, social, and economic factors, and environmental impacts such as earthquakes or war), would not be deliberated further. Making a case for this scenario was seen as not necessary as this future scenario is not expected to arise, in the context of Malaysian higher education.

Scenario Details

What follows from all the deliberations is a write-up of details for each of the alternative scenarios, in the form of narrative personal stories or analytical descriptions. The details included combination of these elements: title, year, metaphor: image with graphic illustration, underlying mythology, pushes and leading proponents (Bedouins), weights and tensions, emerging issues, trends, macrohistory analysis, relevant base figures, steep factors (societal, technological, economic, political), and dominating worldview (e.g. modernist, islamic, traditional).

SCENARIO PRESENTATIONS AND IMPLICATIONS

The two-day workshop ended with scenario presentations. Some common implications running through all the presentations of the alternative scenarios were the need to

- clarify the metaphors of the future,
- persuade/sell the idea of alternative scenarios,
- include the viewpoints of various stakeholders in the scenarios: students, unofficial/official stakeholders, management, employees, the government, the environment,
- acknowledge the inevitable influence of high-technology in all the scenarios,
- note that the conceptualisation of private/public domain would arise,
- ascertain the shape of the future structural environment,
- assure the quality of future services/products,
- reflect upon the extent of bureaucratic culture existing in the future.

Deliberations of the Scenarios by Workshop Participants

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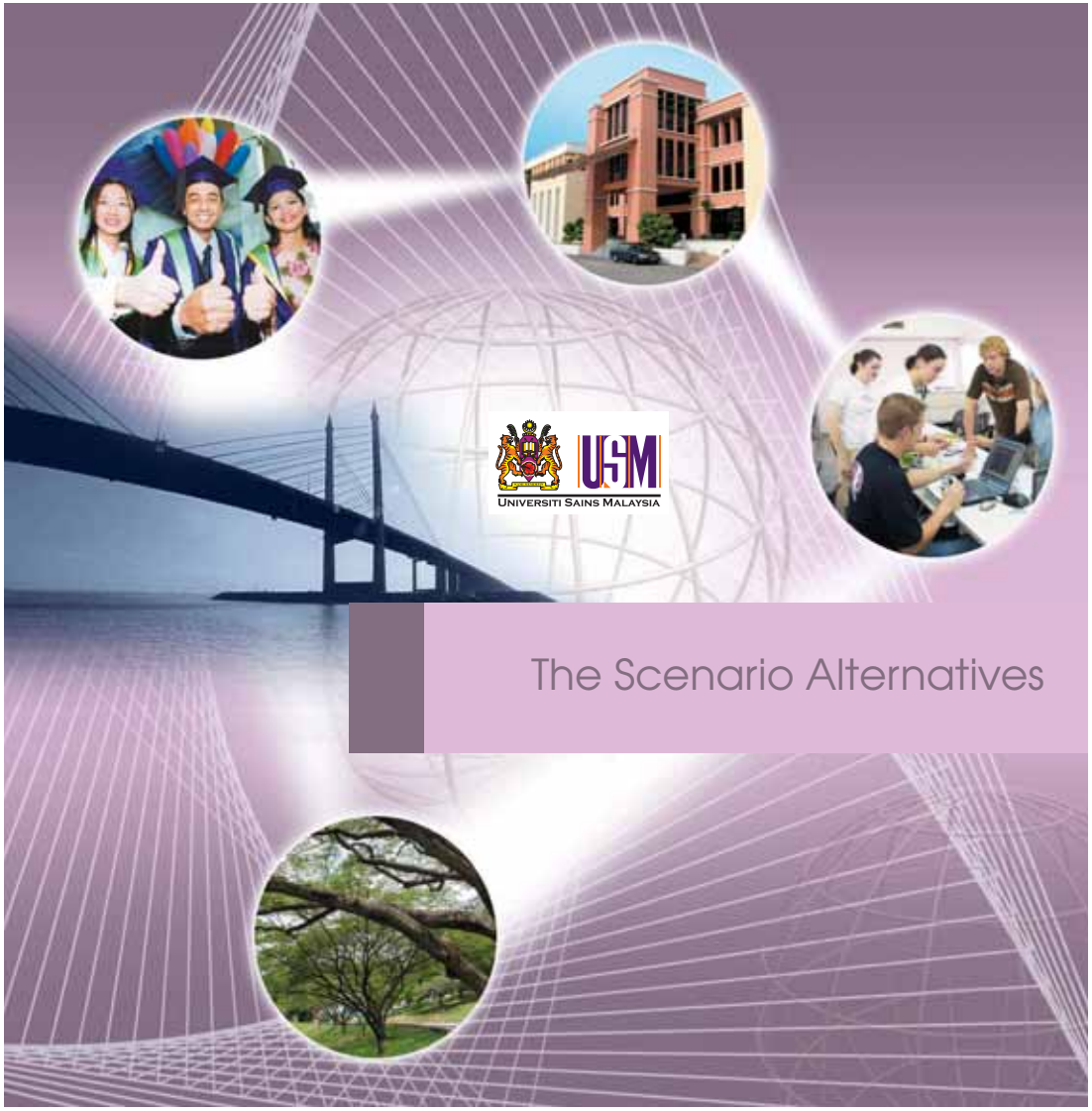
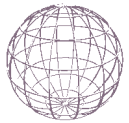


Chapter 3

The Scenario Alternatives

Chapter 3

The Scenario Alternatives



INTRODUCTION

Five alternative scenarios and their respective futures triangles are presented in this chapter:

1. The A' la Carte University (market-student-led)
2. The Invisible University (market-tech-led)
3. The Corporate University (commerce-led)
4. The State University (state-led)
5. The University in the Garden (scholar-led)

In the A' la Carte University, the team positioned the university as a university that offers courses that appeal to both worldwide learners and employers, making USM one of the leading educational provider of choice in the regional as well as in the global market.

The mechanism involves internally synergising people, technology and system to make the university more sensitive to the educational needs of its clientele as well as networking via the many active MOU/MOAs signed by USM and worldwide partners. As such, the university is envisioned as capable of offering education A' la Carte, anywhere anytime to meet the traditional and conventional requirements of its customers. The contributors opine that by adopting the A' La Carte University concept, USM can employ the latest teaching technologies to become a major provider of tertiary and quarternary education geared towards the needs of the clientele in her role as the premier educational institution in the Southeast Asia region.

In espousing their Invisible University, the team propounded the open source model as the basis for their university. Technologically driven and anchored on Sorkokin's Pendulum model, the contributors mined a variety of cyberspace models, especially the Massachusetts Institute of Technology (MIT) Open Courseware (OCW) and the Met school in the USA for ideas that were then ingeniously fashioned to suit the USM future scenarios. Posited on a non-centralised administration, The Invisible University (TIU) proposes to support flexible student-led and student-centred knowledge acquisition. Additionally, it prides itself on its slim and trim administration and physical presence while harping on its wide repository of knowledge and knowledge-for-all concept.

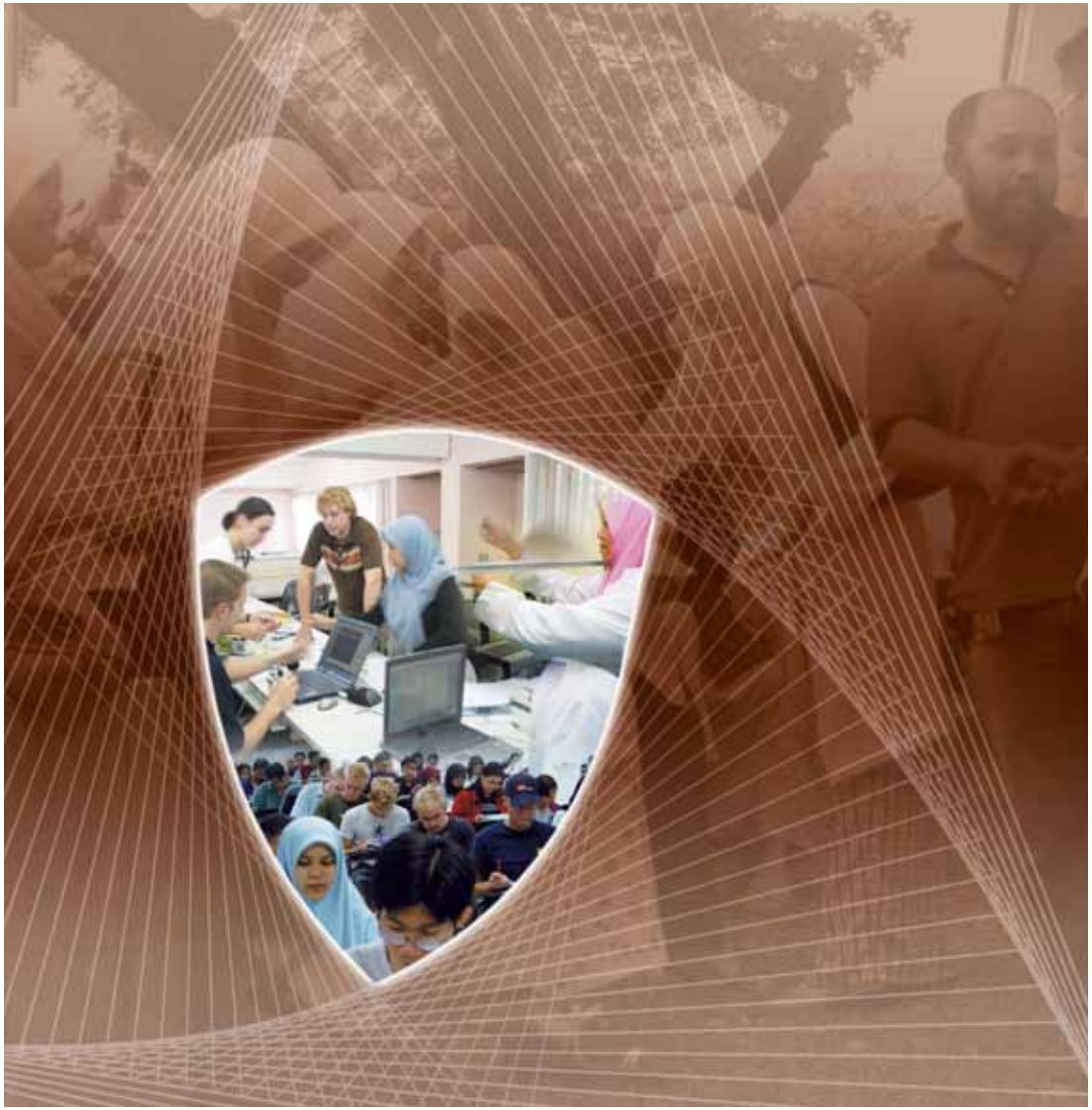
The proponents of the USM as a Corporate University idea are envisioning the university as a privately-funded and independent yet highly regulated university that can confront the expected 30 per cent contraction in government funding. Close collaboration with industry is foreseen and the problem of shortfall in government grants is overcome through the commercialisation of its products and expertise as well as maximisation of existing resources. Physical facilities will remain in the governments' hands while the university pays for their use via taxation and rent. Finally, the university will practise good governance and quality control to ensure its sustainability.

In contrast, the proponents of the State University envision a university that operates at state-level catering for the needs of local industry. Niche-based in orientation, this nimble and flexible organisation is dependant upon the private and public sectors nexus to generate growth and income with academicians and Foreign Direct Investments (FDIs) being the lynchpins of the relationship. While making allowances for drawbacks such as limited demand for services and ubiquitous funding constraints, the contributors are nevertheless optimistic that with good governance, quality control and the success of established field-

dedicated universities, USM with its wide array of experts plus the availability of talent from emerging economies such as China and India possess the wherewithal to establish itself as a field-dedicated university.

Finally, the advocates of the University in the Garden concept targets a return to shared values and the introduction of a holistic-based education system. Their ultimate objective is to make the University once again, an institution of higher education that is autonomous, accountable and sustainable. It will be an abode of learning valued for its own sake to endow the individual with all the intellectual, spiritual and humanistic faculties. This scenario is firmly entrenched in idealism burnished by shared values, academic leadership and innovative thinking individuals. It bhors the robotic mindset and promotes entrepreneurial development, knowledge creation and the germination of ideas. An opponent to the "McDonaldisation" of higher education, this concept extols holistic development of its clients.

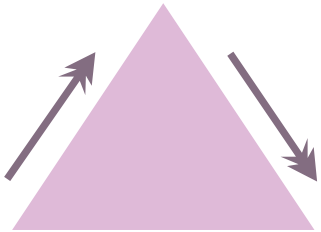
The rest of this chapter will outline in detail each of the five alternative scenarios, as written by the respective authors, and the concomitant issues that accompany each scenario.



Chapter 3

A' LA CARTE UNIVERSITY

Metaphor: Menu
Myth: Cocktail of Courses



PROPONENTS
- 3rd world countries
- OIC & Developing Countries
- African continents
- Women

PUSHES
- Preferences of companies
- Breakdown of disciplines
- Job market relevance
- Technology driven
- Global access
- Generate own income
- Lifelong Learning
- Democratisation of knowledge
- Competition
- Commercialisation

EMERGING ISSUES
- Technology not fully utilised
- Lack of funds
- Lack of emphasis on lifelong learning
- Striving for learning society
- Limited choices; structured/rigid curricula
- Limited places for adult learners

TRENDS
- Access anytime anywhere
- Connectivity
- Transdisciplinary
- Repository
- Paradigm shift in learning

TENSIONS
- Core offerings
- Core staff
- Infrastructure

WEIGHTS
- Accreditation (professional bodies)
- Dominance
- Tradition
- Ministry of Higher Education
- Qualified staff
- Business acumen
- Politics

EXECUTIVE SUMMARY

In the year 2020, USM will stand out as a world-class research university catering to the differing needs of lifelong learners in collaboration with other world-class educational providers from around the world. Our strong footing as a research university does not preclude us from offering courses that appeal to both worldwide learners and employers, making us one of the leading educational provider of choice in the region as well as in the global market.

The mechanism was put in place since 2005 by internally synergising our people, technology and system to make us more sensitive to the educational needs of our clientele as well as networking via the many active MOUs/MOAs signed by USM and worldwide partners. As such, we are able to offer education A' la Carte, anywhere anytime to meet the traditional and conventional requirements of our customers. Adopting the A' la Carte University concept, USM employs the latest teaching technologies to become a major provider of tertiary and quaternary education geared towards the needs of the clientele in her role as the premier educational institution in the Southeast Asia region.

THE IMAGE: THE A' LA CARTE UNIVERSITY

We are proposing that in 2020, USM as a world class research university will have her own identity and brand that differentiate her from other universities worldwide by offering programmes a' la carte.

This proposition is based on the following general questions:

What is USM's niche?
In 2005, there are already 18 Institutions of Higher Education – how different is USM from the rest? Given the stiff competition – niche is to offer a' la carte.

What is USM's market?
Using data based on the Organization of Economic Corporation and Development (OECD) countries as an indicator, enrolment rate to universities was 10 per cent of the general population in 2003. In 2000 about 74 per cent of population aged 25–34 has attained at least upper secondary education and 26 per cent of adult population had received tertiary education by 2000. Hence we expect the percentage to double in 2025.

For East Asia and Pacific, out of a population of 1.8 billion in 1999 we find that with a literacy rate of 90 per cent for males and 79.1 per cent for females aged 15 and above, there is a large market for tertiary education in this region alone. USM cannot depend on the Malaysian population to sustain her growth and development as the premier university in the country.

THE PAST SCENARIO

Since her inception in 1969, USM has been offering traditional academic programmes along interdisciplinary approaches with the hope of better preparing students for the society. Academicians have grown accustomed to the traditional role of teacher- centered education and when we became a research university in 2005, research was centred on-campus along with the academic programmes. However, it was realised that USM needed to go beyond nation building and into sustainable development and we needed to reach out to wider markets as our country's population was not enough to sustain our programmes.

Back in 2005, with 36 years of experience of academic excellence, USM decided to break away from her traditional role to embark on a more worldly cause of sustainable development, both locally and globally. Through our teaching and research programmes, USM has not only developed local students for the needs

of the nation but to be fully functional citizens of the world. Conversely, we open our doors via technology-assisted pedagogical modes to the global citizenry so that they can benefit from our world-class programmes which are geared towards their particular needs. Presently, academicians practise technogogy whereby they fully synthesise technology with pedagogy in delivering education to their worldwide clients.

One key strategic issue is that implementation of the a' la carte concept should be step wise. The details of the steps have been drawn in cascading up (ideas from below moving up the ranks) and cascading down (ideas distilled from various levels which are then synthesised and channeled back down for buy off from all levels) to speed up implementation.

PUSHES/DRIVERS FOR CHANGE

1. Job Market Relevance
   In 2005, Malaysia as a nation had to deal with the issue of graduates not being employable in the job market. We noticed that the preferences of companies tend to dictate graduate marketability, i.e. a key factor being their mastery of soft skills besides their technical knowledge. There is also a breakdown of discipline as many employers want graduates that transcend different disciplines, for example a marketing executive with pharmaceutical background to sell products or engineers with business acumen and cultural sensitivity. In 2020 such discipline-based demarcations would no longer exist as all graduates are expected to be multitasked, multiskilled and most importantly able to articulate and deliver.

2. Technology-driven
   As of 2005, we have a myriad of technology already available to enable us to provide customised education for our clients including the worldwide web and web-based education via the Internet, 3G, audio/video streaming, tele-education, open source, grid computing and many other enabling technologies.

3. Global access
   With the WWW and Internet, we are not limited to providing education on our three campuses, in fact students from around the world can enjoy learning at USM in their respective home countries. In collaboration and deep networking with the 200 or so partners in higher education around the world (with whom we had signed MOUs and MOAs), there is no limit to access for quality education in USM.

4. Self-income generating
   As the government relinquishes her support for public education funding, USM has been responsible for becoming a self-sustaining and self-funded university since her corporatisation in 1998. Therefore, in offering a myriad of products and services, USM's portfolio of income-generating ventures is enhanced so that we may concentrate on our core business (research and teaching) and support them by income generated via other educational programmes in the a' la carte mode.

5. Lifelong learning
   As our programmes and products appeal to different clientele (undergraduates, working adults, underprivileged women, returning adult learners), USM propagates lifelong learning via the programmes.

6. Democratisation of knowledge
   In line with the democratisation of education, tertiary and quarternary education is accessible to anyone, anywhere. This was the impetus for the massive investment in library facilities in

RMK9 and RMK10 for USM to facilitate the access of knowledge.

7. Competition
   In 2005, there are already 18 Institutions of Higher Education – how different is USM from the rest? Given the stiff competition – our niche is to offer a' la carte.

8. Commercialisation
   The private institutions especially from the West have capitalised in making education a commodity and have penetrated into our domestic and regional market. The Malaysian public institutions with strong academicians and enabling technology could tap into the worldwide market and provide quality education given the differing needs of employers, employees, and students locally and globally.

CHARACTERISTICS OF THE LEADING PROPONENTS

1. Third world countries
   For East Asia and Pacific, out of a population of 1.8 billion in 1999 we found that with a literacy rate of 90 per cent for males and 79.1 per cent for females aged 15 and above, there is a large market for tertiary education in this region alone. USM cannot depend on the Malaysian population to sustain her growth and development as the premier university in the country.

2. East Asia and Pacific Region
   If the influx of students from the Middle East can be used as an indicator (2000–2005), we can expect that students from member nations of the Organisation of Islamic Countries (OIC) would be an inevitable market for USM's a' la carte model. In educational tours in 2004–2005, USM received favourable indications of strong interest for on-line and specialised education from prospective Middle-East, Indian continent and Southeast Asian students who want quality education from USM but prefer to study from their own countries. To meet this request, USM embarked on an on-line MBA programme in late 2005, paving the way for future technology-assisted or web-based educational programmes that can be geared to specialised clientele needs. However, while international students still enroll and study on-campus in USM world-class research programmes, they now have an option to study at accredited partner institutions in their region.

3. African continent
   The United Nation's Millennium Declaration has made a special call for social development in the African nations through technical and educational programmes. As such, our a' la carte mode can provide training and better educational opportunities for Africans so that they can be on par with other developing nations.

4. Women
   Whereas in Malaysia and several other developing nations and in the West, women have formed the majority in the higher education student population, there are still a lot of women in developing countries who do not have access to higher education. USM A' la Carte may be the answer to some of these women who are hindered by sociocultural and financial constraints.

TRENDS

1. Access anytime, anywhere
   Early in 2000, scholars extolling the virtues of the Information Age highlighted that knowledge is accessible anywhere, anytime by anyone. The traditional way of conducting teaching-in-class lecture, on-campus facilities, and face-to-face

interactions are still important features of the learning process in 2020. What is different is that e-learning is only complementary, not the main stream teaching process and that the lecturers are more comfortable in using technology to enhance their teaching. Inherent in accessibility is good service management on the part of the system administrators to ensure uninterrupted access and connectivity. USM already has the infrastructure to support such a model.

2. Connectivity
   From the students' perspective, they can learn anytime and from anywhere and understand that they have access to their lecturers at the appointed time windows. From the academician or course developer's perspective, the challenge is to allow for connectivity not only in terms of the server or infrastructure but also content and full utilisation of the available technology (audio and video streaming, blogs, forum, e-groups) as part of the delivery mechanism.

3. Transdisciplinary (a' la carte)
   As argued earlier, employers now look for graduates who are equipped with knowledge in several disciplines concurrently and are multiskilled. This can only come with a transdisciplinary approach to education whereby students may be anchored in a particular academic discipline for their core courses but are taking courses simultaneously from other disciplines to augment their academic programme of study. Hence the a' la carte concept whereby the students can add or select courses a' la carte to their main course.

   As such, the onus is on USM to remodel the courses and make the academic programmes offerings less rigid to allow for such selection processes. Boundaries between departments will cease as they are expected to collaborate in coming up with these innovative programmes offerings or menus. The menus are negotiated with partners, host, students and agencies and will be subjected to a rigorous curriculum development process but more in-tune with the market as opposed to a pure academic exercise. There is a constant renewal of menus. More importantly, this may have a bearing on the naming of degrees, and the renaming of some of the degrees is in order.

   From the students or learners standpoint, too much choice maybe tough – hence a navigating choice will be made available. It is designed to function as a sort of online real-time counseling to assist students to plan out their programme of study.

4. Repository
   One of the key resources in a' la carte model is the library, which is also accessible via on-line. This service complements the myriad of courses already on-line and are inevitably linked to provide a comprehensive resource to the learners. This also entails connectivity in terms of learning resources available either on the net or via the USM library (e-databases, e-journals, e-books etc.)

   As such, the immediate financial implication to USM would be the provision of a massive IT infrastructure to support connectivity and additional electronic learning resources to be housed in the library. However, USM is confident that the IT infrastructure available in 2005 would be adequate in preparing her for the a' la carte concept in the coming years.

5. Paradigm shift in learning
   Learning is student-centred in 2020, and much of it happens not on campus. The shift to

"technogogy" will invariably affect how lecturers see themselves as the provider, moving away from a keeper of knowledge to a facilitator of learning. Much training has been in place since 2005 to assist lecturers to make this paradigm shift. During the Competency Level Assessment training, lecturers are expected to demonstrate competency not only in traditional teaching roles but also be technogogically savvy. As such, lecturers are not "professors-on-line", instead they are a band of technogogically savvy co-learners themselves and are comfortable switching roles back and forth from being a lecturer to a learner.

6. Virtuality
   Technology-enabled pedagogy (technogogy) suggests that the learners now have access anytime, anywhere and with anyone (networking and global collaboration).

7. Sustainability
   As stated earlier, the university of the future must be self-funding and self-sustaining. Given that clients want access to more learning options to enhance self-fulfillment, the a' la carte mode facilitates sustainability in that the programmes are income-generating tools for USM vis-à-vis the continuous traditional world-class research.

WEIGHTS OR CONSTRAINTS

1. Accreditation (professional bodies)
   Whereas some professional bodies regard themselves as the vanguard of quality and enforce accreditations for programmes that produce graduates who will join them, some of their requirements may also hamper the ability of the graduates to be marketable and business savvy. These requirements may limit their ability to acquire additional skills and knowledge needed beyond the professional discipline of study.

2. Dominance
   Dominance of concerned parties in the higher education equation may hamper the move towards offering courses a' la mode. These include the universities themselves for fear of not being able to sustain the "quality" of education, Ministry of Higher Education for fear of losing control over the accreditation and uniformity of the educational programmes, professional bodies may fear the dilution of the core knowledge required of their future professionals being trained in the universities.

3. Tradition
   Academicians with their proud traditions may scoff at the idea that the university now provides a cocktail of courses from a menu as opposed to some rigid, well thought out and tested curricula (one of the myths of on-line education).

4. Ministry of Higher Education (MOHE)
   One of the major sources of upheaval in our tertiary educational system is the Ministry of Higher Education. Since its inceptions, it has introduced or reintroduced initiatives that are counter-intuitive, as such at times we move one step back instead of one step forward. The MOHE needs to be more proactive in its monitoring and regulation of the higher education environment so that some stability exists even when the market and environment is volatile. Where quality issues are paramount, institutions of higher learning like USM should be allowed to dictate their strategies and react to the market forces as they see fit. As such, in 2020 less control from the government is expected if not demanded, and universities enjoy more autonomy. The implications on the legal structure of the universities is an inevitable move to allow for self-governance.

5. Qualified staff
   With growing numbers of institutions of higher learning, the number of qualified staff may dwindle as there are many options for qualified staff to choose from. Brain drain is not a new phenomenon. USM has to have attractive employment mechanisms in place as well as research and teaching programmes that appeal to good lecturers and researchers which in turn will attract good students.

6. Business acumen
   Most academicians are traditionally expert teachers and researchers, but they may not be too concerned about the business side of higher education. Some business savvy lecturers may see the value in the a' la carte on-line mode whereas others may see the programmes as an erosion from the traditional core on-site (in situ) undergraduate courses.

7. Politics
   The Malaysian higher education system is not devoid of politics; as a matter of fact politics is one of the major drivers for development. However, political energies can be channeled towards making Malaysia a hub of education in this region, hence political maneuvers should be targeted to achieving this goal.

MACROHISTORICAL COMPARISON

If we go back into history, the development of higher education in Malaysia and specifically in the case of USM can be analysed using several models. If we subscribe to Ibnu Khaldun's philosophy, the metaphor that can be drawn is that the Bedouins or prime movers in Khaldun's philosophy are any adult learners with the potential of being self growers. The adult learners include undergraduates, working adults, underprivileged women, returning adults and senior citizens not only in Malaysia but around the world who would dictate some drastic changes on how we conduct our business of education. In tandem with this growing population of adult learners, some of our ceremonial processes (protocols/traditional practices e.g. graduation ceremonies, standing in line for on-site registration, face to face meeting with lecturers) will decline or be replaced by more technology-assisted modes.

Secondly, USM and Malaysian higher education in general has shifted from fixed/rigid curricula to an open and flexible curricula (client-based) according to Sorokin's Pendulum. We are constantly forced to react to market forces and societal changes (e.g. from 4 year to 3 year and back to 4 year programmes) and the pendulum has swung from authoritative (almost elitist function of education) to democracy (democratisation of education). As such, the flexible curricula as afforded in the a' la carte mode augurs well with democratisation of knowledge in that education becomes more meaningful and relevant to the needs of the learners.

Thirdly, according to Eisler's model, our education system in 2020 is based on partnership in terms of collaboration. USM's offering of programmes a' la carte is made possible by collaborations via MOUs and MOAs with 200 or so partners in higher education around the world. Coupled with the dominance of technology plus pedagogy or "technogogy" capabilities of our academicians, technically speaking, there is no limit to access USM quality education by anyone, anywhere.

NARRATIVE SUPPORTING CHANGE

The year is 2020 … the time is 9 p.m. … you are hungry for knowledge. What do you do? You log on, type "knowledge" on the search engine, and voila … ACU is the first entry on your search results.

What is ACU? You are curious. You click and welcome to ACU also known as USM 2020.

On your virtual screen, the menu appears and prompts you to make a choice of either a sit down menu or a take away. Clicking the sit down menu, you are presented with the various selections to suit your needs with dining pleasure in a garden of knowledge ambiance. Beyond the traditional college buffet line, if you are a mother with grown up children, have time to spare and want a degree in gardening, select BA Bonsai (Hons) and you may find an offering that suits your palate.

You wonder, "How good is this programme and how strong is this university?" You click on About ACU, and the following information appears:

- ACU is a world-class 7-star restaurant with strong R&D kitchens accredited by World Cuisine Association
- World Renown Professor Chefs, among them Master Chef Rozhan and Master Chef Wan Zainal who are qualified to prepare all kinds of cuisines, mediteranean, oriental, astronautical etc.
- For your dining pleasure, we have well-trained waiters and waitresses to serve your every needs.
- For sit down menu, you have the flexibility to select your own academic cuisine or choose from our myriad of take away academic cocktails.
- Our restaurant is equipped with state- of- the-art cooking R&D kitchens, crockery and equipment.
- We serve a myriad of cuisine from our research kitchens ranging from state–of–the–art palatable centres such as neuroscience, molecular and biotech, advanced composite, marine science etc.
- If you cannot find what you want at ACU, you can search from any of ACU partner restaurants worldwide.

What do you want to eat now? ACU offers a range of courses ... it's just a click away.

PRESENT WORLDVIEW

1. Technology not fully utilised
   As of 2005, we have assessed to a myriad of technology (3G, audio/video streaming, tele-education, open source, grid computing) and many other enabling technologies and infrastructure (PDA, telephone, broadband, wi-fi). However, much is left to be desired in terms of adoption level or utilisation of these technologies in the present delivery of courses.

2. Lack of funds
   A perennial question. Every year we go through the motions for budget requests, budget allocation and disbursement and each time we fall short of how much we need to operate, let alone to develop.

3. Lack of emphasis on lifelong learning
   This is a sociocultural issue as Malaysia has just introduced the concept of lifelong learning (LLL) in 2000 during the tabling of the Budget. Lifelong Learning must be inculcated from primary one up to doctoral and post-doctoral levels, not just by admitting senior citizens and adult learners into the academic programmes and calling it lifelong learning. The concept should be second nature to Malaysians like breathing air, so that children as they grow to become adolescents, adults and senior citizens always have a zest to learn and continue learning.

4. Striving for a learning society
   To be a key player in the Knowledge Economy and Information Age, Malaysians must strive to be a learning society characterised by a high literacy rate, reading culture and literati, social and cultural events that glorify the accomplishments of a civilisation or culmination of civilisations. Malaysia as a multicultural, multiethnic and multiracial society may be rich culturally, but is not necessarily a learning society.

5. Limited choices: structured/rigid curricula
   In 2005, USM offered about 70 undergraduate programmes based on traditional disciplines. Whereas many programmes have interdisciplinary minor programmes, the degrees conferred are rather discipline- or professional-based. The curricula are very structured and rigid, and do not allow for merging or combining of programmes. To some, the clustering of knowledge is more important as opposed to transdisciplinary programmes.

6. Limited places for adult learners
   In 2004, USM offered 50 places for senior citizens and continued the policy of allocating limited places for them in a few undergraduate programmes. As for other adult learners or nontraditional learners (those not directly from SPM/matriculation or STPM), they have a choice of continuing their studies either via distance education or for teachers via the bachelor of education programmes.

MYTHS OF THE DAY: COCKTAIL OF COURSES

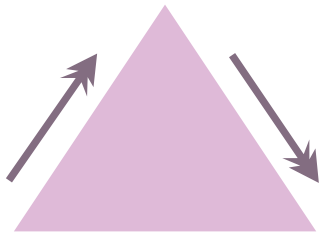
Academicians with their proud traditions may scoff at the idea that as an A' la Carte University, we now provide a cocktail of courses from a menu as opposed to some rigid, well thought out and tested curricula (one of the myths of on-line education).

This myth is debunked by the fact that to offer courses a' la carte, USM has to remodel the courses and make the academic programme offerings less rigid to allow for such selection processes to take place. Academic departments are expected to collaborate in coming up with these innovative programme offerings or menu. The menu is negotiated with partners, hosts, students and agencies, and will be subjected to the rigor curriculum development process but more in-tune with the market needs as opposed to a purely academic exercise.

Chapter 3

THE INVISIBLE UNIVERSITY

METAPHOR: The University is Accessible to Everyone, Everywhere at Anytime
MYTH: Formal Education is the Only Way to Success



PROPONENTS
- Open Source Model
- GRID computing

PUSHES
- Democratisation of knowledge
- Value-driven philosophy: knowledge should benefit the community rather than be retained as personal wealth
- Technology-driven: more open education
- Broader application and acceptance of wireless technology

EMERGING ISSUES
- Growth of private universities has shifted the noble intentions of education as a public good to a profit-motivated product
- Dilution of academic quality due to focus on revenue-generation
- The education system is being turned into assembly lines to feed industry needs
- The emerging breed of digital natives

TRENDS
- Growth of WWW and Internet
- Gutenberg Project, Simputer project, Internet2, MMOPRG, GRID computing
- Open source initiative
- Open university and life long learners

TENSIONS
- The bureaucracy will resist change
- Lost of tenureship and stature
- Lack of privacy

WEIGHTS
- Paper qualifications and intellectual property rights will hold back the surge towards technology-driven education
- Potential high cost of infostructure
- Vested interests who view education as commodity to acquire personal wealth
- Malicious attacks, denial of service, phishing and spamming will create electronic chaos and shatter confidence of users

THE IMAGE: THE INVISIBLE UNIVERSITY

Year 2020 – 2025

- The state when no formal university will emerge or exist.
- USM has to be prepared for this possible eventuality: An environment where learners are bestowed with interactive, dynamic and adaptable resources.

PUSHES/DRIVERS FOR CHANGE

- Democratisation – knowledge is not an exclusive commodity reserved for the elites but should be equitably available to the common people.
- Values – the drive towards sincerity and personal integrity content generated by the intellect should benefit the community rather than be retained as personal wealth.
- Technology-driven – technology will push education towards a more open model.
- Broader application, acceptance of Wireless technology.

LEADING PROPONENTS

- Open Source Model as the alternative economic model.
- GRID computing to encourage the sharing of underutilised computing technology.

EMERGING ISSUES

- Growth of private universities has shifted the noble intentions of education as a public good to a profit-motivated product.
- Dilution of academic quality due to focus on revenue-generation.
- The education system is being turned into assembly lines to feed industry needs for workers rather than producing thinking graduates. This result inconvergent thinking where creativity is curtailed.
- The emerging breed of digital natives who are perpetually connected to the information networks facilitated by wearable computers and nanotechnology resulting in potentially health-threatening situations and maybe is more of a restriction rather than a convenience.

TRENDS

The Invisible University Scenario is supported by the following events and phenomenon:

- Tim Berners Lee, inventor of the World Wide Web (WWW), made technology public-domain and thereby initiated the phenomenal growth of the WWW and the Internet. The WWW is the great enabler of human learning providing access to shared knowledge everywhere anytime. The WWW is also built on the notion that everyone is a contributor or generator of knowledge, each building on previous constructs. The WWW is flexible, unrestricted and easy to use but is not lawless – the World Wide Web Consortium which includes members from the industry sets standards for uniformity and ensures that no one will monopolise or take control of the technology (www.w3.org/People/Berners-Lee/).
- MIT Open Course Ware is offering all their course materials on the Web for free to self-learners – their philosophy is that knowledge is for all. It is not degree-granting and does not provide access to faculty. MIT Alumnus Jon Gruber donated

USD 1 million to the project. (www.ocw.mit.edu/index.html)

- The Gutenberg Project (www.gutenberg.org/), which started in 1971 to make classic public domain literature freely available has now evolved into the digital format with more than 15,000 titles on the Web. The choices have expanded to CD/DVD, audio e-book and digitised music formats. Hundreds of volunteer digitise, proofread, publish and maintain the main servers and mirror sites.

  Public libraries and companies are providing archiving facilities and the project has spread to other nations.

- Open Source Initiative (www.opensource.org/) – the basic idea behind "open source is very simple: When programmers can read, redistribute, and modify the source code for a piece of software, the software evolves. People improve it, people adapt it, people fix bugs". And this can happen at an astonishing speed to produce better software than the traditional closed model, in which only a very few programmers can see the source and everybody else must blindly use an opaque block of bits. It exemplifies the true essence of education which is knowledge for all and everyone collaborates and builds on prior knowledge. This is the alternative accessibility economic model for public good. Examples include Linux, Firefox, Thunderbird, OpenOffice, 7-zip and Gimp.

- Simputer Project (www.simputer.org) – mobile devices which used Linux and IML to provide low-cost (Rs 9000 which is less than RM800) computing facilities to bridge the digital divide, especially in rural areas and in third world countries.

- Open Universities (e.g. www.open.ak.uk) – world-wide accessibility for non-traditional students. No previous qualification required and uses supported open learning systems (learning at your own time and collaborating with other student platforms). The minimum age for enrolment is 18 but there is no upper age limit to encourage lifelong learning.

- Internet2 (www.internet2.org) – initiated in the mid-1990s, it is a collaboration between more than 200 universities, industry and government to develop and deploy "advanced network applications and technologies for research and higher education, accelerating the creation of tomorrow's Internet".

- GRID computing (www.grid.org) – grid.org is a single destination site for large-scale, non-profit research projects of global significance. With the participation of over three million devices worldwide, grid.org projects like Cancer Research, Anthrax Research, Smallpox Research and the Human Proteome Folding Project have achieved record levels of processing speed and success. USM is actively involved in several Grid computing projects in the Asia Pacific Region (http://egrid.cs.usm.my/).

- Third Generation Mobile Network (3G) / Global Positioning System (GPS) / Radio Frequency Identification (RFID), WiMax – wireless and mobile technology for anytime, everywhere data-mining, analysis and information accessibility (www.wimaxtrends.com/).

- Lifelong learners – a society of individuals who are motivated to continue learning throughout their lives – both formally and informally. They are individuals who take responsibility for their

own learning and who are prepared to invest "time, money and effort" in education or training on a continuous basis. Lifelong learners possess a particular set of personal attributes including skills and attitudes for learning, especially literacy and numeracy skills; the confidence to learn, including a sense of engagement with the education and training system; and willingness and a strong motivation to learn. The Invisible University provides the environment and system for such self-directed learning. (www.canberra/edu.au/lifelong/docs/lifelong.pdf).

- Webcasting of lectures – Universities such as the National University of Singapore are webcasting their lectures live. The recordings are archived for anytime everywhere access. Students can choose to "miss lectures" and study at their own pace from any location they are comfortable with.

- Massively Multiplayer Online Role-Playing Game (MMORPG) – these are role-playing simulation games on the WWW where several thousand (even up to 100,000) players may be simultaneously playing an online game. These players are the digital natives ready for The Invisible University where role-playing simulation is the dominant and preferred pedagogy. Imagine learning geography in a 3-D virtual world or dissecting a virtual frog during lifescience lessons. Books as we know it today (hardcopy) will be irrelevant and/or obsolete. These will be replaced by e-paper and e-books with interactive dynamic content. The All-Seeing-Eye by Yahoo is a game server browser which allows players to select servers by regions around the world and know who is playing what game (gamesdomain.yahoo.com/). In The Invisible University concept, similar eyes will facilitate the search for learning communities.

TENSIONS (RESULTING CONFLICTS)

- The bureaucracy will resist change – there will still be too much "paperwork" and procedure but in the digital domain.

- Old-school professors will contest the loss of tenureship and stature.

- Lack of privacy – everything, including personal data, is online, open and accessible.

- Misinformation – not everything on the Web is true, valid or reliable. There will exist different levels of trust and confidence regarding the information available and the people who generate and publish the information. Therefore, there will be a need for the individual to sieve, siphon and retain information which is relevant, correct or appropriate for their needs.

- Social ills – pornography and dark or deviant culture may grow exponentially.

- Search-engine algorithms has not matured resulting in inefficiencies in data-mining.

- Homes and mobile devices are currently not designed according to ergonomic principles and standards.

- Economic – who pays what when, how much, to whom is not well-established.

- Politics – governments are protective of ideologies and philosophies which maybe counter-productive for the free dissemination of knowledge.

- Environment – the lifespan of technology continues will shorten resulting in increasing amounts of e-waste.

WEIGHTS OR CONSTRAINTS

- The prevailing schema of rules, examinations, paper qualifications, intellectual property rights will hold back the surge towards technology-driven education.
- The cost of infostructure will escalate if the present economic model is maintained.
- Vested interests including professors, politicians, employers, entrepreneurs who see education as commodity to acquire personal wealth.
- Malicious attacks, denial of service, phishing and spamming will create electronic chaos and shatter confidence of users.

MACROHISTORICAL ANALYSIS

- Sorokin pendulum model:
  - In the beginning there was no university but it slowly evolved into formal universities.
  - It is anticipated that the pendulum will swing towards non-formal universities removed of its current structures such as its bureaucracy, academic structure, rigidly designed curricula and prescribed qualifications.
  - Digital, bio- and nanotechnology should be used to modify the swing to minimise the negative impacts of non-formal universities.

NARRATIVE SUPPORTING CHANGE

It is the year 2025. The time is 05:58 hr (I still can't get used to the new fangle language of chrono-units, call me old fashioned). The digital weather station on my wrist-top computer alerts me to a high pressure build-up 2 kilometres away indicating an impending tropical rainstorm. As I put on my head-mounted display, I see my 12 year-old grandson has not taken his state-dictated nocturnal rest break. He has spent the last three chrono-units doing his first virtual brain surgery in collaboration with 10 other medical practitioners from three other quadrants of the globe to implant a nano-optical knowledge receptor watched by several thousand potential recipients.

I walked up to him and said, "Still not seeing eye-to-eye with your other digital natives?" He gave me a sympathetic glance to acknowledge my repeated attempts to poke fun at his faceless encounters on the Net. I quickly switched subject, "Have you taken your pedagogical enhancer?"

My grandson impatiently responded, "I didn't need the PE". And then excitedly blurted out, "I shaved 5 micro chrono-units off the standard implant procedure. That was awesome cool, wasn't it, grandpa?"

I asked him back, "How'd you do that?"

He replied in a matter of fact manner, "We executed the virtual collaborative collective paradigm. Everyone was spot on."

After a pause he added, "I will join you for the Subuh prayers". With one swift motion from years of practice he removed his VR viewer and simultaneously signed off from the global lecture theatre. "Malcolm X signing off ... " But even as he did that his communicator implant pulsed to alert him of multimedia messages (what we used to call e-mails) offering positions as a Level 5 Intern Medical Technologist at five of the World's Top 10 Life Health Management Providers. He grinned and looked quite pleased with himself, muttering, "Their performance review systems must be working overtime ... I will deal with them later".

Several thousand knower-explorers signed off while a few thousand more logged in to continue their quest for knowledge constructs.

Instantaneously, the auto-utility pop-up notified me that Malcolm X had consumed 33 renewable energy units in the last interactive session. I sighed ... "These energy cartels are sucking us dry".

PRESENT WORLDVIEW

- Philosophy of MIT OCW initiative is based on the conviction that the open dissemination of knowledge and information can open new doors to the powerful benefits of education for humanity around the world. OCW is a free and open educational resource for faculty, students, and self-learners around the world. OCW, a publication of MIT course materials, does not require any registration, is not a degree-granting or certificate-granting activity and does not provide access to MIT faculty. The MIT OCW hopes to establish a community and resource for information exchange that will lead to a greater understanding of open source and its applications. (http://ocw.mit.edu/OcwWeb/index.html).

- Met School in USA – "no classrooms, no formal lessons, no bells, no grades, no uniforms, no detentions – and no teachers" – a radical approach by today's standard but proven to be workable by Dennis Littky in Rhode Island. The Met schools aims to empower students to take charge of their learning, gaining the skills and knowledge necessary to achieve success beyond high school and to become lifelong learners and contributors. The programme reduced the drop-out rate from 10 per cent to 1 per cent and the number of students applying for university increased from 10 per cent to 55 per cent with all of them accepted. Bill Gates has given USD40 million to set up 70 similar schools throughout USA, declaring that high schools in USA are obsolete.(http://www.bigpicture.org/publications /2005%20archives/LondonTelegraph05.html).

- Bill Gates – Harvard dropout; Steve Jobs another dropout. Michelangelo, Leonardo Da Vinci, Picasso – did they go to school? (Einstein was a poor student to the point that his Ph.D. thesis was rejected.) Einstein succeeded to obtain his Ph.D. only in his third attempt, which by then he did not need anymore, because he already had become world famous through his revolutionary publications and proved that the formally educated physicists of his day were too "narrow and convergent in their thinking". Formal education is not the only route to success in life.

INCASTING–THE INVISIBLE UNIVERSITY SCENARIO

- Drivers
  – Knowledge for all

- Leading Proponents
  – Open source

- Description
  – Non-formal university supports flexible student-led and student-centred acquisition of knowledge

- Funding
  – Corporate funding (social and community contribution) Learners pay for value-added services

- Worldview
  – The alternative economic model for education

- Research Implications
  – Research on effectiveness of "graduates" in employment

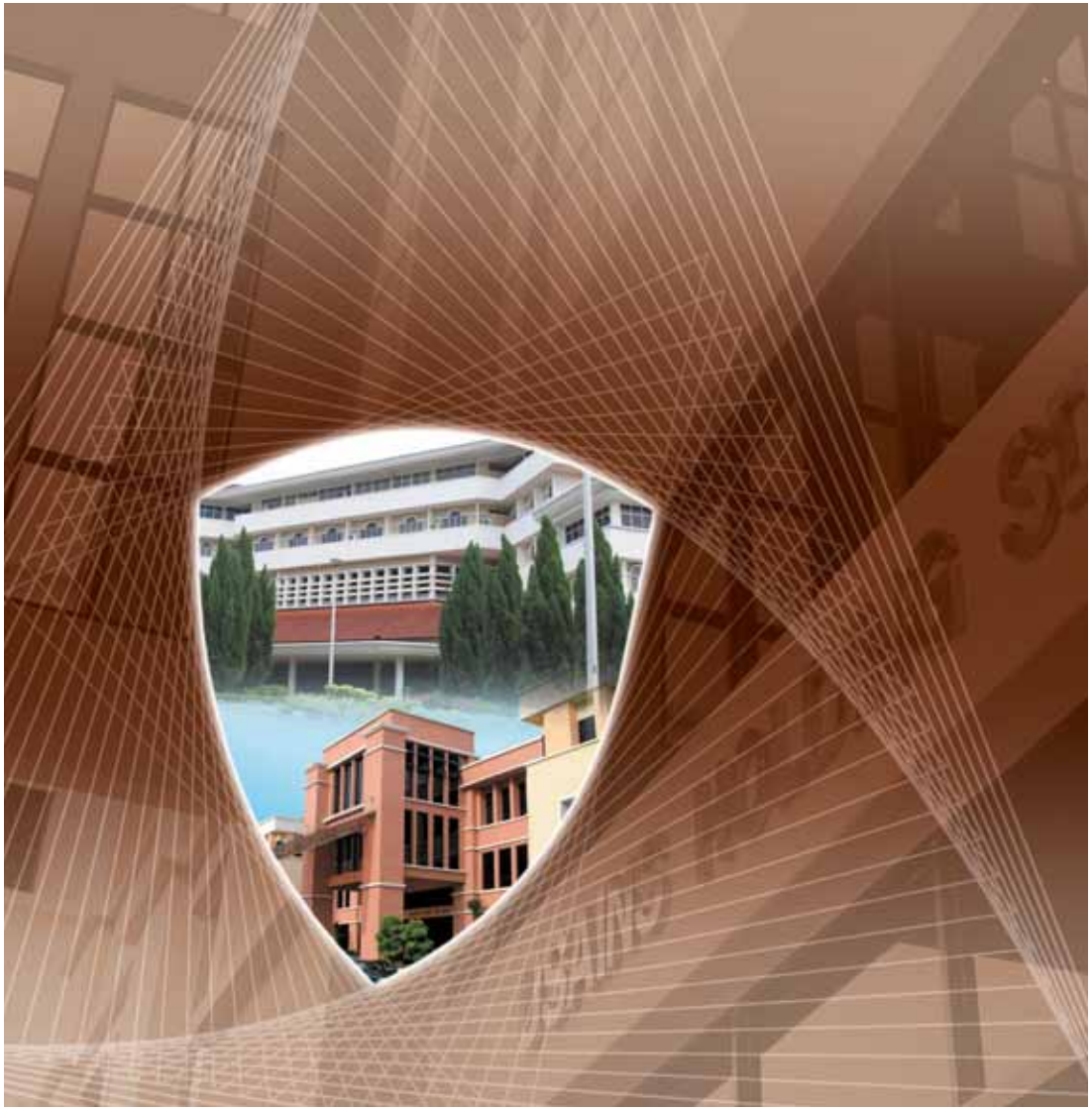
- Policy Implications
  - Non-centralised administration, syllabus, curriculum

- Implications for USM
  - Non-tenure professorship
  - "Lecturers" as content generators rather than teachers
  - Validated repository of knowledge
  - Global competition for "student enrolment"
  - Slim and trim administration
  - Technology driven
  - "Slim & Trim" physical presence

MYTHS OF THE DAY

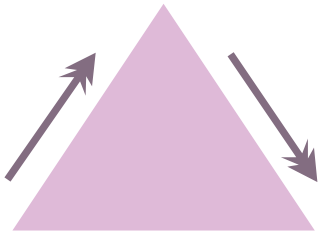
- Formal education is the key to success
- Formal education is the only way to contribute to the world of knowledge
- Face-to-face learning is more effective
- Education is only for the elites
- You must go to school - you have to be physically at a certain place, a certain time and be with a particular teacher
- Online learning will soon fade away

The Corporate University



Chapter 3

THE CORPORATE UNIVERSITY
METAPHOR: Money Makes the World Go Round
MYTH: Tortoise and the Hare



PROPONENTS
- Private sector – take over
- Academics themselves – break away
- Politicians – throw in their fair share

PUSHES
- High cost of public education plus reduced government funding requires new financial arrangements
- Stiff global competition to achieve best practices / world class status
- Mismatch between resources and revenue
- Poor cost-recovery mechanism
- Survival-driven
- Towards financial autonomy
- Good governance/corporate accountability/ transparency
- Continued quality assurance
- Greater efficiency
- Upgrade and modernise resources

EMERGING ISSUES
- Private education as a successful alternative
- Government announced corporatisation in 1998; need to trim the expenditure
- To reduce public funding by 30 per cent
- Proliferation of more public universities
- Complacent public sector culture migrating to private sector

TENSIONS
- Education as universal right is compromised
- Competition for talents, students, other resources

WEIGHTS
- Free market principles will operate against us/can public university survive without subsidy?
- Courses/programmes limited, restricted to popular demand only
- University culture as we know now – reluctance to change
- Fear of the unknown
- Erosion of fundamental research

TRENDS
- Act 555: Private Institute of Higher Education Act
- Act 556: National Accreditation Board Act
- Universities pushed to work with the industry
- Commercialisation of the university R&D
- Internationalisation agenda

INTRODUCTION

The year 1996 saw the legislation of three Acts of Parliament. They were the National Higher Education Council Act, the Private National Higher Education Institution Act and the National Accreditation Board Act. These three Acts have paved the way for quality private higher educations in the country. In 1998, the government announced the corporatisation of public universities by way of governance only. Even so the difference before and after is not quite apparent.

THE IMAGE: USM INC.

A corporate body is an organisation or group of persons that is identified by a particular name and that acts, or may act, as an entity. Typical examples of corporate bodies are associations, institutions, business firms, non-profit enterprises, governments, government agencies, religious bodies, local churches, and conferences.

Corporate governance is the system by which business corporations are directed and controlled. The corporate governance structure specifies the distribution of rights and responsibilities among different participants in the corporation, such as, the board, managers, shareholders and other stakeholders, and spells out the rules and procedures for making decisions on corporate affairs. By doing this, it also provides the structure through which company objectives are set, and the means of attaining those objectives and monitoring performance.

The Corporate University is a company which has been entrusted with the provision of higher education, research and development and whose corporate governance policies include one that distinctly specifies that the trust of all its activities shall be for the greater good of the nation. It is to do this without undue and unfair dependence on government largess for funding its public obligations of bringing the best forms of education to the community with profits from the operation of the private aspects of its business operations.

The images that our group would like to share a USM that is autonomous, privately funded, independent but it also means highly regulated by authorities – the outcome of full privatisation of public universities. However quality is assured by private accreditation bodies.

PUSHES/DRIVERS FOR CHANGE

Pushes that direct the current Institutions of Higher Education (IHEs) towards a new structure that will be almost independent of close government control began with the recognition in the late 1990s that public universities were consuming a disproportionate share of the public revenue without a commensurate return of investments. Stiff global competition to achieve best practices and world class status require a management structure that promotes accountability and value for money in both inputs as well as outputs of public universities. As most public IHEs are now seriously experiencing a mismatch between resources and revenue, and with no sign in sight of potential correction or corrective measures, corporate restructuring of universities is beginning to be seen as a viable alternative to the present structure. As the current sources of funding appear to be unsustainable, given the increasing demand for quality education, the IHEs' citizens and the public at large are indeed the proponents of the transformation process into corporate universities.

EMERGING ISSUES

Five emerging issues which have become the factors for developing the scenario are:

- Private education as a successful alternative
- Government announced corporatisation in 1998. Need to trim the expenditure
- Proposed reduction of public funding by 30 per cent
- Proliferation of more public universities
- Complacent public sector culture migrating to the private sector

At least two acts (Act 555 and Act 556) have become trends towards corporatisation of the university. There is a further push for universities to work with industry and to commercialise the university. R&D and internationalisation agenda are another trend towards the realisation of a corporate university.

WEIGHTS OR CONSTRAINTS

Residual resentment will come from academics and their supporters who profess to subscribe to the paradigm that knowledge should be freely pursued for its own sake and that this accumulation of knowledge is an obligation on the part of the community. Moreover, the free market principles are believed to work against such an idea of for-profit universities. Many would be skeptical of the survival of universities without subsidies. Many would also argue that there would be an erosion of fundamental research in universities, because of the lack of immediate benefits and hence current commercial value. The general fear of the unknown coupled with the university culture as we know it further constrains the realisation of a corporate university.

MACROHISTORICAL COMPARISON

The phenomenon that the country is about to experience can be explained by several microhistorical models:

- Sarkar – social cycle and Sadvipra spiral Intellectual-Warrior-Capitalist
- Marx – "How to end oppression of academics and create the autonomous university" and "Deliver the asset to new group of people i.e. the academics"
- Sorokin – political reaction to high cost of education, the situation can swing back from capitalist to intellectual

Given the above scenario, the macrohistory of the nation would be documented as follows:

- Intellectual Era of 1969–1980. With only five universities, tertiary education was very much autonomous, idealist, democratic and elitist
- Government Intervention Era of 1991–1995. This is a period marked by racial divide, social engineering and a dominant national agenda
- Corporate Era of 1995–2005. This is a period of meritocracy in higher education, value-for money approach to education, university-industry collaboration, entrepreneurship drive and commodification of education

NARRATIVE SUPPORTING CHANGE

The top management of each university, as instructed by the government, would take steps to engage in talks with potential partners to form corporations that will be entirely free from government subsidies and control.

The Corporate University will probably follow the structure of a large company but the board of directors will necessarily be mostly independent people of uncommon vision and knowledge. Such a corporate university would owe its success more to the fact that its CEO is basically a fund raising machine who does not interfere in the academic field as that would be left very much to the academics who have the power, through a collective voice, in the hiring and firing of colleagues.

The government will in effect derive revenue from the new corporate universities through the payment of fees for land, infrastructure and other facilities which shall remain in the domain of public ownership and by taxing the income and profits of these corporate universities.

The Road To A Corporatised University

Our group envisages the budget speech in Parliament in the year 2008, announcing a liberalisation of public universities, by the Prime Minister as the spring board of a journey towards a full blown corporatised university. It entails the gradual self-funding of universities with new structures of ownership, governance and management.

After the announcement by the Prime Minister, discussions, forums and public debates begin to take place. Typically there will be progressive academics with much optimism for the new modus operandi of the universities. They understand that the nation has to face up to the increasing costs of funding public tertiary education. As there are now some 20 universities, with at least one in each state, offering a staggering number of courses, many of which have become irrelevant to the needs of the country as a whole. Meanwhile, there would also be conservative academics who are pessimistic about the new business model of a corporate university. They are not prepared to see the so-called "non-market" driven courses to besidelined when universities start having profit motives. If the universities are expected to run as for-profit organisations, naturally that freedom to teach what, how and when will be circumvented by financial considerations. This, they feel, is hardly autonomy as promised by the whole idea of corporatisation. They see essential but non-profitable subjects such as history would be curtailed.

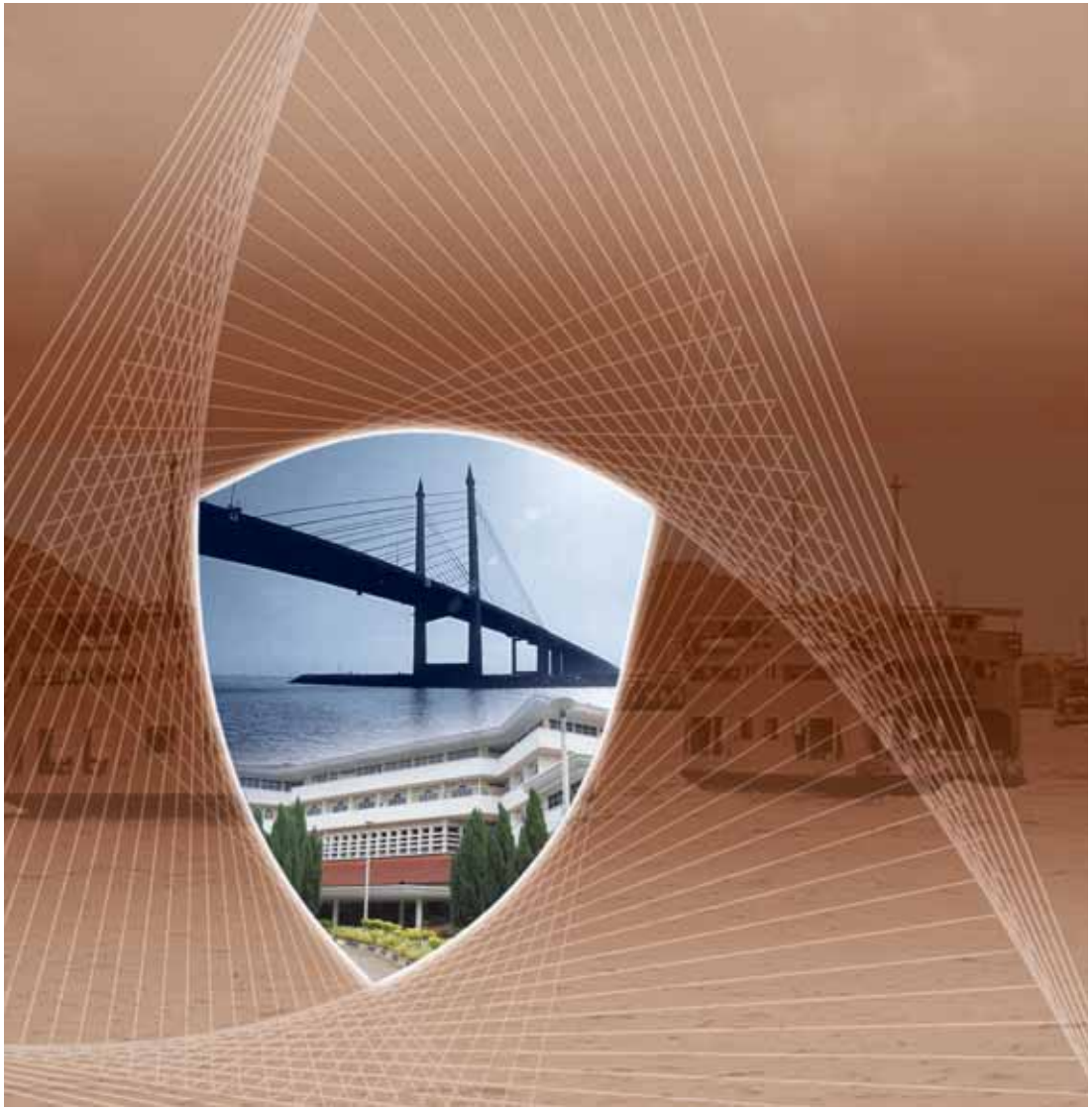
In the year 2020, USM would be a full-blown corporatised university known as "USM Inc". By then it would have developed a new culture and a balancing act between revenue generation and academic pursuits. Close working relationship with the industry being the order of the day.

MYTHS OF THE DAY

The metaphor for USM Inc. is "money makes the world go round". In terms of proponents, the private sector will take over. It is also envisaged that academics themselves or some of them will break away, while the politicians will throw in their fair share. The possibility of courses and programmes offered in such universities being limited and also restricted to popular demand only will discourage people to allow the idea of corporate university to materialise.

A competitive spirit would be expected to flourish within the academia community. A particular myth of the day would create tension amongst the community though as the priorities for good corporate management underscore the need to renegotiate the importance of one key value which is sacred to the academics:

"education for knowledge-sake". Profit-motive, corporate image, enterprising scholars, branding of a university, and salesmanship play a role in nurturing and promulgating the "tortoise and the hare" myth: a "survival of the fittest" mentality. The notion and purpose of knowledge creation and knowledge sharing would be redefined and renegotiated in order to fit the aspiration and the needs of a private-funded institution.



Chapter 3

USM AS A STATE UNIVERSITY

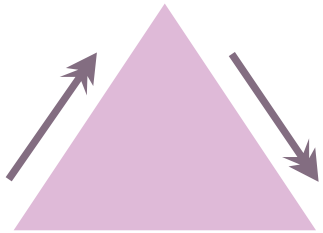
State-owned and Administered but in Partnership with Local Industries

METAPHOR: Pearl of the Orient

MYTH: To Each His Own

PROPONENTS

- State's private sector – needing R&D (including tourism)
- Academics themselves – keen to be entrepreneurs or consultants
- Politicians – establishment of facilities and conducive environment for FDI in state



PUSHES

- High cost of public education plus reduced government funding requires new financial arrangements
- Stiff global competition requires state to cooperate in move up value chain
- Mismatch between resources and revenue, poor cost recovery mechanism
- USM must participate in local scene
- Towards financial autonomy
- Good governance/corporate accountability/ transparency
- Continued quality assurance
- Greater efficiency
- Upgrade and modernise resources in partnership with industry
- Successful Agricultural & Mechanical U model
- Successful field-dedicated universities
- Precedent in state ownership of land and religion issues

EMERGING ISSUES

- Private education as a successful alternative
- Government announced corporatisation in 1998; need to trim the expenditure
- To reduce public funding by 30 per cent
- State demands for universities (e.g. Defence U in Perak, Petroleum U in Terengganu)
- Complacent public sector culture not consonant with desperate global competition
- State development is increasingly an initiative of state government

TRENDS

- Act 555: Private Institute of Higher Education Act
- Act 556: National Accreditation Board Act
- To commercialise the University R&D; importance of industry inputs
- Internationalisation agenda
- Increasing involvement of state governments in agenda for industrialisation
- In Penang, migration of industries to places such as China, Thailand, Vietnam, India: India produces 150,000 engineers/year; China: 250,000

TENSIONS

- Uneven distribution of rewards to states
- Competition for talents, students from other institutions

WEIGHTS

- Free market principles will operate against us/can public university survive without subsidy?
- Courses/programmes limited, largely restricted to demand by local industries – no longer universal
- University culture as we know now – reluctance to change
- Fear of the unknown
- Erosion of fundamental research
- Fear of parochiality contrary to centralised government concept

NARRATIVE SUPPORTING CHANGE

The typical daily log of Professor A. Yusuf, Head of Department of E&E, USM at Penang.

One day in 2015

8:00 a.m. Conference call with V-P, International Research of Chipdsg, Palo Alto on the company's VLSI chip for the new super DVD machine (AY heads the main design team which is located in Penang) with sites in Bangalore and Shenzen.

9:30 a.m. Arrives at his office in USM and prepares for his meeting with his research team of two postdocs, three doctoral and five MSc candidates. There are about six final year students on projects. The meeting reviews work done and introduces ideas and directions have been obtained from the morning conference call.

11:30 a.m. Appointment to meet with Mr. Saito, TD from Fujizuka Electronics who is introduced by the GM of the Penang Development Corporation (PDC). Fujizuka is interested in setting up a plant in Penang to assemble first, photovoltaic arrays, but eventually to manufacture all components here in Penang. He wishes to know the specialisations of the academic staff at USM in order for him to assess how many technical people he has to bring to Penang. He also wants to know about the number and quality of the graduates that USM produces. AY gives him the statistics and informs him that USM is the designated centre for the government initiative on the fifth energy source (renewable). The grants received by this Centre is RM15 million from various sources. He calls for the director of the Centre to join the meeting. It is a fruitful meeting as Mr. Saito agrees to recommend Penang as their overseas site.

2:30 p.m. AY attends a board of directors meeting as the USM nominee at the Kulim High Tech Park. USM holds 25 per cent of the equity in the company which is manufacturing infrared sensors based on an original discovery at USM. Altogether USM has a total of 85 nominated directors on companies, many of them listed, as a result of the licensing and sale of USM IP in exchange for equity and board seats.

4:30 p.m. AY enjoys a round of golf with friends.

8:30 p.m. AY returns to the USM Campus and prepares for his second year undergraduate class on VLSI design basics.

9:00 p.m. AY arrives at the lecture hall. There are 250 students, some still in their company uniform. More than 30 per cent are sandwich students released by their companies to enrol for the part-time B. Eng (E&E) .

11:00 p.m. AY returns home for a well-earned rest.

The Log of SS, a third year sandwich programme B. Eng (E&E) at USM.

Same day in 2015

6:00 a.m. Rise and shine to prepare for work at Chipdsg (Penang) during the 8:00 a.m. shift. AA holds a diploma in Production Methods from the Penang Skills Development Centre (PSDC). This Diploma was devised by USM and offered to school leavers with at least a SPM. He has worked for five years now and, having successfully completed inhouse training under the company's programme for skills development, AA has been enrolled into the part-time B. Eng (E&E) programme at USM. This is his third year, equivalent to the start of the second year of the full time programme.

8:00 a.m. AA is a Line supervisor at Chipdsg (Penang). He begins his shift for the day and it proves to be a long day as he is required to troubleshoot several quality issues in the line. He also receives a letter from the company that he has been accepted for a six-month training stint at the Palo Alto plant and another from the University approving his leave of absence for one semester to coincide with his overseas training. Today is not his practical leave day. If it was so, AA could leave his position two hours earlier to go to USM for his laboratory sessions (2 – 6 p.m.)

3:00 p.m. AA's shift is over but he goes to the Chipdsg (Penang) Educational Centre where he finds conducive space and facilities to do his studies for his university programme. He has a bit of a problem with one or two assignments. Luckily the senior design engineer, Dr. WRT, has taken his post as the academic facilitator for the evening session and, after a discussion with him, he is able to understand the assignment and returns to his desk to complete it.

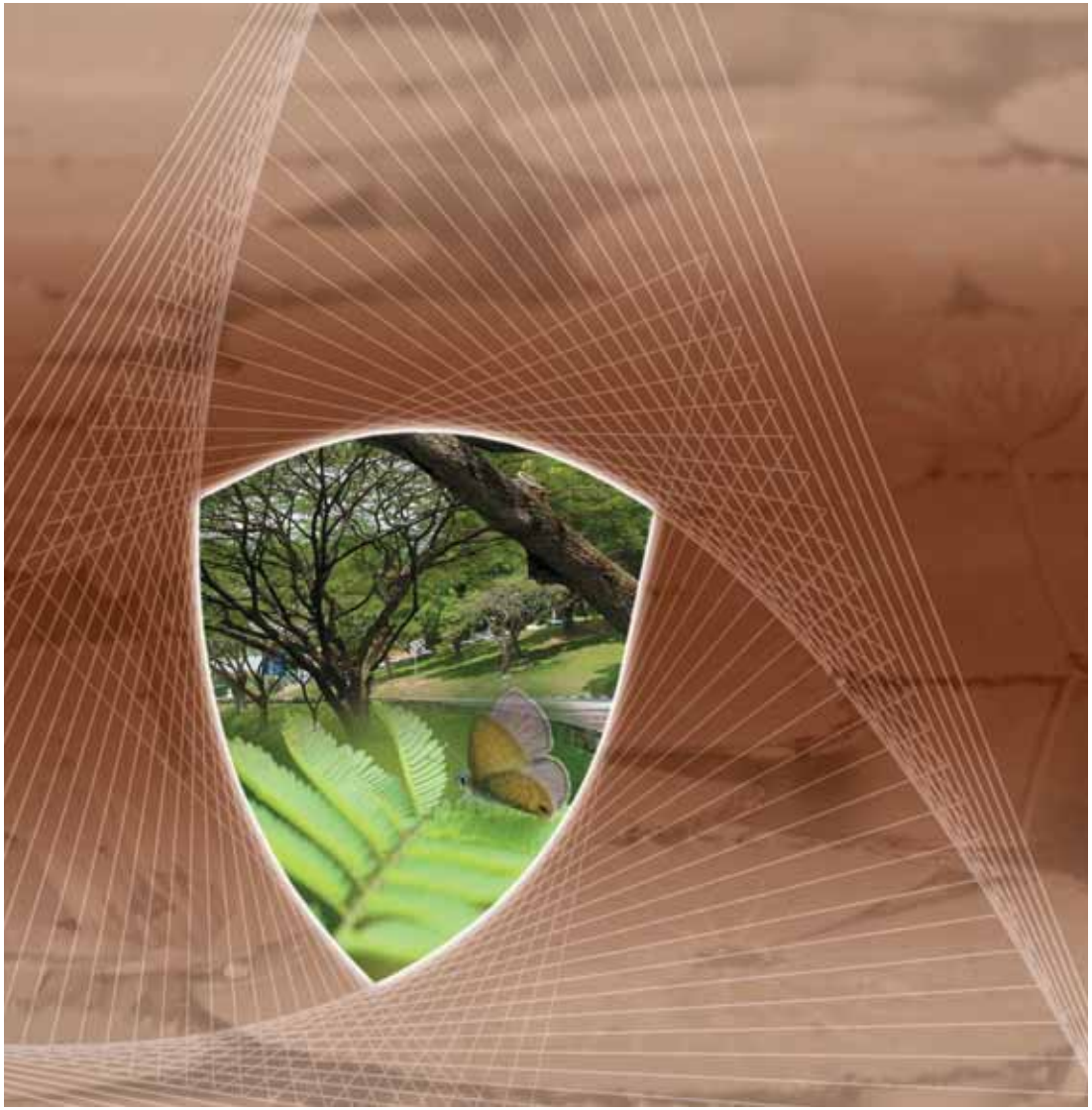
6:00 p.m. AA makes his way to the USM gym for a light workout and socialising with his friends at USM. They have dinner together and prepare for classes.

8:00 p.m. First class of the evening. This is a repeat of an earlier class for full time students in the morning. The lecturer merely summarises the two-hour morning lecture and directs them to his website for the full lecture. He also informs them that the next lecture for full time students will also be on the site and that AA and his classmates should look at them before they meet for the next class.

9:00 p.m. AA attends Prof. AY's class. This is the full two-hour lecture with all the bells and whistles. It is a big class and he is fascinated by the immature behaviour of the fulltime students who are probably 6 – 7 years younger than himself.

11:30 p.m. After a quick supper, AA heads home, 20 minutes away. His day has ended. Another will start at 6:00 a.m. the next morning.

The University in the Garden: Flowering of the Minds



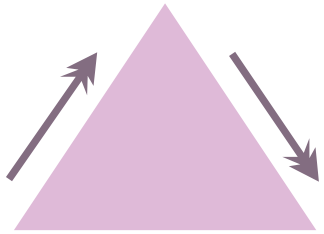
Chapter 3

THE UNIVERSITY IN THE GARDEN

Flowering of the Minds

METAPHOR: Free to Grow

MYTH: An Ivory Tower, Out of Touch with Reality



PROPONENTS
- Academics
- Students
- Small businesses

PUSHES
- Holistic development
- Ideals/dreams
- Academic leadership
- Participatory governance
- Shared values
- Inevitable failure of the current mould

EMERGING ISSUES
- Education is increasingly being standardized due to globalisation leading to "McDonaldisation" of higher education
- Living in comfort zone due to perceived advantages of standardisation
- Standardisation kills creativity and produces robotic mindset
- Standardisation generates knowledge-transmitters (teachers) not knowledge-creators (educators)

TENSIONS
- Government and its agenda
- Bureaucrats opposed to idea
- Big businesses

WEIGHTS
- Bureaucracy
- University as extension of Government
- University as market-driven
- Apparent success of existing mould

TRENDS
- Increasing number of unemployed graduates suggesting failure of current system
- Calls for a revolution in higher education
- Expectations that universities become idea-factories and entrepreneurial incubators
- The need for human capital capable of innovative thinking
- Universities and government in consultative and participatory process

EXECUTIVE SUMMARY

The year 2025 celebrates the fifth year that Malaysia has achieved a developed country status. It can look back at its successes in overcoming the worst effects of globalisation and surviving the many attempts at world hegemony by the different powers from different parts of the globe. In this struggle Malaysians have time and again drawn upon their past history and traditions to guide them through the tough and often tumultuous times. With some pride, Malaysians can say that they can put their strengths on the three pillars of their society: the continuity of the social compact of racial, ethnic and religious harmony and tolerance; the resilience of the partnership forged between government, businesses and civil society; and finally the sustainability of the common and shared values cherished by all members of the community, especially the need to balance the demands of modernity with tradition, to see themselves through to the next century.

Progress however has not come easy. There were costs to both country and people. This is very clearly seen in the field of higher education. The drive towards the "McDonaldisation" of higher education meant that the delivery, content and the very substance of education has become standardised and commoditised. The robotic mindset that results stifles creativity and brings forth the phenomenon of pseudo-intellectuals and unemployable graduates.

The intellectual environment was therefore in a state of deep ferment. Against this backdrop of decline the educational leadership dared to think the unthinkable and called for more participatory governance within universities, a return to shared values and the introduction of a holistic-based education system. Their ultimate objective was to make the university once again, an institution of higher education that is autonomous, accountable and sustainable. It will be an abode of learning valued for its own sake to endow the individual with all the intellectual, spiritual and humanistic faculties.

THE IMAGE: "UNIVERSITY IN THE GARDEN"

The "University in the Garden" is a fitting image held by the intellectual community of their University of the Future. It must be a place that allows for the flowering of minds in a garden environment that recognises that every individual is unique and has talents that must be allowed to develop with a minimum of constraints. The University is likened to a big tree of knowledge whose roots are continuously being nurtured by dedicated and committed teaching professionals and whose branches represent the holistic development of young minds without abandoning their interconnectedness with nature in a sustainable way.

THE PAST SCENARIO: THE "MCDONALDISATION" OF HIGHER EDUCATION

In the years preceding 2025, the emerging scenario in the field of higher education will be marked by the following issues:

1. In a world where education is increasingly being standardised, government policies continue to be dictated by the demands of industry and the need to be competitive in the global marketplace.

2. The attractiveness of standardisation is built upon the following features: mass-production enables pre-packaged delivery and economies of scale; the low-cost per unit of production that results minimises budget allocations for education and education that can be more technologically delivered.

3. With minimum resources and knowledge-creation necessary, standardisation calls for less control on part of government.

4. The perceived advantages develop a false sense of security among the receivers and the movers as a feeling of self-satisfaction creeps in. There is very little incentive to change and to explore new horizons.

In contrast to the above, there are certain costs to be borne with standardisation. These include the following:

1. Creativity is not encouraged. Knowledge is created only with the intention of dispensing it.

2. Pseudo-intellectuals will serve canned-knowledge to undergraduates who do not know their true potential since they have nothing unique to offer.

3. Graduates become mere assembly-line workersand their innate individualities and unique talents are ignored.

4. There are no room for the flowering of minds and the holistic development of the individual.

PUSHES/DRIVERS FOR CHANGE

In the environment described above, there exist various forces that support the calls for change and those that go against it. Among the drivers for change we can list the following:

1. The holistic development of the individual – If previously acquiring a higher education qualification is the passport to a good, well-paying career, the emphasis has changed to one that must allow for the fullest possible development for the individual. Graduates are now expected to not only gain knowledge but also benefit from this knowledge by knowing how to apply them as well. Other important requirements at least from the employer's perspective are strong leadership qualities, integrity and commitment and passion to a cause. Book learning alone is insufficient to enable a graduate to journey through life. A holistic approach that puts a high premium on the development of these different criteria and requirements will go a long way in the education system.

2. The push for change also comes from the growing number of academics within the universities who are being sidelined because they placed priorities on knowledge for knowledge's sake and thereby alienating themselves from those that are happy to be where they are. The more serious among them wants to go on being academically inclined but it is the mainstream leadership that seeks to put the brakes on this.

3. One of the areas of common concern among this group of growing intellectuals is the feeling that their views on how to run things inside the universities are not being considered at all. There is a growing disaffection over the issue of participatory governance, for instance, as the Government continues to administer the institutions of higher education in its own way with less and less involvement of the latter.

4. The whole picture conjured in the academic community's mind is one of change from the negative environment painted above to one that exhibit's a system of shared values made possible by a society that has a promising and progressive future ahead of them. They dream of the time when this road in the dark tunnel of higher education will lead out into the new light of an autonomous garden-like seat of learning.

5. In turn it is the hope that this phase of dangerously moving towards the "McDonaldisation" of higher education will pass and that frustration and other ensuing disappointments with the existing system will reach breaking point.

CHARACTERISTICS OF THE LEADING PROPONENTS

The drivers for change are the academic community. It includes generally the leading intellectuals. But in time they are joined by students who are anxious to exercise their freedom of choice. As a group they are still small and they also have a low self-esteem and motivation. As roots of the knowledge tree in the University in a Garden, they have not been given an opportunity to spread out on their own to grow together thus contributing in a meaningful way, in a manner, similar to the operation of the neural networks in our brain and to nurture the flowering of minds. Academic leadership is seriously wanting.

WEIGHTS OR CONSTRAINTS

Against the sea of opportunities sketched above, we cannot but consider as well the constraints that are weighing so heavily upon this Andalusian vision of the University in the Garden. Factors that go against this mould of the future include the following:

1. The bureaucracy – in the interest of administering the growing demand for higher education and meeting the incessant requests for efficient and standardised delivery of educational qualifications from community and employers alike, the government sought to impose different bureaucratic contingencies that are mostly putting the academic community in strait-jackets with very little room for manoeuvre.

2. The favourite instrument exercised by the administration is of course the budget that is forever being controlled in the name of expediency and cost-savings. The resulting circumstances quite easily encourage mediocre services to be rendered in return by the academic community. In short those who hold the purse-strings call the shots. Year-in and year-out, everything remain the same. Progress is therefore stymied.

3. Coupled with the absolute control of spending money by the government, another factor that is in the way for change is the move to extend its reach into the very domains of the academic community in the universities. The situation can be described as one where the university is seen as an extension of the government. Academics are indeed the losers in this game!

4. The apparent pandering to the needs of the markets for graduates via the above scenario is real as the larger corporations tend to benefit from the government's programmes as this will aid their growth. They get what they want from the government with no strings attached.

MACROHISTORICAL COMPARISON

What the country is going through in the field of higher education is indeed a repeat of past scenarios that have been brilliantly encapsulated by macrohistorians such as Sorokin and Ibn Khaldun.

Within Sorokin's framework the pendulum of higher education in Malaysia, has swung, from the liberal and autonomous era of the 50s and 60s to the other end, the "McDonaldisation" of higher education. This will be the inevitable result if the swing of the pendulum is not reversed. Evidence of this negative movement has already surfaced in 2004 and 2005. The number of unemployed graduates have increased. A figure of 18,000 in September 2004 has been quoted. Why? Employers reported that these graduates have nothing unique to offer. Industry is refusing to train them on the job. They are passing the buck to the Government and the University which is ill-equipped to respond.

Ibn Khaldun wrote of the "Bedouins" who are waiting outside to enter the scene and ready to institute change.

In our scenario of the University in the Garden, described above, these "Bedouins" will refer to the academic community groups indicated earlier. They are in the forefront of moves for change to stop the pendulum from reaching the other end.

STEEP ANALYSIS (NEGATIVE)

Social

- The threat for social disruption as universities criticise society based on independent thinking and new ideas
- Challenging the status quo as a place to promote "established" thinking and 20th century mindsets

Technology

- Defying the use of modern technology, in preference for indigenous modes
- Fear of the loss of control by the "owners" of modern technology

Economic

- Apprehension that universities are not serving the immediate economic needs of society
- Universities function as businesses and knowledge is regarded as a commodity to be monopolised, bought and sold

Environment

- Education will move away from the industrial "assembly-line" model, to an autonomous and sustainable "ecological-organic" model
- A challenge to the "extractive, unsustainable" paradigm of education

Political

- Universities as a hotbed of anti-establishment sentiments
- Fear of the loss of political control and conformity

STEEP ANALYSIS (POSITIVE)

Social

- Impetus for change based on independent, critical thinking and the authority of ideas
- Facilitating the creation of a new society suited to the paradigm of the 21st century – thinking, ideas and values

Technology

- The use of modern people-friendly technology to enhance autonomy and institutional freedom especially in seeking knowledge
- Precursor to the democratisation of education

Economic

- Ingredient for a knowledge (brain)-based society and economic sustainability
- Universities are not ivory towers, knowledge is for seeking the truth

Environment

- Environment as a source of inspiration and innovation
- A chance to promote "sustainable" education

Political

- Universities as a community of scholars who are responsible for global nation-building
- The importance of intellectual leadership in the political scheme of things

NARRATIVE SUPPORTING CHANGE

Recalling September 2004, more than two decades ago, the warning signs were alarming in terms of the number of unemployed graduates reported by the authorities. Although a clarification shifted the numbers from 80,000 to 18,000, there were still many sectors that were unhappy with this figure which represented about 5 per cent of the total graduates seeking employment then.

But now that phase of anxiety seems to have passed. The number of unemployed graduates has dwindled to just two digits. This remarkable change has everything to do with how the higher education system has taken a new "revolutionary" turn initiated since two decades ago. It was on 13 January 2004 that the then Prime Minister called for an "education revolution". He said,

> I believe we will need nothing less than an 'education revolution' to ensure that our aspiration to instill a new performance culture in the public and private sectors is not crippled by our inability to nurture a new kind of human capital that is equal to the tasks and challenges ahead.
>
> Changes in the education system, no matter how ambitious and far-reaching, will take some time to yield results. We must also think about the hidden talents, the undiscovered gems already in our midst (*New Straits Times*, 13 January 2004).

Earlier in 2003, during his tenure as Deputy Prime Minister, he remarked that,

> … Universities, research institutions and technology companies must step up efforts to continuously develop talents and act as idea-factories. Apart from this, universities can act as incubators for building entrepreneurs in support of the national effort to promote research and development and to intensify creative innovations (*New Straits Times*, 2003), excerpt of Address of YAB Dato' Seri Abdullah Ahmad Badawi during Venture 2002 Final Awards in Kuala Lumpur)

Many of these have now been the mainstream features of the new higher education system thus differentiating itself from the "standardised education" with its pre-packaged, stereotyped delivery system. While this latter type of delivery system was perceived as "efficient" and "cost-effective", it was hardly a system that promoted creativity and uniqueness which is the much sought-after talent to compete in today's environment.

Unlike the past, graduates today are more entrepreneurial and "thinking" thus enabling them to be more employable or otherwise able to create their own career paths. In other words, the hidden talents and the undiscovered gems referred to by the (Deputy) Prime Minister, some 20 years ago, have been fully nurtured and polished through the new higher education policy that allows greater academic and intellectual autonomy. In fact Malaysian graduates today are very much in demand globally. Coming from a society that is truly multicultural and multireligious, the graduates have taken a globalised character which is simultaneously enhanced by the new higher education system. Malaysian graduates are now able to not only preserve their unique identity but also to "brand" themselves as the preferred choice for employment and partnership.

As an emerging knowledge-based nation moulded out of the nine challenges of Vision 2020, Malaysia's economic environment too has dramatically changed. The days of low value-added assembly-line type of industry are gone. Instead, the engine of growth of the nation depends very much on high value-added intellectual capital that is capable of innovative thinking to move the nation up the value chain. This is well-suited to its developed nation status as conceived by the over-arching principles of Vision 2020. The new breed of graduates and citizenry is better suited to play the role of knowledge workers.

This could be gauged from the recent 2025 World Competitiveness Ranking that places Malaysia among the top 10 nations among the economically advanced economies, and among the top five among the newly industrialised ones. This has much to do with global reach of the country's economy not only in terms of its trading activities and partners worldwide but also due to the quality of home-grown human and intellectual capitals that are involved in the promoting such global connectivity. Graduates of Malaysian institutions of higher learning together with the economic sectors are fine tuning the training that they received with the latter getting directly involved in investing the much needed inputs and resources to create a comprehensive R&D culture including building their own niches for marketing and commercialising the R&D products and ideas.

As a consequence, Malaysia is very well-recognised as an R&D hub not only for the scientific and technological cutting edge research but also in areas of humanities and the social sciences. This is largely because of a USM-led initiative that promotes a transdisciplinary approach to education, especially in graduate studies. Knowledge is no longer rigidly and artificially compartmentalised, rather it created a "new science" in the original sense of the word "science" as understood from its Latin root *scientas*. This is also reflected and enhanced in the curriculum at undergraduate levels where students are not bound by the "standardised, prepackaged education" that once was the norm. In this context, academics and to some extent the administrators are also subscribing to the ideas of transdisciplinarity so that the decisions made with regard to higher education is sensitive to the needs of this approach. So too are the design of spaces and infrastructures that will facilitate transdisciplinary interactions and discussions thereby contributing to the flowering of minds. Like nature, the transdisciplinary scheme of things allows for a worldview that is holistic, symbiotic, interdependent, and interconnected in an ecologically sustainable way.

According to Henderson (1991)[1], transdisciplinary educational philosophy would require more than one single indicator, unlike the idea of measuring a complex society using only the Gross National Product (GNP) as the indicator.

Transdisciplinary approach will encourage a broader scope of not only intellectual pursuit but more importantly, development of action plans that are more comprehensive and people-oriented rather than technology-oriented. This approach emphasises the interplay of environmental, economic as well as social factors within the framework of transdisciplinarity. Education is only one of the several interplay of factors that impinge on this scenario and in turn is impinged upon by it. Hence, by adopting a transdisciplinary approach, the output/outcome that could be derived will not only be more realistic and acceptable, but also creative in many ways.

[1] Henderson, H. (1991). Paradigms of Progress: Life Beyond Economics. San Francisco:Berret-Koehler.

On part of the government, the autonomy given to universities have also benefited it a great deal as it will have a vibrant intellectual input from a community of scholars to fall back on. The universities, no longer being regarded as part of the civil service, will provide many new opportunities for creating a competitive future based on the authority of ideas. This will heighten the trust forged between the university and the government, in particular the Minister of Higher Education, which will be even more facilitatory and consultative in nature. This in turn will make intellectual pursuits more attractive and indirectly will invite the best brains to flock to the universities. As a result research will flourish and the level of scholarship will move up to a level that is internationally recognised.

To summarise, under the autonomous university model, the future of universities will be greatly enhanced as the innovators of the new economy, because the true meaning of a university is a place where it can "continuously develop talent and act as an idea factory. Apart from this, universities can act as incubators for budding entrepreneurs in support of national efforts to promote research and development, and to intensify creative innovations".

While providing employment is not the main core business of the university, indirectly the problems of unemployment is no longer an issue because graduates who are educated in a truly academic environment with the freedom to inquire for the sake of advancing knowledge is a boon to the employers across board, be it in the public or private sectors as well as those for profit and those for a civil society. They are indeed the new generation of leaders that have undergone an exciting higher education system that is capable of a flowering of the minds. After all as Churchill has been quoted as saying: "The empire of the future is the empire of the mind."

PRESENT WORLDVIEW

The current worldview of higher education is anchored around the core of teaching and scholarship: educating young minds to seek truth and create knowledge, propagate our culture and values from one generation to the next, while constructively engaging the society through sustained academic disciplines and professionalism. This foundation is made up of activities characterised by critical and creative thinking, analysis, as well as moral reasoning and judgement. In a way the, university is like a garden that provides a share of knowledge to those travelers and seekers of truth.

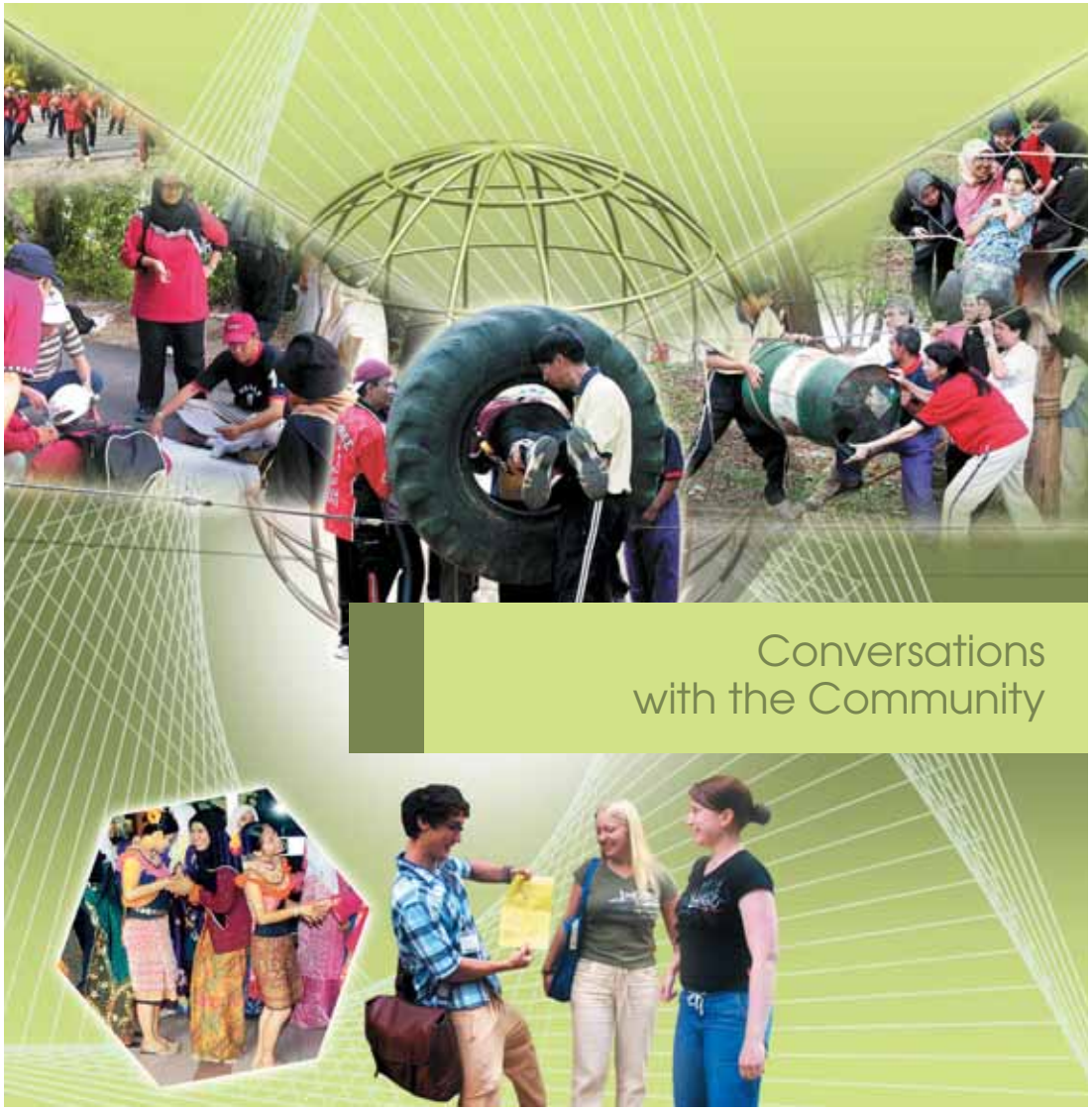
However, of late, universities are increasingly invaded around their peripheries by the activities that are specifically oriented towards utilitarian roles of job creation and employment. There is an increasing tendency for society to view the university as an engine for economic growth through the generation, application and commercialisation of knowledge.

In other words, there has been a gradual shift in emphasis within the university away from their traditional roles of disseminating and analysing knowledge, namely, "teaching" and "scholarship", to generating and applying knowledge, through activities such as "innovation", and "entrepreneurship". Increasingly universities are required to establish links with the industrial sectors which now shaping a new worldview for higher education.

MYTHS OF THE DAY

Myths are the rallying cry for any community to move them into action or inaction. They survive to make up the inner psyche for the members of a particular community and continue to guide their social and religious pursuits. Often the impetus for change can be derived from these operating myths and the vision of something better can be worked in to suit the situation. Two such myths can be identified and drawn upon as lessons for us to meet the challenges mentioned in evolving the University in the Garden in all its pristine features:

- "University is a hotbed of anti-establishment"
- "University is an ivory tower"

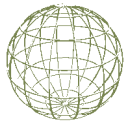


Chapter 4

Conversations with the Community

Chapter 4

Conversations with the USM Community



Following closely on the first workshop in May 2005, a presentation of the alternative scenarios was made to the heads of department (deans and other senior administrators) during an executive workshop at Hotel Grand Plaza Park Royal, Penang, on 11 June 2005. Arising from participants, feedback, a questionnaire was developed to not only gauge the participants' reactions to the scenarios, but to also allow them to voice out what they thought was the likelihood of various events or phenomenon happening in the future. The issuance of the questionnaire provided for wider input of views since not every participant took the opportunity to speak or were willing to speak their minds openly. It also allowed some quantitative data to be analysed when measuring the concurrence or diversity of viewpoints, signifying insights about the USM community. The questionnaire was not intended as an instrument to validate the scenarios or the views on which the scenarios were built on.

A second presentation was then made on 1 July 2005 at USM Main Campus in Penang to the deputy deans and senior administrators but deans and other heads of department were also invited. Participants came from the three campuses of USM. During this second presentation, the questionnaire was distributed to all participants. The questionnaire comprises two sections (see Appendix).

Section A sought the views of participants on the likelihood of various events or phenomenon happening. They were told to respond based on their own experiences or knowledge and were reminded that this section is not about preferences or likes and dislikes.

Section B gave the participants the opportunity to state what they liked or disliked about the various alternative scenarios presented to them.

Forty-six questionnaires were returned after the presentation on 1 July 2005. A report presenting the findings of this first survey was issued in July 2005 (updated in October 2005).

As part of the "buy-in" and dissemination process, several more workshops were conducted between October and November 2005. Every lecturer and administrative officer in USM was invited with a personal letter of invitation from the University. These workshops were organised into groups, namely, the pure sciences, applied sciences, arts, engineering, health and medical, and administration. At each of these series of workshops, a similar approach was adopted.

With an initial presentation of the futures methodology, the USM team facilitators presented the five scenarios, which ended with discussions and feedback. All participants were also asked to fill in the same feedback form used in the earlier workshop. A further 191 survey forms were returned during the subsequent workshops.

A second edition of the survey report for all the workshops combined with a total of 237 completed questionnaires was issued on 1 December 2005.

On 1 March 2006, three dissemination exercises were conducted especially for student leaders at the three USM campuses. The earlier questionnaire with some modifications were distributed to the students. A total of 113 completed forms were returned.

This chapter presents a discussion of the updated survey findings which include the results from student surveys.

PROFILE OF RESPONDENTS

Staff

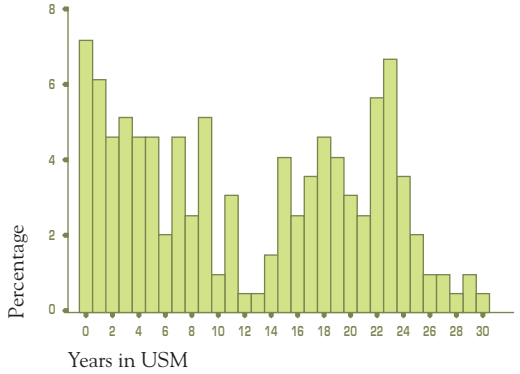
The survey forms were issued to all participants of the various workshops with no compulsion to return the forms. There was no attempt to use any sampling method to obtain a statistically representative sample of any of the target populations. Nevertheless, every effort was made to include the participation of all lecturers and senior management. The total forms collected (237) may be seen as representing the views of lecturers and administrative officers who had taken an interest on the subject of the future of the university. In terms of percentage, the number of respondents is roughly 20 per cent of the total academic staff in USM. In total, slightly over 400 USM staff attended the workshops.

In the first survey, the 46 respondents comprised six deans, one research dean, one director, 10 deputy deans, three deputy directors, one professor (some of the deans are also professors), eight lecturers and various other staff from all the three campuses. In terms of years of service in USM, 27 per cent had work in USM between one and 10 years, 40 per cent between 11 and 20 years, and 23 per cent had served USM more than 20 years.

The combined surveys as at November 2005 showed a wider spread in terms of representation of various groups from senior professors, heads of departments to junior lecturers. Because of the nature of the way in which the workshops were conducted all disciplines and schools in USM are represented in the survey findings. However, because no attempt was made to employ any stratified sampling methods, it was prudent not to analyse the results by disciplines or schools.

The longest length of service was a respondent who joined USM in 1974 (31 years of service) while about 7 per cent of the respondents had joined USM in 2005. It can be seen below that there is a good spread in terms of length of service even though there seems to be a deep trough in representation from those who joined USM in the early 1990s. On the whole, there was a good mix of people with long experience in academia with those who are younger and thus may have newer ideas or visions of the younger generation with regards higher education in the future. Of course, this assumes that those who joined in recent years are the young academics. While this may not be true in all cases, the number of recent recruits who are in the older age groups are likely to be small.

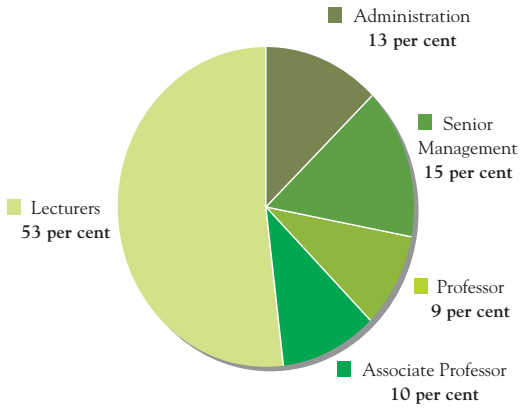
Years of Service in USM



The spread of respondents by their position in USM shows senior management (directors, deputy directors, deans and deputy deans) taking up 15 per cent, administrative staff (including staff from the registrar, bursary and library) 13 per cent, and senior academics (professors and associate professors) 19 per cent. The majority of the respondents were lecturers (including the category called "senior lecturers") making up 53 per cent.

Again, it is noted that there was no attempt to undertake stratified sampling of respondents by categories. As such, the classification of respondents by position is not to show that the survey is representative of the make-up of the university. Nevertheless, it does show that the effort to draw in

participants who are not part of the senior policy- and decision-making body of the university have been successful (as indicated by the large number of lecturers responding).



Students

Three concurrent presentations were conducted for student leaders on 1 March 2006 at the three USM campuses. At the end of the presentations, the survey questionnaires were filled in by the students. A total of 113 forms were returned as follows:

Main campus – 27 students
Engineering campus – 48 students
Health campus – 38 students

About 70 per cent of the student respondents were male. All the student participants returned a filled questionnaire.

The questionnaire for the students was essentially the same as the one used for the staff (lecturers and administrators) in order to make the two sets of data comparable. However, the section on A5 (Tenureship) was deleted from the student's version because it was felt to be not relevant to the students. An additional section C was added to ask the students to create a daily log of the life of a university student in the future. This was intended to be a flexible and creative instrument to allow them to communicate their own versions of the scenario of the university in the future.

The survey findings are not meant to reflect the views of the entire USM student population.

SECTION A – LIKELIHOOD OF EVENTS HAPPENING

The first section of the survey form presented events (as statements or phenomenon) grouped into six major categories, namely:

A1 Funding
A2 Students
A3 Curriculum/Courses/Knowledge
A4 Technology
A5 Tenureship
A6 Control/Authority

A total of 33 events were identified based on an analysis of the scenarios generated by the USM team. They do not include all events or trends which will have an impact on the future of the university but are the events which were most discussed and of the most concern to the USM team. The occurrence of these events in the future may push universities towards the form as visualised in the various scenarios. The opposite could also be true with these events weighing down and preventing the university from achieving its vision.

For each of the events, the respondents were asked to indicate their assessment of the likelihood of the events happening in the next 20 years or so. The five responses provided are:

1 = Very unlikely to happen
2 = Not likely to happen
3 = Uncertain
4 = Likely to Happen
5 = Very Likely to Happen

Even though the responses are presented as a form similar to the Likert Scale it is considered inappropriate to generate the means or standard deviations based on the numerical codes assigned. Rather, the focus is to discover whether the respondents in general, feel that the events presented are likely or not likely to occur in the future.

The statements are independent of the five scenarios which have been generated by USM. In fact, many of the events or phenomenon occur in multiple scenarios.

Did the Number of Respondents Make Any Difference?

The first report was based on 46 respondents comprising mainly deans and deputy deans. The question foremost is probably: "With the larger number of respondents and bigger spread in terms of types of respondents, are the results substantially different?"

In a statistically representative survey using sampling methods, the sample size is determined by (among other factors), the level of sampling error and accuracy or level of confidence desired of the results. For instance, if the error acceptable is set at 3 per cent, then the results would be within a margin of + and – 3 per cent. Any result which falls in between the lower and upper values would be treated as statistically the same (i.e. not significantly different). In practice, the error deemed acceptable is 3 to 5 per cent. Even though this survey did not employ this method to determine the size of respondents, it is useful (and revealing) to examine whether the results have shifted with the larger number and type of respondents.

A quick assessment was made by comparing the differences between the earlier tables (with 46 respondents) and the updated tables (with 237 respondents). The focus is on whether the percentage who think that the events are likely to happen[1] has changed substantially[2]. Since we are only making some general observations, we have avoided using the phrase "significant" in order not to be confused with the more rigorous measure of "statistically significant". Of the 33 events listed in the survey form, 15 events changed by 3 per cent or less; another 8 events changed by between 4–5 per cent; 7 events by 6 percent; one by 7 per cent; and the remaining one by 17 per cent. If we take the 5 per cent margin as being "not substantially different", then about 70 per cent of the events (23) remained unchanged in terms of the respondent's assessment of the likelihood of the particular event occurring in the future. We are not able to assess how much the respondents have been influenced by the presentations given during the workshop. It must be noted however, that the presenters had been instructed to be neutral and not to indicate their personal preferences.

Even though the distribution of responses show that the respondents are predominantly in agreement that the identified events are likely to happen there are also sizeable percentages who disagreed. It can reasonably be assumed that the respondents made independent judgement based on their own experiences and knowledge. This is supported by the diverse views expressed in the open-ended questions and the distribution of the responses and cross-tabulations presented in this chapter.

The biggest difference recorded is in the statement that "The government is unable to fund the high cost of higher education and research. It directs public universities to be self-funding (A1a)." The percentage who thought it likely to happen dropped by 17 per cent to 63 per cent (from 80 per cent). In the workshop at the Health Campus in Kelantan, one senior professor had emphatically stated that she did not see the

[1] That is combining "Likely to happen" and "Very likely to happen" categories.

[2] Either increase or decrease in percentage.

likelihood of the medical schools being privatised or the government relinquishing its social obligations to continue supporting medical schools in public universities in the near or distant future.

Are Students' Views Different from the Staff?

Instead of integrating the students' completed forms into the staff database we have kept the results separate to answer the question – Is the result from the students survey substantially different from the earlier survey of staff?

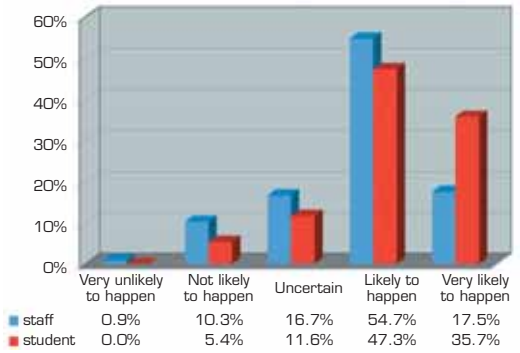
A preliminary analysis was made based on a visual comparison of the separate distribution charts from the two surveys. In general, there is a very high level of similarity in the distribution patterns of responses by the two groups for each of the 33 events. Even for events in which the staff were ambivalent, the students also showed surprisingly similar distributions (i.e. flatter distribution with no prominent peaks). There were no events for which the two groups showed direct opposites in terms of their assessment of the likelihood of an event happening in the future (i.e. one group saying it will happen but the other group saying it will not happen). Notwithstanding the similarities in distribution, there are many events in which the students were more assertive in their views compared to the staff.

A1 – Funding

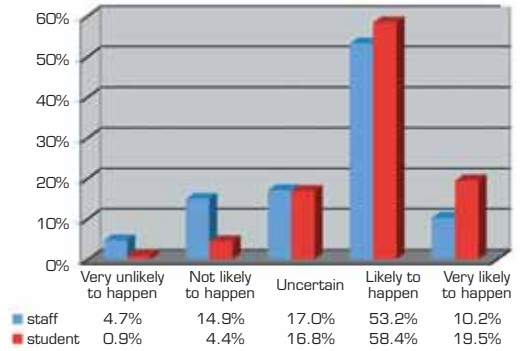
Five statements on funding were posed to the respondents to find out what they think will be the main source of funding for higher education in the future. For ease of reading, the respondents will simply be referred to as "staff" and "students" when discussing the two groups of respondents.

The majority indicated that the government will find it increasingly difficult to fund the high cost of higher education and research and will direct universities to be self-funding (see A1a). Fifty-three per cent of staff and students agreed that this will happen. An equal percentage of staff felt that despite the lack of public funds the government will continue to exert control over universities by working with private companies (63 per cent). A much larger percentage of students (78 per cent) felt that this will happen (see A1b).

A1a – The government is unable to fund the high cost of higher education and research. It directs public universities to be self-funding

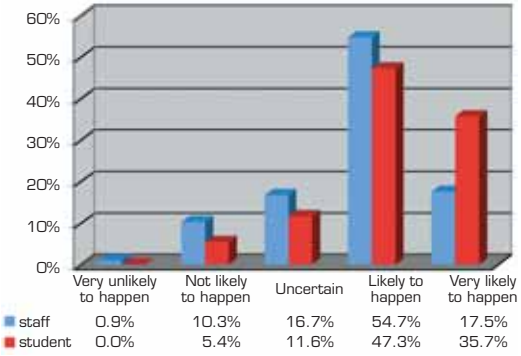


A1b – Because of lack of public funds, the government works with private sector in order to maintain control of public universities



Amongst the staff, about 72 per cent felt that courses will be tailor-made for the industries (see A1c). Note that in the original design this was one of the statements: "Because of lack of public funds, the Government works with private sector in order to maintain control of public universities. Courses at universities become tailor-made for the industries." However, this was split into two statements because it was felt that the statement appears to be doubled-barrelled. The result is that the questionnaire then appeared to have two similar statements that the courses will be tailored to industry (statements A1c and A3a).

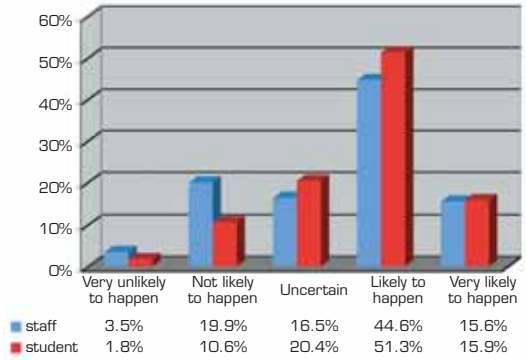
A1c – Courses at universities will be tailored for the industries



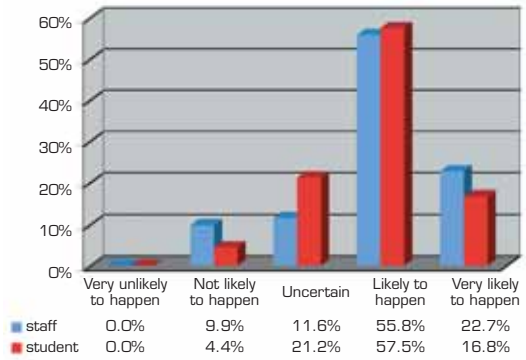
A majority (60 per cent) felt that companies will tap corporate knowledge to set up their own universities in direct competition with public and private universities (see A1d). An even larger percentage of 78 per cent felt that universities will have no choice but to be market-driven to generate enough revenue to sustain research, academic positions, development and operating expenditures (see A1e).

The response amongst students is interesting because more students than staff think that courses will become tailor-made for industry with about twice the percentage of students compared to staff saying that it is "very likely to happen". The student responses to events A1d (companies set up own universities to compete with public and private universities) and A1e (universities become market-driven) sees a very slight shift in the distribution of the student responses, mainly towards the "uncertain" category. The percentage of students who think that these two events are likely to happen is about the same as that for staff.

A1d – Companies will tap corporate knowledge to set up their own universities in direct competition with public and private universities



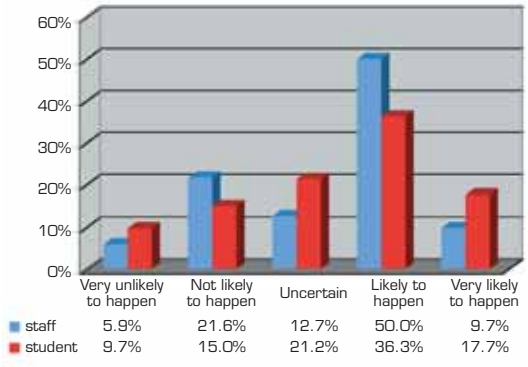
A1e – Universities have no choice but become market-driven to generate enough revenue to sustain research, academic positions, development and operating expenditures



A2 – Student

Two statements were posed related to students' financial ability to pay for their education. The responses indirectly acknowledged the rising cost of higher education with 60 per cent of staff saying that students will be studying part-time and working full-time to finance their higher education (see A2a). The student respondents generally agreed that this is likely to happen but their responses showed a greater departure in terms of the spread. Even though a bigger percentage of students think that A2a (students will mostly be studying part-time and working full-time) is "very likely to happen", there is a big drop in the percentage who chose the "likely to happen" category. Overall, there is bigger spread indicating more diverse views amongst students compared to staff.

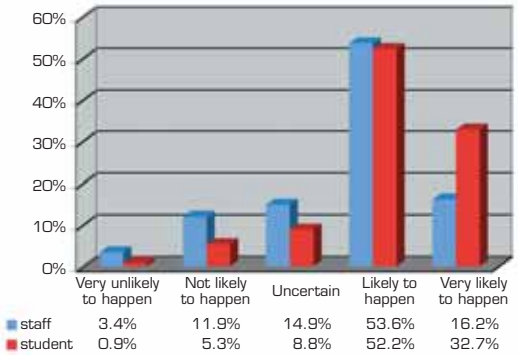
A2a – Students will mostly be studying part-time and working full-time to finance the high cost of education



A higher percentage of staff (70 per cent) felt that higher education students will be taking courses sponsored by their employers (see A2b). An overwhelming 85 per cent of the students think that they will be paid by corporate sponsors taking courses relevant to the employers.

The responses to these two statements appears to reinforce their feeling that courses will become market-driven.

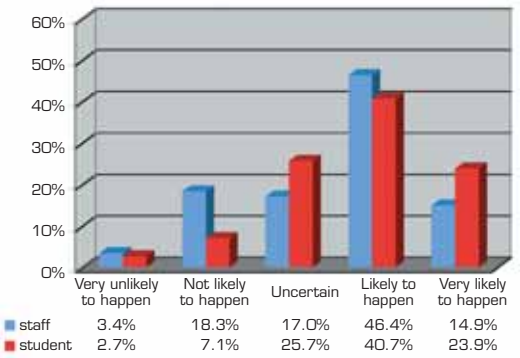
A2b – Students will be paid by corporate sponsors to study courses relevant to their employer (job)



The third statement concerned students' brand loyalty. Most staff respondents (61 per cent) felt that students will no longer be satisfied with what is offered by a single university but will want to choose courses from the best universities in the world (see A2c). Only a slightly higher percentage (64 per cent) of students agreed but more students were "uncertain" compared to the staff's responses.

Conversely, fewer students think that it is unlikely to happen. Even though it is not possible to measure how big the difference is between the two groups, it can be seen that the students are more confident than staff that students will be likely to want to choose courses from more than one university. Students will not just go to Harvard or Cambridge or USM but will collect credits from all of them. So, how or from whom will he get his degree? In future, universities may not award degrees but only credits – it will be up to the employer to determine whether the potpourri of courses taken by the students satisfies the qualities or skills required in the job description.

A2c – Students will not be limited to courses from one university only. They will demand to pick and choose from the best universities all over the world



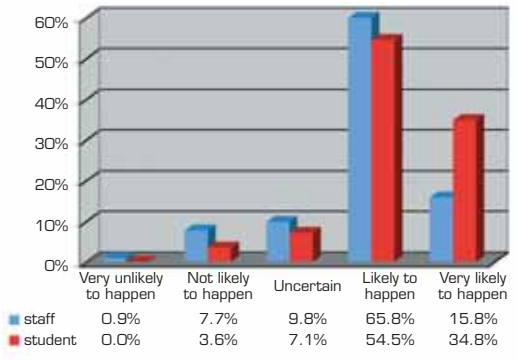
A3 – Curriculum/Courses/Knowledge

There seems to be some wavering amongst the respondents on two similar questions on the possibility that courses will be tailored to industry needs. One question was placed in the section on "funding" (A1c) while the other was placed in the section on "curriculum/courses/knowledge" (see A3a).

The overall percentage amongst those who indicated that it will happen differed by almost 10 per cent (72 per cent compared to 81 per cent) for staff responses to the two statements with obvious shift to greater confidence that the event will happen the second time it was presented in the questionnaire (A1c compared to A3a). The same phenomenon can also be observed amongst the student respondents increasing from 83 per cent to 89 per cent.

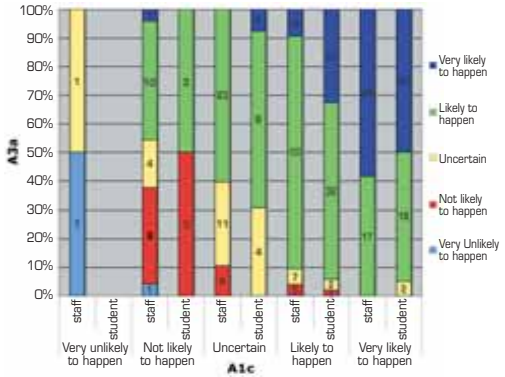
Note that in both statements, the student responses were about 10 per cent higher compared to the staff (for those saying that it is likely to happen) but the most important insight is that both staff and students believed in the inevitability of courses being tailored to market (industry) needs.

A3a – Courses will be tailored to fulfill industry needs and specifications



Nevertheless, it is interesting to discover that there were also shifts in viewpoint by those who initially were uncertain. Note that A1c was originally tied to A1b. In other words, we were suggesting that the government's drive to rope in the private sector to help overcome funding problems would result in courses being dictated by the private sector partners. Looking at the two statistics, it may be concluded that the respondents felt that with or without government intervention, the direction is that courses will become market-driven.

A1c/A3a – Clustered bar chart of "Courses at universities will be tailored for the industries" (A1c – horizontal axis) against "Courses will be tailored to industry needs and specifications" (A3a)

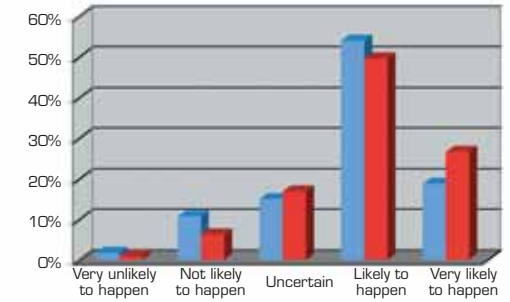


A deeper probe into the above two variables reveals that many of the staff and student respondents changed their assessment when responding to the second event (see clustered bar chart A1c/A3a). The horizontal axis shows the responses to the first statement while the coloured portions in bars show their response to the second statement. For instance, in the "Very Likely to Happen" category along x-axis (A1c), about 40 per cent of the staff changed (downgraded) their view to "Likely to Happen" in the second statement (A3a: green portion inside bar). There were similar changes in view among the students. However, the majority who said that courses are likely to be tailored to industries ("Likely to Happen" – horizontal axis) maintained their position in the second statement (green portion). But within this group, some changed to their position to stronger confidence of likelihood of it happening (dark blue) with a few becoming less confident that it will happen (yellow and red). Of course many who were consistent in their positions.

It must be recalled that we are asking the respondents to see into the future with its inherent uncertainties. Thus, it should not be surprising that the respondents change their minds even within a 15-minute span.

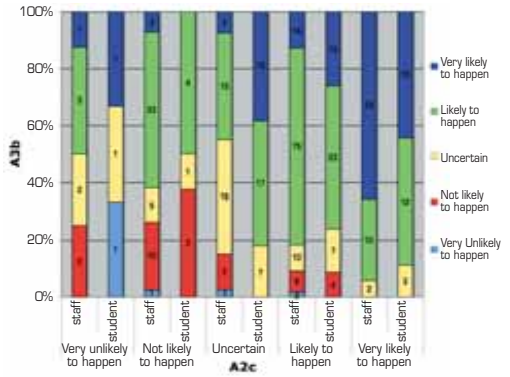
On the subject of transdisciplinary education, 73 per cent of the staff respondents felt that it will become reality with students choosing courses across discipline (see A3b). This seems very surprising given that most lecturers are currently involved only in their own disciplines. The students themselves were only slightly more confident about transdisciplinary education happening with 76 per cent saying it is likely to happen.

A3b – Students (learners) can choose any courses across disciplines (transdisciplinary) in pursuit of knowledge and truth (rather than narrow skills or knowledge for a specific



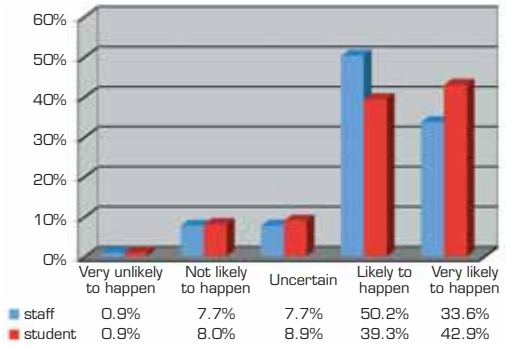
Amongst those who thought that students will want to choose courses from the best universities, most also felt that the students will want to choose courses from across disciplines (see green and dark blue portions of bars of clustered bar chart A2c/A3b). However, even those who thought that students will not likely be choosing courses from more than one university, a large percentage felt that choosing across disciplines will likely happen.

A2c/A3b – Clustered bar chart of "Students will not be limited to courses from one university ..." (A2c – horizontal axis) against "Students can choose any course across disciplines in pursuit of knowledge and truth" (A3b)



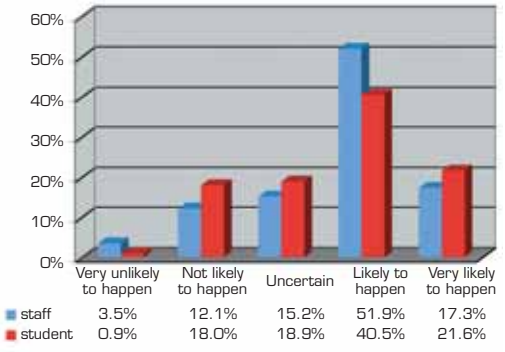
Will knowledge become public good or a commodity for profit? About 84 per cent of the staff felt that knowledge would become public good accessible by everyone and not just for the rich (see A3c). But a very high percentage (69 per cent) also felt that knowledge could become a commodity protected by intellectual property and commercialised for profit. It is possible that the respondents want both scenarios to happen (or think that both will happen simultaneously). The concept of public good was not defined in the questionnaire so it is likely that respondents who said both are likely to happen are assuming that knowledge as public good does not imply that it is totally free. Someone still have to pay for it or everyone has to pay a reasonable sum. It this sense there is no contradiction when a respondent feels that both will happen. An example is open source and the way the Internet works. The open source software is free for everyone who wants to use it but companies will make money through huge volumes rather than big margins by providing value-added services.

A3c – Knowledge is considered a public good to be accessible by everyone, not only by the privileged and the rich



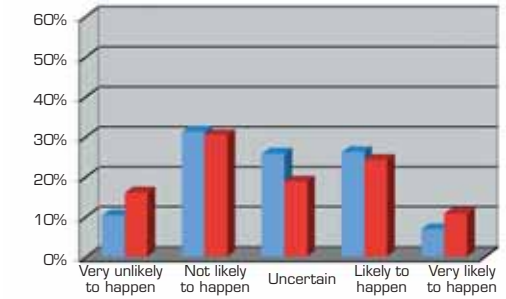
The students were equally confident that knowledge will become public good (82 per cent) and only slightly less confident about knowledge becoming a commodity (62 per cent) (see A3d).

A3d – Knowledge becomes a commodity protected as intellectual property and commercialised for profit



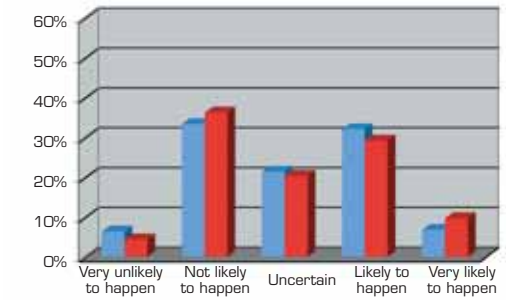
There are three interrelated statements regarding the learning approach. The staff respondents were split in their views on whether knowledge will become standardised (creating robotic minds and killing creativity) – a sizeable 41 per cent did not think it is likely to happen while 33 per cent felt that it would and the rest (26 per cent) were uncertain (see A3e). Related to this is what will happen when knowledge becomes standardised? Will lecturers become merely transmitters of knowledge rather creators of knowledge? Again, the respondents appeared ambivalent on which direction we are headed – about 40 per cent did not think it will happen while an almost number thought it would. About 21 per cent were not certain (see A3f).

A3e – Knowledge becomes standardised, creating robotic minds and kills creativity



	Very unlikely to happen	Not likely to happen	Uncertain	Likely to happen	Very likely to happen
staff	10.3%	31.2%	25.6%	26.1%	6.8%
student	16.1%	30.4%	18.8%	24.1%	10.7%

A3f – Lecturers become transmitters of knowledge, not creators of knowledge

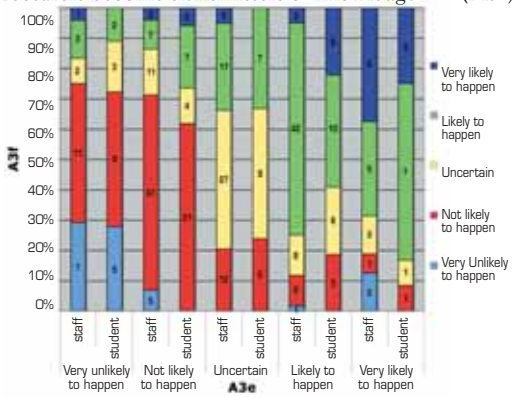


	Very unlikely to happen	Not likely to happen	Uncertain	Likely to happen	Very likely to happen
staff	6.4%	33.3%	21.4%	32.1%	6.8%
student	4.4%	36.3%	20.4%	29.2%	9.7%

Quite surprisingly, the distribution pattern for the above two statements (A3e and A3f) appears to be very similar between students and staff, both showing wide differences in opinion amongst the respondents – there was no consensus that the events "will" or "will not" happen.

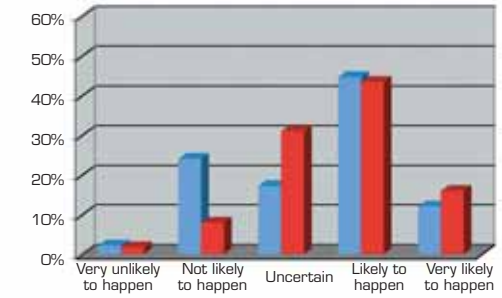
Probing deeper, the staff respondents were quite consistent in their positions. Most of those who said that knowledge is not likely to become standardised also indicated that lecturers are not likely to become mere transmitters of knowledge. The converse is also true for those who think that it will happen. The same can be said about the students' responses (see clustered bar chart A3e/A3f).

A3e/A3f – Clustered bar chart of "Knowledge becomes standardised ..." (A3e – horizontal axis) against "Lecturers become transmitters of knowledge …" (A3f)



The sentiments with regards to student-led learning is not overwhelming. Equal proportions of staff (57 per cent) and students (59 per cent) thought that the traditional curriculum will become obsolete and be replaced by student-led learning with students deciding what they want to learn (see A3g). But while more staff felt that it will not happen (26 per cent of staff compared to 10 per cent of students), a much high percentage of students were uncertain (31 per cent of students compared to 17 per cent for staff).

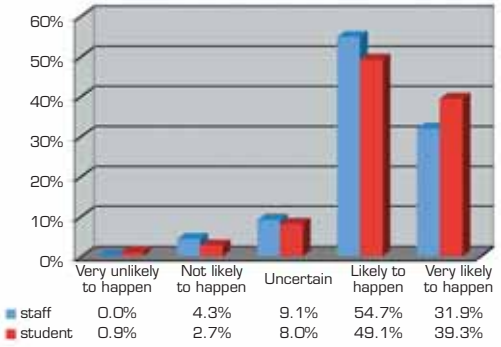
A3g – Learning becomes student-centred, student-led (students decide what they want to learn). Traditional curriculum becomes obsolete



	Very unlikely to happen	Not likely to happen	Uncertain	Likely to happen	Very likely to happen
staff	2.1%	24.0%	17.2%	44.6%	12.0%
student	1.8%	8.0%	31.0%	43.4%	15.9%

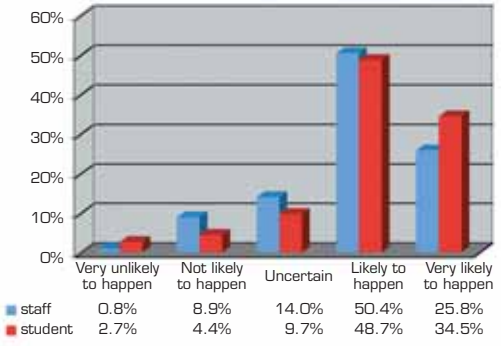
An overwhelming 87 per cent of staff and 88 per cent of students thought that learning will become a life-long process leading to a learning society. A small minority were uncertain with an even smaller number thinking it unlikely to happen (see A3h).

A3h – Learning becomes a lifelong process leading to a learning society



Surprisingly, almost 76 per cent of staff felt that critical thinking and analytical approaches will replace memory-based learning. So, while they were not sure that knowledge will become standardised (creating robots) or that lecturers will become mere dispensers of wisdom (i.e. knowledge), the majority of staff respondents were convinced that memory-based learning is on the way out. A much higher percentage of students (83 per cent) felt that this will happen (see A3i).

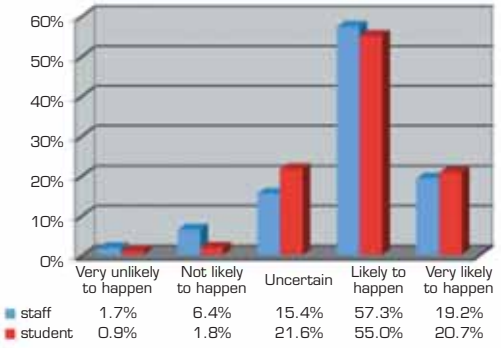
A3i – Critical thinking and analytical approaches will replace memory-based learning



These statistics suggest that there is a strong sense that the current mode of teaching and learning which essentially follows the rote-learning approach and focus on the teacher will not be sustained into the future.

Most of the respondents (76 per cent for staff and students) seems to think that Education for Sustainable Development (EfSD) will become the core or be integrated into all courses (see A3j).

A3j – Education for sustainable development will become the core for and be integrated into all courses



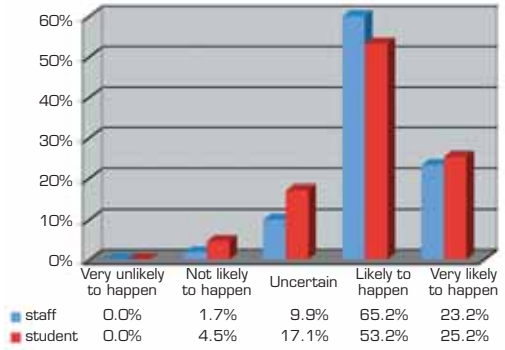
Most of the responses to this section of the questionnaire showed a leaning towards agreeing that the events are likely to happen except for events A3e, A3f and A3g which showed a wider spread of responses.

A4 – Technology

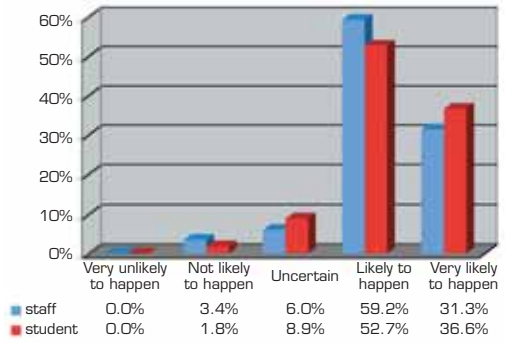
What will be the impact of technology on academic life? Eighty-eight per cent of the staff respondents thought that digital natives (learners who are technology savvy) will demand technology-driven courses. Even more (91 per cent) agreed that digital natives will demand anytime-everywhere accessibility to education. Interestingly, these two figures changed by only one percentage between the earlier set of 46 respondents and the second set of 237 respondents. But will this make face-to-face lectures redundant? The respondents were ambivalent with almost equal split between those who thought it will happen (44 per cent) and those who disagreed (33 per cent) with a sizeable percentage being uncertain (23 per cent).

The students generally concurred with the staff that digital natives will demand technology-driven lessons (see A4a) but there is slightly less enthusiasm amongst students with more being "uncertain". However, the students were equally emphatic that digital natives will demand education to be accessible at anytime from everywhere (see A4b). The students seemed to be a little more confident that face-to-face lectures will become redundant (see A4c) but like the staff, the sentiment is not overwhelming with a large percentage of students "uncertain".

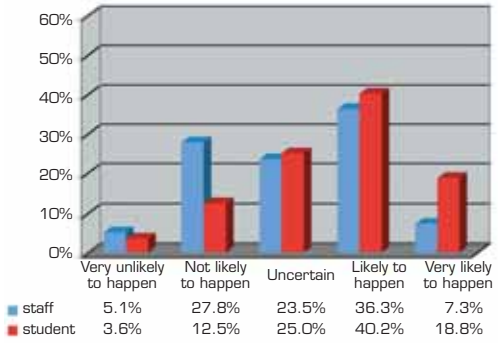
A4a – Digital natives (learners who are techno-savvy) will demand technology-driven lessons



A4b – Digital natives will demand education to be accessible at anytime from everywhere

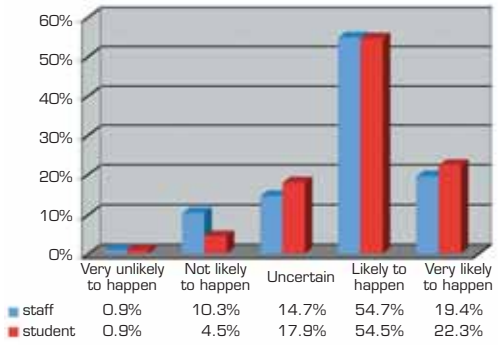


A4c – Digital knowledge will make face-to-face lectures redundant

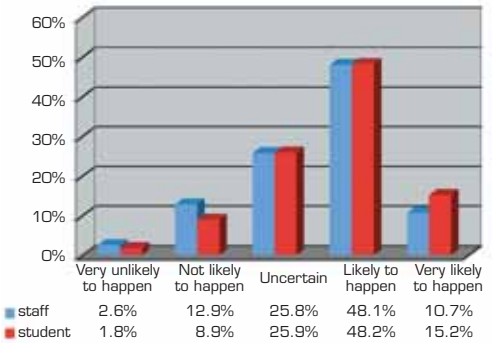


Will digital knowledge enrich learning by making it accessible to all? Seventy-four per cent of staff thought that it would but on the other hand a large majority (59 per cent) felt that corporations will own the digital knowledge and control access to the knowledge. The students shared very similar views with the staff on these two events (see A4d and A4e).

A4d – Digital knowledge will democratise education making it accessible to all



A4e – Corporations will own digital knowledge and control access to the knowledge



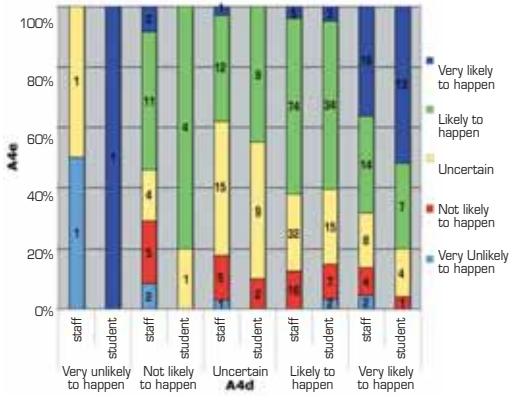
This may appear contradictory but in reality both is happening. Google for instance, is digitising millions of books working with some major universities and libraries. The libraries providing the original copies of the books will get a free copy of the digital version from Google. But the condition is that the libraries cannot make the digital copies available to Google's competitors. Google, of course, will offer the digital books free through its own websites (paid by advertising, most likely). Nevertheless, the issue of intellectual copyright is also preventing the project from realising its full potential. Book publishers are protesting that Google's "opt-out" policy is illegal (publishers holding copyrights have to state that they do not wish their books to be digitised). Other online providers are playing safe by digitising only books which have expired copyrights, effectively meaning only very old books will get in the digital libraries. Currently, one random sample pages are available and readers are then directed to online bookstores to purchase the books.

At the other end of the spectrum, the Open University in UK has announced that its famous self-learning materials will be available under the Creative Commons license for free in October 2006. The University will be spending £Í5.6 million on this project mostly funded by a grant from the William and Flora Hewlett Foundation.

This is a significant advancement over the much more publicised effort of MIT in its OCW project which to some educationist is a disappointment because it only provides course syllabus and some lecture notes appropriate for use by lecturers rather than students[3].

Amongst the 171 staff respondents (71 per cent) who felt that digital knowledge will democratise education, a large majority (109 or 46 per cent) also thought that corporations will own digital knowledge and control access to it. The students also felt the same but with a higher percentage saying that corporations will own and control access to knowledge (see clustered bar chart A4d/A4e).

A4d/A4e – Clustered bar chart of "Digital knowledge will democratise education making it accessible to all" (A4d – horizontal axis) against "Corporations will own digital knowledge and control access to the knowledge" (A4e)

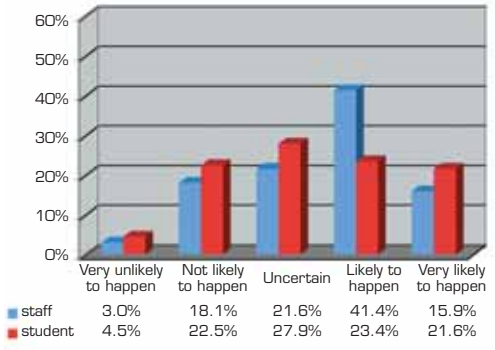


Research has claimed that e-learning has resulted in the lecturers having to actually spend more time on their teaching duties (especially in monitoring online conversations or checking on students work and progress online). Well, the majority (57 per cent) of staff are convinced that the working day will be longer (no more 9-to-5 office hours). But an astonishing 89 per cent thought that technology will make working hours more flexible. Reading both statistics (see A4f and A4g) suggests that the respondents who did not think that working days will be longer nevertheless agreed that technology could allow them to work the same number of hours in a more flexible manner (perhaps staggered hours or telecommuting).

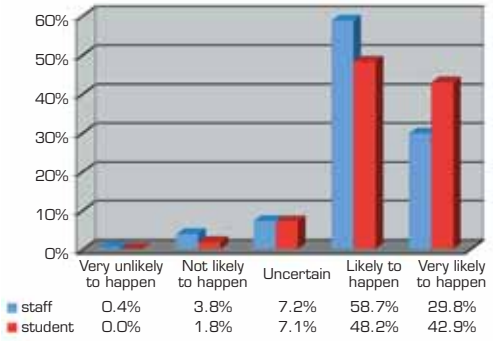
Amongst the students, the shift in distribution for A4f (technology will make working hours longer) seems significant, with quite a big drop in the percentage of those who think that it is likely happen. Less than half (44 per cent) of students think it will happen compared to 57 per cent amongst the staff. In other words, a lesser proportion of students think technology will lengthen the work day. Does the fact that they have not worked in an office before have any influence on their perceptions? On the other hand, the percentage of students who think it will not likely happen is only marginally higher than that for staff. In general, the distribution for students shows ambivalence as to whether it will happen or not. The students were equally confident that technology will make working hours more flexible with 91 per cent saying yes (compared to 89 per cent for staff) but a higher percentage selected the "very likely to happen" category (see A4g).

[3] Sir John Daniels, former Vice-Chancellor of Open University UK and currently President and CEO of the Commonwealth of Learning (COL) made similar remarks at the "Borderless Education Seminar" at the Palace of Golden Horses Hotel, Kuala Lumpur on 3 April 2006.

A4f – Technology will make the working day longer (no more 9 to 5 office hours)

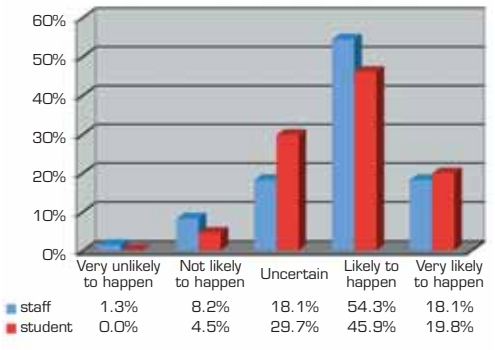


A4g – Technology will make working hours more flexible



Finally, 72 per cent of staff felt that technology will help to reduce the physical demand on spaces. While the students generally concurred with the staff, there is a jump in percentage of students who are "uncertain". This might be interpreted to reflect their lack of exposure or experience related to planning of physical spaces or could be interpreted to mean that they are not convinced that there will be real savings in space usage from technology use (see A4h).

A4h – Technology will lead to dramatic reductions in demand for physical spaces



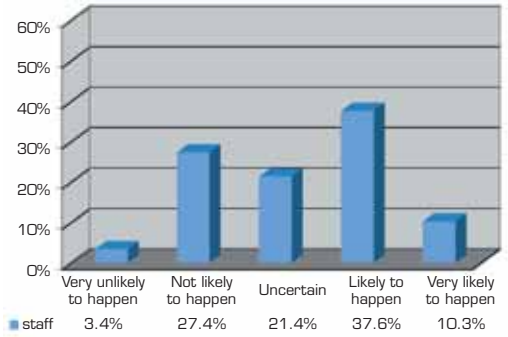
The distributions of responses to all the events for technology show wider spreads while all the charts show that the respondents mostly agreed that the events are likely to happen.

A5 – Tenureship

This section on tenureship was not included in the questionnaire for the students as it was felt to be not appropriate or relevant to ask their views about a matter which is lecturer-centric. Hence, the discussion in this section refers only to staff responses.

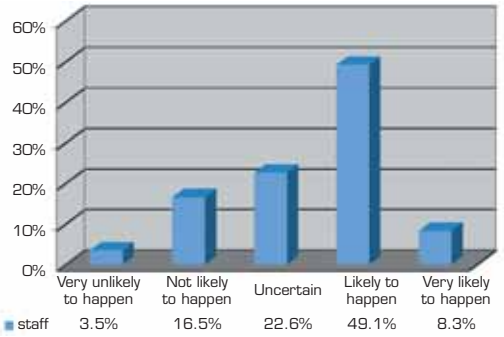
Almost half (48 per cent) of the respondents believed that lecturers in the future will be working part-time at the university and hold full-time jobs in the industry. A sizeable number (almost one-third) still do not believe that this will happen (see A5a).

A5a – Most lecturers will be working part-time in the university and hold full-time jobs in the private sector (e.g., in the industry)

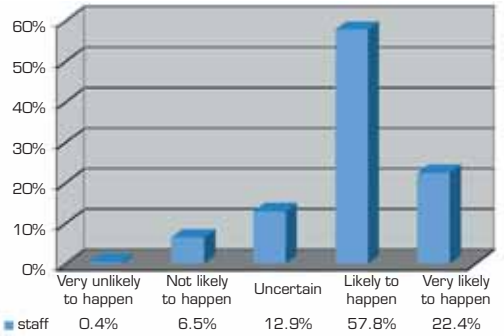


A larger percentage of 57 per cent felt that life-time employment (tenured positions) will not be sustained and will be phased out in favour of contract posts (see A5b). It is therefore quite surprising that 80 per cent of the respondents felt the research and publication will still be the dominant criteria to determine tenureship and career advancement (see A5c). Upon reflection, this apparent contradiction could be explained in terms of the assumption made by the respondents. So, while the respondents might think that the future is likely to see tenureship abolished, they had interpreted the statement on research and publication in the context of tenureship being still in practice. Hence, we could interpret the results as: "If tenureship were sustained, 80 per cent thinks that research and development will be the dominant criteria for tenureship and career advancement."

A5b – Life time employment (tenureship) for lecturers will be phased-out in favour of contract employment

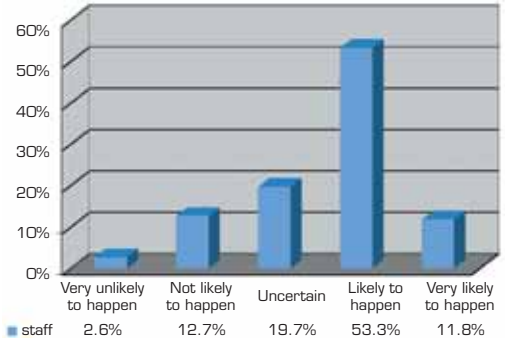


A5c – Research and publication will continue to be the dominant criteria to determine tenureship and career advancement



Nevertheless, a big majority (65 per cent) were convinced that lecturers' career advancement will be determined by what they do (i.e. actions) to translate knowledge for the general good and well-being of the community, i.e. no more publish or perish (see A5d).

A5d – Lecturers' career advancement will be determined by what they do (i.e. actions) to translate knowledge for the general good and well-being of the community (no more publish or perish)

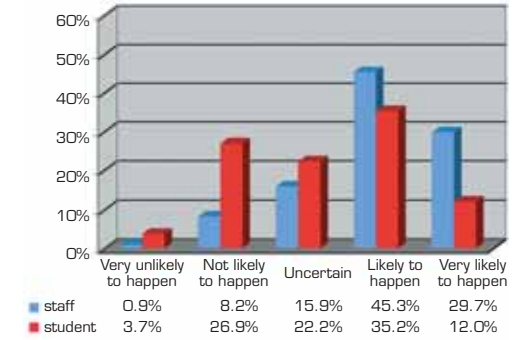


Again, this result must be read in the context of the above analysis. It does not have to be seen to contradict each other because of the inherent assumptions made by the respondents. So, in this case it can be interpreted that the majority of the respondents feel that changes in the way academic careers will be nurtured and sustained could or is likely to change but if nothing changes then research and publication will still be the key to promotional prospects in the academic world.

A6 – Control/Authority

Seventy-five per cent of the staff respondents felt that the government will continue to control public and private university (see A6a). Only 32 per cent thought that the universities will not become autonomous and free to pursue intellectual ideals while 24 per cent were uncertain and 44 per cent thought that universities could be autonomous. In other words, their views on these two events are not necessarily mutually exclusive. The staff are saying that even with government control, there are a sizeable number who would like to think that autonomy and freedom to pursue intellectual ideals will still be possible.

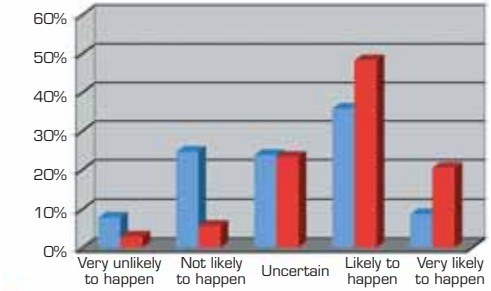
A6a – Government continues to maintain control over public and private universities



The bottomline however, is that the majority of staff are not yet convinced (including those uncertain) that universities will become autonomous. The response from students with regards continued government control of public and private universities is indeed an eye-opener. While the larger majority of lecturers and administrators think that this will persist, the students appear to have come out strongly to say otherwise. There are larger percentages of students who think that it will not persist (32 per cent of students compared to 9 per cent of staff); or are uncertain that it will persist (22 per cent compared to 16 per cent of staff).

Conversely, there is a big shift in the distribution with regards to universities becoming autonomous with the graph skewing to the right showing more students think that it is likely to happen. About 69 per cent of students think that universities will become autonomous compared to 44 per cent of the staff (see A6b).

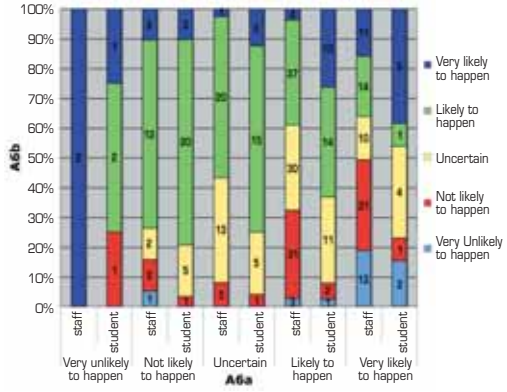
A6b – Universities will become autonomous and free to pursue intellectual ideals (with or without government funding)



	Very unlikely to happen	Not likely to happen	Uncertain	Likely to happen	Very likely to happen
staff	7.7%	24.5%	23.6%	35.6%	8.6%
student	2.8%	5.6%	23.1%	48.1%	20.4%

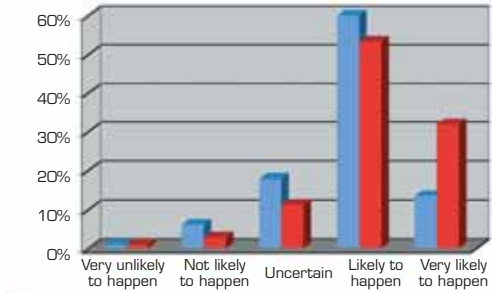
Amongst the 174 (73 per cent) staff respondents who thought that governments will continue to maintain control over public and private universities, 66 (23 per cent) felt that universities could still become autonomous. However, large numbers amongst those who felt that government will continue to maintain control of universities also did not think that the universities can achieve autonomy (see red and light blue portion of bars in the "likely to happen" and "very likely to happen" category in clustered bar chart A6a/A6b). The students are more optimistic with much smaller percentages saying that autonomy is not likely to happen among those who say that government will continue to control the universities.

A6a/A6b – Clustered bar chart of "Government continues to maintain control over public and private universities" (A6a – horizontal axis) against Universities will become autonomous and free to pursue intellectual ideals (with or without government funding)" (A6b)



A large majority (75 per cent) of staff felt that universities would move towards more participatory models in the running of universities (see A6c). The students not only are more confident that this will happen (85 per cent saying yes) but also feel more strongly that universities will become more participatory with 32 per cent saying it is "very likely to happened" compared to 14 per cent amongst the staff.

A6c – Universities will become more participatory with involvement of all stakeholders including management, academics, students and the community



	Very unlikely to happen	Not likely to happen	Uncertain	Likely to happen	Very likely to happen
staff	0.9%	6.1%	17.8%	61.7%	13.5%
student	0.9%	2.8%	11.2%	53.3%	31.8%

It would be interesting to probe deeper to discover whether these sentiments are in fact expressions of a desired future as opposed to the likelihood of those events happening. The staff on the other hand maybe become more pessimistic because of their long service and what they know about how the bureaucracy works.

SECTION B – LIKES, DISLIKES, ETC.

The second section offered four open-ended questions for the respondents to provide feedback or opinions related to the five scenarios presented. The sessions were initiated with presentations regarding the process which the USM Futures Team went through to generate the scenarios. The respective scenarios were then presented, typically with PowerPoint slides of the futures triangle, a narration of the future state of universities under that scenario and for some, a video skit of their scenarios. In the first workshop, each group took between 15 to 25 minutes to put forth their case but later workshops were shorter and more concise.

The four questions asked the participants what they liked or disliked about the scenarios, what is missing and what other comments they might have. The following write-up is intended to as accurately as possible reflect the diverse views of the respondents so that their concerns will be addressed during the follow-up stages of the process of visualising the future of higher education in Malaysia.

What did They LIKE MOST About the Scenarios Presented?

Responses from the staff

The scholar-led university with its multiple concepts embracing sustainable development (The University in a Garden) and the "flowering of the mind" was the most liked scenario receiving 40 specific mentions amongst the staff.

The A' la Carte University was a distant second with 22 mentions followed by The Invisible University (12) and The Corporate University (10). The State University received the least mention (7) but for one respondent who liked the idea, he rationalised that Penang is already well-known and USM could use Penang U to brand Itself.

A few respondents indicated they liked more than one scenario (even though the question is specific about asking what they like most) and the count above is inclusive of this multiple selections. Many did not specifically pick any scenario which they liked most. Some liked all of them.

Some commented that the presentations were concise, lively, creative, thought-provoking and interesting. They were supposed to comment on the scenarios rather than the presentations but it is also good feedback. Others said that the scenarios were "exhaustive"; had "good futuristic imagination"; allowed "free expression of ideas of the future"; and the highest compliment was probably the statement that "it was presented by a team of dedicated intellectuals who sacrificed their time" and gave the participants the "why not thinking" to envisage a "better, greater, more ethical university" (so, why not?).

Apart from specific scenarios they liked, they also liked the flexibility of the offerings "because the future … will be customer-centredness less rigid". Others liked the student/customer-centredness of the scenarios, the exhaustiveness with which the various scenarios seem to cover and the willingness of the team to look for change outside the current "mind-set". They also found the scenarios fun and provided "something to discuss".

Others were not so impressed and said that they did not find anything important in the presentations; or did not like any of the scenarios because they are so "ideal". One commented that the scenarios were "far-fetched" but felt that "it doesn't hurt to spend some time to ponder" over them. One wrote down "not suitable"

(*tidak sesuai*) under this column to indicate he found nothing that he liked. One respondent noted that it was "informative but not innovative". The comments of respondents in this paragraph were written under the question asking them what they liked most about the scenarios.

Responses from the students
In terms of the order of popularity, the students' choices incredibly matched the staff's choices. The students' selection of the scenario they liked the most resulted in the following order of popularity:

University in a Garden (35 mentions)
A' la Carte (28)
The Invisible University (14)
Corporate University (7)
State University (2)

Among those who chose the University in a Garden scenario, there were some who chose it because of its freedom to choose and to grow without interference while others were attracted more to the idea of being at peace with nature. One student wrote that such a university would be "free from the government and its agenda" while another wrote it would enable them to "grow freely mentally, physically and socially" to become "more independent". "Innovative thinking and creativity" would become the trait of the university student which will separate them from secondary school students. "Holistic development and leadership" will be nurtured amongst students in this university. The payoff would be "the university will be great" because the university will be "measured by the high quality of its main clients, the students".

Flexibility and freedom to choose courses across disciplines and across borders in pursuit of knowledge and interest also featured prominently, especially amongst those attracted to the idea of the A' la Carte University with one student writing that the university should not just produce "workers which fulfill the demand of society". A few liked the idea of learning being student-led and student-centred which will make the students more "human" and enjoy learning. In other words, going to university not just to get a job but to be better or more competent persons, with well-developed EQ and SQ (emotional and social quotients respectively). The theme of independence also figured in the views of these students who made oblique critiques saying that youngsters are "more creative and intelligent" (than we think), implying that the authorities are constraining or restraining them from achieving their full potential by giving them only limited or fixed options.

Some of the respondents obviously saw The Invisible University more in terms of the virtual university offering greater accessibility (saving time) and also to open up opportunities to tab ideas from the global community. Others think that the technology-savvy will benefit more because the virtual university will make life easier but at the same time accelerate and enhance their learning (for the techno-savvy). No one mentioned the collapse of formal education as the enticement for their choice.

The Corporate University is attractive to some because it will make the university an independent institution without having to rely on government funding and subsidy. It will also make it more competitive. However, more students thought that the corporate university will provide the exposure to prepare students for the "nice job" as well as open up more employment opportunities.

One student explained his liking for the State University in terms of the strong ties with industry which will protect the interests of the university and students.

A handful of students did not choose any scenario that they liked the most but instead wrote about the positive experiences from the scenario presentations. In particular, a few felt enlightened and inspired with the presentations opening up their minds about the need to examine the longer-term future instead of their current short-term

view of 3 or 4 years. For some of the participants, the presentations had triggered them to "start wondering" about the future. The critical thinking process required to visualise possible futures was a major attraction to many of the student participants.

What did They Think was MISSING in the Scenarios Presented?

Responses from the staff

One respondent wanted a "real" (or really) futuristic scenario as he felt what was presented already exist. Many wanted other alternative models to be considered including a scenario of the current model (Is the current model obsolete or of no value?) An interesting observation is that all the scenarios are about "living universities" and the respondent suggested that a "dead university" scenario should be considered – how do we then "undead" it (or bring it back from the dead)? Missing is also a scenario of a Research University with several calls for such a scenario to be considered. Other suggestions include scenarios on globalisation and one in pursuit of the Nobel Laurete.

What appeared to be missing for some is philosophy – the Education Philosophy of USM or the basic university philosophy. For instance, it was mentioned that many great universities and even companies have their own philosophy which do not change over time; an example given was "Build to Last". Connected to this is what is university education? Some respondents have suggested that this be re-examined. The traditional argument is that with a university education, you will ultimately earn more income. However, the reality of the moment is that over a lifetime, graduates in some countries including UK make only marginally more than those who do not go to university.

The latter get several year's headstart in the job market. In fact, plumbers make substantially more money than the average graduate in UK. There were suggestions that more groups should be allowed to generate their own scenarios according to guidelines provided (by the facilitators). For example, scenarios could be created by postgraduates and undergraduates students or other groups of lecturers. The five scenarios are seen as lecturer-centric – they want perspectives from students, politicians, administrators, parents and industrialists as well. There was also concern about the lower income group not being adequately considered – will our children be able to afford higher education in the future?

Top of the concerns was that the human touch is lacking – human values, ethics, religion, morals, social justice, human rights to education, truth, poverty, gender issues and health are felt to be missing. There was a comment that the scenarios are focused more on the sciences than the arts. There was even a suggestion for a political scenario but others felt that too much politics will "hinder whatever vision recognised". A political scenario of course, does not have to imply the presence of a lot of politicking. Quite a number wanted more information pertaining to the scenarios and felt that the amount of time spent was too short and the explanation, facts and figures provided were inadequate to help them better understand and evaluate the scenarios. A number of respondents touched on the issue of implementation –"implementation, implementation, implementation" –that seems to be the key to a successful future.

What seems to be said (and even unsaid) is for the Team "to get back to reality".

Responses from the students

Many students felt that there was nothing missing. However, one student could not resist the opportunity to register his displeasure that students were excluded from initial deliberations, saying that "nothing seems to be missing … (and) everything (was) constructed effectively and strategically" and then adding that "They know more than us". In fact, quite a handful of students resented the fact the scenarios were constructed without the input of students, one student saying that we should first understand the life, minds and soul of the students.

Some wanted more access to the university management so that the students could make their voices heard, which seems to suggest that they did not see the scholar-led university as coming close to their own notions of student participation in university life. The students seemed to think that since the scenarios were developed by lecturers, they "obviously" could not have given as much weight to the idea of student autonomy or understood what students wanted.

Apart from the students' point of view, other students suggested that the public and government's point of view should be considered, possibility by having all the stakeholders together for a dialogue.

Various suggestions made are insightful and worth exploring and developing, including the ideas of:

Home-based learning – with the parents instructing their children aided by technology to answer questions beyond the knowledge of the parents. This is different from the virtual university in that the role of parents is being introduced as a partner in learning.

Culture in university – or perhaps the cultural university; one which could champion the national language, *Bangsa Malaysia*, and the Malaysian culture.

Religion University – with religious classes during leisure time.

Talent University – where only talented students are admitted but there was no suggestion that it should be elitist since the concept of multiple-talent, multiple-intelligences and multiple ways of learning is gaining credence in education.

Staff University (no elaboration given)

Entertainment University – students are entertained while learning.

Open University – to bring the outside world closer to the university community and vice-versa. The openness suggested here is not to offer more places for study. It differs from the existing Open Universities which are mainly to offer more opportunities for higher education via a non-traditional route.

Some students felt that the learning style in Malaysia which is memory-based and studying for the sake of examinations should also be taken into account. They wanted the scenarios to cultivate creative thinking and the ability to question so that our nation can be independent technologically. "We can develop technology and science on our own", said one of the students. But other students warned that technology could make us all lazy leading to health issues. Technology could also make the industry greedy triggering a virtual land grab with the corporate world thinking of "how to extract from the creative minds of the students".

The quality of the products from each scenario and the future generation coming out of each scenario seems to be missing from the scenarios description. We should understand the main reason "why many USM graduates are still unemployed" (as claimed by one student). The quality of staff was also mentioned as not being adequately dealt with in the scenarios.

One very strong and repeated theme among the students is human development which they used on not only in the sense of developing human capital to feed the knowledge society or industry but in terms of the development of values which many saw as central to the role of the university. Morality and moral values, human rights, culture, ethnic relations, racial integration, unity, peace, personality, character, mentality and even sports were thought to be missing (or at least required repeated emphasis). But the students did not want a

code of ethics which would restrict their freedom of thought and effective actions. Even their current participation in sports outside of campus is a problem with one student saying that it is "difficult" to do so and mostly limited to the Main Campus as far as athletics is concerned. The students felt that the scenarios were too focused on issues of funding, industrial demand, university costs and the job market and wanted more thought to be given to human development to produce multiskilled graduates.

The research university was not obvious to the students with calls for more R&D and a review of the role of postgraduate students. A few saw R&D as the way to learn. And learning should be fun too – well at least, we should not take the fun out of being students. "Let students be themselves" so that there will be more interest in the learning process. One of the students, at least, would have enjoyed more interaction amongst themselves and with the lecturers and the university. One student expressed the wish to have "student-lecturer conversations", demonstrating a deeper appreciation of the idea of a university.

One student reached further back to say that all these can only be realised if basic changes are made to the education system to mold students with the right qualities before they come knocking at the university's door.

While a few students praised the presentations, others were not so impressed. One felt that one of the presentations focused too much on the technology while a couple demanded statistical proof to support the basis and logic behind the scenarios. One asked for further research to provide prove that the scenarios will happen in the future.

Other Comments and Suggestions

Responses from the staff

About 15 to 20 per cent of the staff respondents stated that the most likely outcome is a combination or hybrid of the various scenarios. Many recognised that each scenario had its own strength. But as far as "trying to paint what is coming in 20 to 25 years … it is going to be quite difficult, if not impossible". However, if we want to say that "this is the model we want in 25 years time", then we could "start building it from now".

There were suggestions for more inclusiveness in the consultation process of scenario building to include even the Penang State Government, the Ministry of Higher Education and other main stakeholders which was perceived to be lacking. One respondent suggested that all stakeholders should be present in one sitting together instead of by cohorts. Another respondent used more colourful language, saying that in "the earlier stage, small potatoes and small fish" could be included with "high powered eagles" during the formulation of the scenarios. Nevertheless, he acknowledged the substantial effort behind the future workshops and wanted the team members to "be appreciated, recognised and rewarded".

One fundamental issue raised by several respondents was "what is a university?" They called for a rethink of the purpose and role of higher education and how best we can achieve them. Others were concerned about the status quo. For him, nothing is going to change – that is the scenario! Technology will only help to improve what we already have.

Quite a number of respondents were concerned that this future scenario building will just be an academic exercise. One respondent specifically mentioned the "Critical Success Factor" plan where "much time and resources were spent" but there was no implementation. "Will this go the same way?" – he wanted to know.

Some comments are extracted below to show the diverse range of comments given:

- The university should focus on quality of education, emphasise meritocracy and place greater emphasis on brain-based learning to harness the potential of the mind.

- The size of classes in science stream should be controlled. Smaller classes are preferred to encourage conversation.

- University education should encourage students to be innovative, have the ability to solve problems and contradict conventional wisdom.

- We can never go wrong by investing in physical requirements for research and education (which is not happening). This will form the bed for the internal strength of the university, providing core competencies to weather all storms.

- Get success stories from top universities as reference points for developing our own scenarios.

- Two basics shall remain unchanged :
  i. University students must learn the fundamental and basic concepts of their fields of study.

  ii. Researchers are needed to further the frontiers of knowledge. What may change are types of courses offered and the financing of the universities – these will be market-driven.

- Full-scale research with a global flavour is required for us to build scenarios.

- The university must set up more professorial chairs and hire the best lecturers in the world ("it will take forever to grow our own experts").

- Government should provide free education up to university for its citizens. Increase taxes if necessary (as in UK).

- USM should allow its staff to excel in all parts they choose, e.g. either in teaching, research, writing, etc.

- The future of the university cannot be planned in a 2-to-5 p.m. session.

- Improve our infrastructure. Do a rubric of types of workers vs. levels of change needed, with costing in of all training needed to get the workers where USM feels they should be, i.e. performing their best and generating the best incomes for USM.

- Extrapolate the political and economic condition of the country – a lot of the decisions about the future of the universities will be dictated by these situations.

- Include scenarios for human resources perspective to achieve all the scenarios.

Responses from the students

Many of the comments in this section were repeats or reinforcement of the students' statements in the section about what is missing from the scenarios and will not be repeated here.

Some other remarks made by the students are:

- Students should not be treated as the market but as the marketing agent. When the university produces high quality graduates, this will itself sell USM's products in the job market.

- Education should be based on practical rather than theoretical learning to cultivate better skills.

- Education should not be exam-oriented.

- A conducive environment for learning without the pressure is desirable.

- There should be more opportunities for students to interact with the outside world so that they can be prepared for all situations.

- Choosing across disciplines is already available but lecturer-advisors discourage the students from taking options outside their discipline, telling the students that the important thing is to graduate on time.

- A university student representative in Parliament in 2025.

- Students in the virtual university should be able to show their learning outputs or products directly to the industry (presumably online).

- Fast development of the country is crucial to the realisation of any of the scenarios. The downside of too much information is misinformation.

- More workshops should be held and should be open to all students instead of only to committee members of societies. USM should also publish leaflets to disseminate the ideas. The students even expressed willingness to propagate the ideas.

- "The current education system does not support initiatives."

SECTION C – A DAY IN THE LIFE OF A UNIVERSITY STUDENT IN 2025

The students were given pre-formatted log-sheets and asked to visualise "a day in the life of a student in 2025". Some guidelines were given to indicate what the USM Team was looking for but the students were otherwise told to let their imagination go free. They were also encouraged to change the format or media of submission, if so desired.

Our intention was to provide a platform for the students to give us an alternative view of how they see higher education in the future. It is not the intention of this exercise to judge whether the students are forward-looking or have creative imaginations but one primary concern is whether the students can in fact tell us what they want so that we can build a campus of the future (which of course, includes a virtual campus). In other words, are students thinking further ahead about "how to change the education system" or are they more concerned with the bread and butter issues of education today (get into the right university, choose the right course; get a good job)?

Several lecturers in the USM Team volunteered to examine the log-sheets but no standard format or structure was used for the analysis. Each analyst would use his or her own approach in order to capture different perceptions. Their impressions of the students view of the university of the future are presented separately below.

Impression 1

The Virtual University – an overwhelming number of the students (more than 90 per cent) described interactions with online systems to access real-time and pre-recorded lectures and lecture resources. However, the large majority seems to be trapped in the current technological know-how with many still visualising having to connect to the Internet and to download lecture materials. There was not sense of the pervasiveness of the anytime, everywhere online environment where we are always online no matter where we are and speeds are so fast that the idea of a download could be redundant. The notebook it seems will not be obsolete yet as quite a few described its usage, including lugging it for a virtual lecture at the lake with his girlfriend. Only one student described the pervasiveness of the handphone and 3G technology (lectures broadcast on handphone, consultation with a lecturer via handphone close to midnight). Despite their acceptance that online learning will be inevitable, many described having to campus for sessions with lecturers and coursemates or do carry out experiments in the laboratory.

Time of day – the world will not be turned upside down by technology. Even though a few described a typical day starting at 4:00 a.m., for most students the days end by 12:00 midnight. Most learning activities would still be conducted in the traditional 9 to 5 hours. There were no nocturnal creatures who stayed up all night (perhaps to interact with coursemates on the other side of the world) and slept through the day.

Learning approach – the term "lecture" was used liberally in the context of online learning, showing that the students are very much framed by their current notions of learning. Even though some used the term "self-study", it was not obvious that the students envisaged (or wanted) a different approach to learning from the current lecturer-led system. No one replaced or removed the "lecturer" from his learning process. Students would still be watching live or recorded lectures and will be submitting assignments by e-mail (yes, students will still have to do assignments).

Personal development – exercise, dating (interestingly, only the male students wrote about this), playing games (real and online), meeting friends and family for social activities, watching TV, sports, etc. featured prominently amongst the students, many logging several such activities within the day. Several wrote about doing virtual exercises without any elaboration (perhaps a replacement of the exercise video; or like line-dancing with thousands around the world?).

Impression 2

From the survey forms several themes seems to emerge. The patterns that seems to reoccur can be grouped into 4 major categories as follows:

Private time – As the format of the student's daily log encompasses activities from Dawn to Dusk, almost all the activities begin from their first waking moments to when they retire to sleep. These activities would include time for private religious practice, reflection, interaction and collaboration and face-to-face meeting. These face-to-face meeting apparently are very important to these students as they would include several references to highlight that fact. They would include statements such as reality, physical, "for real" whilst in contrast to terms as virtual, *maya* or online. Another interesting note is the activities which include time with family members either for breakfast, lunch or dinner. This reflects that close family ties are very important but the underlying idea is that they are all still living at "home" without having to physically stay in a "University Campus". This may be due to their vision that the technology would allow them to obtain a university degree without actually having to leave their homes; basically they are comfortable studying in a "home living environment".

Learning time – Learning time is actually the main activity that USM Future Scenarios are focusing. From the analysis and impression that is obtained from their forms, the students indicate a blended approach to obtaining their knowledge. Activities include interaction with coursemates and educators regardless of boundaries and not confined to a specific time. These activities include both asynchronous and synchronous interaction, collaboration and communications. The interactions would include e-mail, chatting, video conferencing, online discussions but almost all the students would mention whenever physically possible a face-face interaction with their educator. Some of the students showed preferences to begin with their classes in the morning, some were in the afternoon but night time seems to be reserved to complete assignments, reading and for reflections. But the later part of the night would constantly include social activities where the interaction would include going somewhere to eat and socialise.

Social activities – This segment included interaction in groups, individuals as well as personal social interaction. The common terms would include "*keluar dengan* (going out with) girlfriend, friends, chatting, e-mail, *main* (play) online games". The interesting data here is that physical activities are often mentioned such as "exercise, jogging, futsal, swimming, and fishing".

Though there were several mentions concerning using the "online" facilities for exercise programme and checking their physical health by using online diagnostic tools, the overall flavour seems to be that health is very important to their lives. It may be the fact that these students unconsciously revealed that they accepted the fact that there are many things that can be done online or using the "virtual facilities". True health can only be achieved by being engaged by physical activities and health is an important concern in their lives.

Responsibilities – The scope of responsibilities are still similar to the way the students interact with educators presently. The comments would include checking their e-mail to find out their assignments, to send their assignments to the relevant parties. This would mean that the students seem to accept the responsibility of checking for the latest information concerning their course and not rely on their instructors to remind them during an asynchronous communication interaction. The emerging factor here is that it is expected that the relevant authorities would be responsible for providing the info/infrastructure at relative low costs or free of charge for the students to use the facilities.

From the comments and logs that were presented by the students it may be summarised that the technology and info/infrastructure available is extensive. Everyone is very comfortable using these technologies to fulfill their daily needs. The common term is "digital natives" to represent the comfort level and expectations of these students as their daily life is infused with all types of technology. It is interesting to note that all the responses gave a very optimistic view of technology use. No one mentioned problems and fears normally associated with the use of these technologies. No one mention viruses, phishing scams, spam, slow Internet access, but a few mentioned ordering breakfast or lunch online. So the common theme is convenience by using technology to allow them to enjoy the comforts of life from a home environment, being healthy while attaining a quality education without being bound by the boundaries of time or geographical location.

Impression 3

The students did not respond specifically on any of the scenarios that we have developed. Their responses however had a lot of crossovers but there are close associations with almost all the scenarios.

Recalling Daniel Pink's description of the world in 2025 as being moved by "Right-directed Thinking"[4] we can group the responses from the students on what a typical day for them is going to be like in 2025 by separating the Information Age (now) characteristics from the Conceptual Age (future) ones (see next page).

[4] Pink, D.H.(2005). *A Whole New Mind: Moving from the Information Age to the Conceptual Age*. USA: Penguin Group.

Information vs. Conceptual Age
Analyses of student log-sheets from Pink's (2005) perspective

INFORMATION AGE (now)	CONCEPTUAL AGE (future)
Learning – Delivery via video conferencing; e-learning; virtual lectures and exams; live-broadcast lectures Learning culture – interact globally	**Favourite activities** – Drawing, reading, jogging
Technology – Everything is technology driven; wide use of laptops, PDAs, MP3s; personal labs	**Recreational** – Yoga, meditation, piano
Venue – Wired campus; discussion in park; the need to go to a campus continues	**Spirituality** – Prayers, meditation, God-fearing
High-tech jargon – Chatting, online, surfing, Power Point, etc.	**Types of courses enrolled** – Speech pathology and music, entrepreneurship, management, leadership, success, chemical engineering and technical theatre, social skills
Degree requirement – Students present projects to lecturers; theory from lectures and practical: handle use of technology	**Socialising** – Girlfriends, parents, friends
Recreational – MMORPG, X-Box, PS3; electronic workout; aerobic online	**Opinions** – Students can express opinions freely
Prayers – Virtual prayers	**Work** – Students can work part-time
	Exams – System withdrawn
Interactions – One-to-one	**Interactions** – Group discussion
Status symbol – Laptop or notebook	**Status symbol** – Relaxed lifestyle
Metaphor – Individualism	**Metaphor** – Togetherness

Dissemination Exercises with USM Stakeholders






Dissemination Exercises with USM Stakeholders

CONCLUDING REMARKS

This survey report, reflects the USM team facilitators' attempt in avoiding be judgemental. It has, as much as possible, tried not to rebut the statements and comments of the respondents, except sometimes to clarify. It presents the respondents' views as accurately and as meaningfully as possible. Nevertheless, in "processing" through the hundreds of comments, some form of weaving and synthesis of the comments had to be made to ensure that the report presented a meaningful and engaging story to the reader. Therefore, if there are any less than accurate interpretation or representation by the writers, it was not intentional.

The USM team facilitators began the future of higher education exercise with the expressed goal of generating and choosing a preferred scenario but scenario-building also serves another purpose, that is, to initiate conversations with members of an organisation of possible futures given certain events happening.

From the diverse and passionate feedback from the staff and students, it is obvious that the dissemination exercises have stimulated such a conversation and perhaps a series of conversations.

Perhaps, the presentations did not adequately explain the nature of scenarios which are essentially possible futures given the trends and events and likelihood of various phenomenon occurring. As such, it is not a model of what the university will be or should be in the future. A scenario is typically limited by the specific and very narrow trends or events which is being investigated. Hence, its accompanying description and narration highlight very specific characteristics of that scenario.

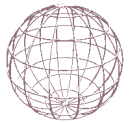
Reflecting on the feedback of the respondents, it is apparent that the overwhelming majority were visualising a preferred model of the university in the future.

Chapter 5

Dreaming and Visualising the Preferred Vision for USM

Chapter 5

Dreaming and Visualising the Preferred Vision for USM



INTRODUCTION

A second workshop entitled "Creating the Futures of Universiti Sains Malaysia: Backcasting and Visioning of the Scenarios" was held on 4 – 6 December 2005. It capped the Future of Higher Education project following the completion of a number of dissemination exercises. This (visioning) workshop was primarily geared towards allowing the participants to complete the final stage of the scenario-building, Transforming the future (T), which is part-and-parcel of the MADCT approach, applied in the scenario-building process. This final stage was used to match the alternative scenarios with the desired and preferred future. Thus, the visioning workshop takes the analytic views of the five scenarios towards another level, a subjective level that evokes emotions of likes and dislikes, and preferences.

Similar to the first workshop, while general objectives were set for this second workshop, the philosophy behind the facilitation process by the futurist, Sohail Inayatullah, was constructionist in nature. It was the interactive participation that led to the formation of the five phases of workshop with substantive outcomes. These five phases are best described as: (1) a review of dissemination exercises, (2) the existing mythology within USM, (3) the emerging vision: 4S: the Symbiotically Sustainable Study Space, (4) backcasting of the emerging vision, and (5) exploration of long-term (up to the year 2020) key indicators. Each of these phases will be deliberated below.

A REVIEW OF THE DISSEMINATION EXERCISES

The dissemination exercises were a series of planned mini-workshops/activities scheduled between June and November, 2005. The overall objectives of the dissemination exercises were twofold: to find out the USM community's views about the alternative scenarios and the preferred scenario. In total, 440 respondents consisting of deans/directors/heads of departments, deputy deans, and academic staff, participated in the exercises scattered within the six-month duration.

This workshop reviewed the dissemination exercises conducted through six clusters (Health, Engineering, Pure Sciences, Applied Sciences, Arts, and Administration) with administrators and academicians throughout September/October and November 2005.

A review of dissemination exercises began with a two-part presentation: (1) by USM Team Facilitators of each cluster regarding verbal feedbacks during the focused group discussions, and (2) by the survey research coordinator regarding written feedbacks on survey forms which were disseminated during dissemination exercises.

Generally, across all clusters, while there are similarities in the feedback, the review discovered a number of key factors:

1. The stakeholder such as the Ministry of Higher Education is a major player which needs to be consulted and persuaded.

2. Details within each alternative scenarios could be elaborated, especially with regards to enriching the human soul.

3. A beneficial approach to developing a scenario would be to integrate different stakeholders' perspectives on one scenario, rather than developing separate scenarios based on different stakeholders (e.g. student-centred scenario or alumni-centred scenario).

4. Looking at the future with a flexible and creative mind is perhaps more important than looking at the future as just an extension of the present.

5. USM stakeholders are absorbed with the present challenges affecting their day-to-day well-being as an employee/student/family member/member of society, such that the future is too distant and not necessarily seen as an important priority.

A PERSPECTIVE ON THE DISSEMINATION EXERCISES: EXISTING MYTHOLOGY WITHIN USM

The review of the dissemination exercises was then contextualised within the concept of four-quadrant mapping. It was in essence, an analysis of the two poles making up four quadrants: the inner/outer and individual/collective poles. Within the context of the four quadrants, the dissemination exercises could be evaluated from the perspective of each of the quadrants. For instance, the top-left quadrant, the inner-individual quadrant connects to the inner world of meanings and could portray individual feelings of resentment or which embrace change. The bottom-left quadrant, the inner-collective quadrant connects to the world of individual behaviour and could portray a newinner map of individuals. Whereas, the top-right quadrant, the outer-individual quadrant connects to the inner mythology of organisation and could portray behavioural change of individuals within the organisation, and the bottom-right quadrant, the outer-collective quadrant which connects to external policies and structures might show collective behaviour negotiating change such as corporatisation, virtualisation, etc. (see Figure 5.1).

In connection with the four quadrants, four questions were posed to workshop participants (as facilitators of dissemination exercises). Highlights of individual responses to each of the questions by workshop participants are extracted as below:

1. What were the insights about you?

   Answers:
   - obtaining more inputs from USMers would complete/improve the image (of the scenarios)
   - listening to the feedback allows one to be more open to ideas as well as be more patient
   - researching about the external world/ environment is important in scenario-building

2. How would you approach the dissemination exercises differently?

   Answers:
   - building deep discussions on the missing gaps in the scenarios and critiques about the scenarios
   - removing (any imposed) constraints for respondents to respond about the future of USM, by not exposing the alternative scenarios in the beginning of dissemination exercise
   - avoiding a lecture-centred approach during the exercises
   - conducting more exercises in order to communicate effectively across a bigger pool of respondents

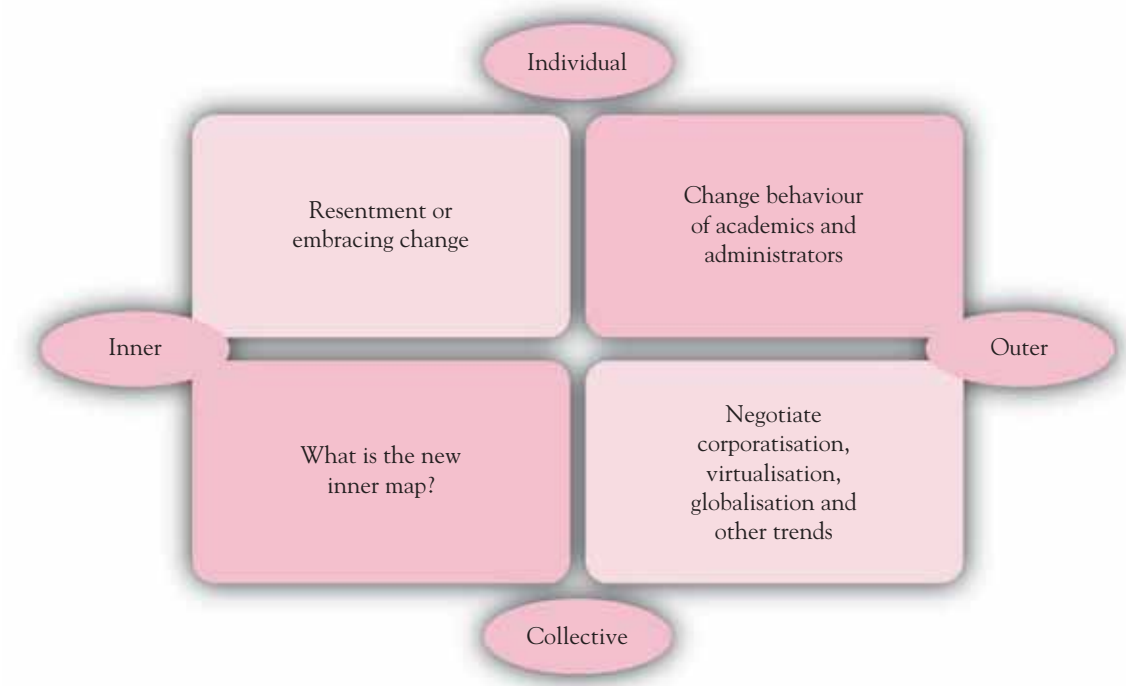


Figure 5.1. Four-quadrant Mapping
Source: USM Workshop on Dreaming and Visualising the Preferred Vision (4 – 6 December 2005)

3. What did we learn about the inner character of USM?

   Answers:
   - cluster-based feedback depicted varied inclinations, showing differences in thinking between those from the arts and science-based clusters
   - a mood that portrayed a sense of resentment and tension existed
   - USMers expected facilitators to be experts who have answers to all questions
   - USMers are more inclined towards understanding the processes underlying scenario-building

4. What did we learn about USM?

   Answers:
   - existing reluctance to project the future
   - portraying a mood concerned with the present challenges as educators and administrators
   - aspiring to turn USM into one of the best universities

The discussions led to further questions raised vis-à-vis the inner myth of USM and inner world of meaning for USMers in the pursuit of answering a major question: "What change would we like to negotiate for USM?"

1. What is the inner myth of USM?
    - Does a pyramid leadership exist in USM?
    - Are individuals change-oriented, are the cluster groups seen as experts who should be providing the answers to questions posed by USMers?
    - Is participation in scenario-building a sensitive issue for USMers?
    - Do USMers feel that there is opportunity for change?
2. What is the inner world of meaning for USMers?
    - Is there imagination about the future?
    - Are we open to criticism?
    - Are we stakeholder-oriented?
    - What does it mean to be an ethical university?
    - Is the inner map of students about getting jobs?
    - Is the inner map of academicians more about working hard, very much focused on the promotion-based criteria?
    - What about the inner map of administrators?
    - Is the inner map of ministry about more standardisation of education?

Finally, the discussions raised a poignant question: "Which quadrant is USM moving towards in the future: a feudal/reactive or feudal/responsive quadrant?" It is based on two poles: feudal/corporatised and respond/reactive, making up four possible quadrants of alternative futures for a university (see Figure 5.2). The feudal/respond quadrant portrays a niche university with old rituals but open to making new agreements (e.g. a Harry Potter version of a university).

The feudal/reactive quadrant portrays insular, subsidised, top-down administered university. The corporatised/responsive quadrant portrays a university which is flexible and open to change, and academic entrepreneurs flourish, while the corporatised/reactive quadrant portrays a "mass" university where students are customers. The stakeholders portray passive, aggressive, resistance behaviour, while chanting the slogan: "I'll do it but will fight you all the way."

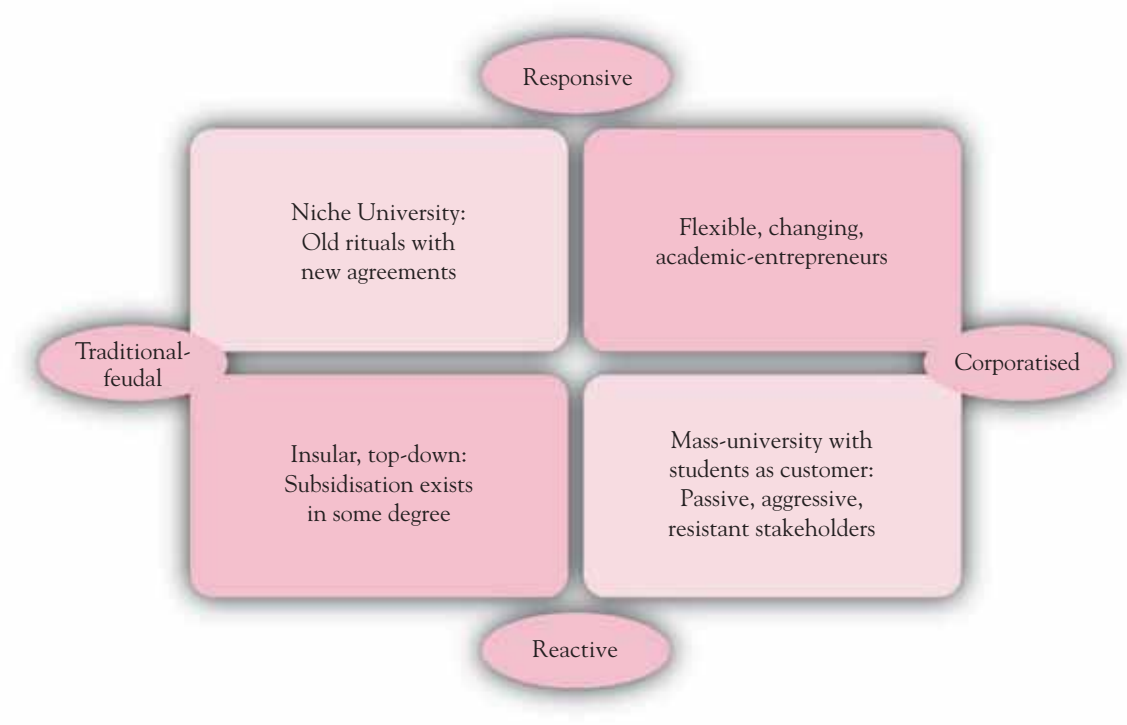


Figure 5.2. Four Quadrants of the Future
Source: USM Workshop on Dreaming and Visualising the Preferred Vision (4 – 6 December 2005)

THE EMERGING VISION: 4S (THE SYMBIOTICALLY SUSTAINABLE STUDY SPACE)

The emerging vision which tentatively followed, the Symbiotically Sustainable Study Space, came forth after an intriguing visioning process which involved series of exercises, reflections, and discussions.

Two main sessions contributed towards the emergence of the 4S vision: (1) creative one-to-one public interviews between workshop facilitator and workshop participants and (2) individual creative visualisation.

Creative Interviews

The public interviews were aimed at energising the subconscious, the passionate feelings, the inclinations, and the desires of participants, with regards to their personal view of their own future. Through a series of questions below and proddings-for-details, creative future images were conjured:

- What is your world in 2020?
- What are you doing at 3:00 p.m.?
- What are you doing at 11:00 p.m.?
- What is your best day like?
- What is your worst day like?

- What is your preferred lifestyle?
- What is the most important thing in your day?
- Who do you meet?

Further discussions led to an emerging vision, which represents a possible future, a Symbiotically Sustainable Learning Environment (SSLE), based on the five alternative scenarios, also known as probable futures.

This vision was consequently renamed as the Symbiotically Sustainable Study Space (4S). It is a vision characterised by a combination of nature, technology and flexibility as follows:

1. Global in outreach
2. Major infrastructures are virtual but face-to-face infrastructures still exist
3. Face-to-face infrastructures embedded in sustainable green architecture
4. Flexible human resource policy: attracting the best talent
5. Teaching plus research continues in a deep collaborative environment
6. Majority of academics salaried but many on contract/consulting
7. Links with industry central for academics and for students
8. Beginnings of entrepreneurial culture
9. Links with civil society
10. Advisory and cooperative synergistic relation exists with the Ministry of Higher Education
11. University leadership as beacon, enabling academics and students
12. Autonomous culture as main core
13. Multiple sources of funding: student plus government plus industry
14. Scholar-led

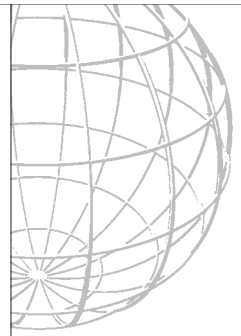
Some poignant reflections of the 4S vision are:

- It portrays an interesting combination of autonomous individuals, but collaborating with industry
- It portrays global with local content
- Its ethical core: university must enable; leadership must remove the weights/barriers (tight closed structures)
- It portrays collaborative individuals in sustainable environment
- It asserts control to freedom

Creative Visualisation of the Future

In order to augment the 4S vision, participants indulged in a creative visualiation of the future. This exercise brought participants into a quiet meditative state. Key aspects of the 10-minute meditation process are re-narrated here simply as below:

> With eyes closed, imagine yourself lying down in a field. See yourself standing up, walking 15 steps forward. At the end of the 15th step, you see a hedge. You walk through the hedge and out of it. (The hedge demarcates the present from the future.) You are now walking up 7 floors of stairs. From the 7th top floor (representing the view of the future from the top), you see what the future looks like.



Insights from the creative visualiation process pointed towards these key features of the image of the future at USM:

1. There is a deep link with technology, urban landscape and green environment
2. There is flexible learning in nature, in cafes virtually
3. Contemplation, calm action is happening
4. The future is not frantic, but defined
5. There is a global centre of excellence; it stands out amidst the calmness
6. Something unique about the future
7. The idea of heritage (philosophy/values) is maintained while modernity thrives; heritage/ culture is maintained and observed on the buildings but high-technology preside within the building
8. No one imagined classrooms as part of the future

BACKCASTING OF THE EMERGING VISION: THE 4S VISION

Backcasting takes the emerging vision to another level: the strategic level. During a brief discussion, participants went through an experiential process, listing down important historical events that would have happened in the future. For instance, "Now it is 2020; what's happening in 2005, 2010, 2015, 2020?" Various working ideas of the backcasting exercise were churned out. Three different themes emerged:

1. The evolution of green-tech campus
   Collaborations with NGOs and civil societies beginning in 2008 lead to establishments of future research awards that are funded by civil societies. ICT blueprint and e-learning technologies dominates the learning environment. The development of such a green-tech campus is expected to reach its full realisation between 2010 and 2015, with transformations in the nature of classrooms: classless and wireless. Certain buildings within the campus are recognised as heritage buildings.

2. The evolution of industry-university collaborations and research orientation
   By 2010, the corporate arm of USM, USAINS, is commercially-listed. A USM research park is well-established with strong footing of university-led in collaborations with industries. University's earnings are diversified with multiple source of funding realised on equal ratio basis coming from the government, industries and students.

   Documentations become important with the development of a university research library. Research orientation on brain-based learning and artificial intelligence becomes significant and experimental brain-learning research projects in high schools thrive. Current research on biotech would have matured and significant research outcomes are forthcoming. A new frontier of knowledge is leading the future.

3. The evolution of academic culture
   An academic movement for change is foreseen to happen by 2010. A strong entrepreneurial academic culture would materialise hand-in-hand with the evolution in university-industry collaborations. Niche research emerges with transdisciplinary research merging the arts and sciences taking centre stage. The notion of tenureship would be contested.

   By 2015, enterprising academicians would be nominated as Nobel Laureate award winners and

many academicians would be receiving awards for breakthrough-research findings. A trusting university culture prevails, bureaucracy softened, and performance-based surveillance replaces physical-based surveillance (e.g., attendance records/smart cards) of human resources. This culture coincides with the unclamping and empowerment of civil societies in Malaysia.

By 2020, an entrepreneur-academic VC (born in dotcom era) would transform the cultural environment. He/she is surrounded by "champions" who advocate organisational transformations.

EXPLORATION OF LONG-TERM KEY INDICATORS

Four groups of workshop participants were involved in exploring and formulating the indicators for the year 2020. This is an exercise taking into account the emerging vision and the five probable scenarios. As the time available was limited, the discussion was focused, yet flowed quickly, freely and creatively. The results were a mixture of not merely indicators that can be easily quantifiable, but also possible themes and directions for further consideration, as added-value to the discussion. The following are the outcomes of discussion in its "pure" form:

First group

1. Number of patents, equipments and devices
2. Number and type of university-linked companies (ULC)
3. Green recognition/health-campus/intelligent building zone: collaboration with Ministry of Health to create green zone template. (e.g., USM smart zone, smart building)
4. Number of quality research output
5. Number of USM academicians named as leading innovators/change agents (e.g., new theoretical models)
6. Number of transdisciplinary/interdisciplinary clusters
7. Number of corporate professional chairs
8. USM open courseware/infrastructures
9. Efficient/functional e-governance (+ budgeting and planning)
10. Academic electronic portfolios
11. USM open learning branch campus/lifelong learning: professional development

Second group

1. Centre of excellence indicators
2. Student and staff population involved in health campus programme and sustainable development
3. Number of staff promoted
4. Funding for research park
5. Techno-savvy literacy among students and staff
6. Number of publications and technology development which relates to greens and sustainable development (more points should be allocated to this category for promotion purposes)
7. Creativity of research among students and staff

8. Creativity in teaching-learning indicators

9. Accessibility of knowledge: lifelong learning, anywhere/everywhere indicator

10. Multiple funding indicator sources

Third group

1. Full range of funding increased from industries: grants, internship

2. Development of champions for change

3. Documentations of successes in library

4. USM as participants at international level committees which are involved in structuring change

5. Rising sign of volunteerism

6. Establishment of internal auditors with standards of reference, documentations, innovation systems

7. Rewards/incentives for supporting staff (e.g., for further studies, innovative non-monetary rewards)

Fourth group

1. Research
   a. awards for "green" innovation

2. Budgeting
   a. equitable budgeting including mainstreaming gender in budgeting/budget reflecting inclusion of minority groups (e.g., differently-abled)
   b. equitable redistribution of grants: percentage of grants for social-based research to be proportionate to those that are science-based

3. Enabling conditions
   a. participation in decision-making: lifting of barriers to freedom of information and participation
   b. affirmative action: achievement of specific percentage of women holding high-level decision-making positions

4. Structural sustainability
   a. degree of wirelessness
   b. degree of response to system failures
   c. facilities for the disabled and elderly students with family-friendly residence (e.g., cooking, dorms for families)
   d. facilities to accommodate staff welfare and well-being (crèche for children, sporting, well-equipped pantries, breast feeding areas, barbeque pits and benches)

5. Bureaucracy
   a. lifting of bureaucratic procedures hindering efficiency
   b. paperless environment
   c. shorter response rate
   d. transperancy of information

6. Civil society
   a. how academic activities are able to relate to civil society
   b. relatedness of students activities to civil society activism, including lifting of barriers to rules prohibiting students' activism
   c. civil society's input in decision-making processes
   d. creation of "chair of civil society"

Based on the above outcomes, there are five important areas of future indicators that this workshop has underscored:

1. Indicators and ideas on socio-technological environment that supports well-being and sustainability of campus community.

2. Indicators and ideas of equitability as well as indicators and ideas of removal of barriers to good governance and excellence.

3. Indicators and ideas of collaboration and partnership with community.

4. Indicators and ideas of reinforcement and recognition for professional excellence, self-improvement, innovation and volunteerism.

5. Indicators and ideas of knowledge-sharing and knowledge accessibility effectiveness, efficiencies and integrity.

Nevertheless, there are four other areas which were not sufficiently or proportionately emphasised, and, if at all, could be explored:

6. Indicators of pedagogical effectiveness and transformation of students.

7. Indicators of societal transformation and contribution to society.

8. Indicators for financial self-sufficiency of university, costs-saving and profit-generation.

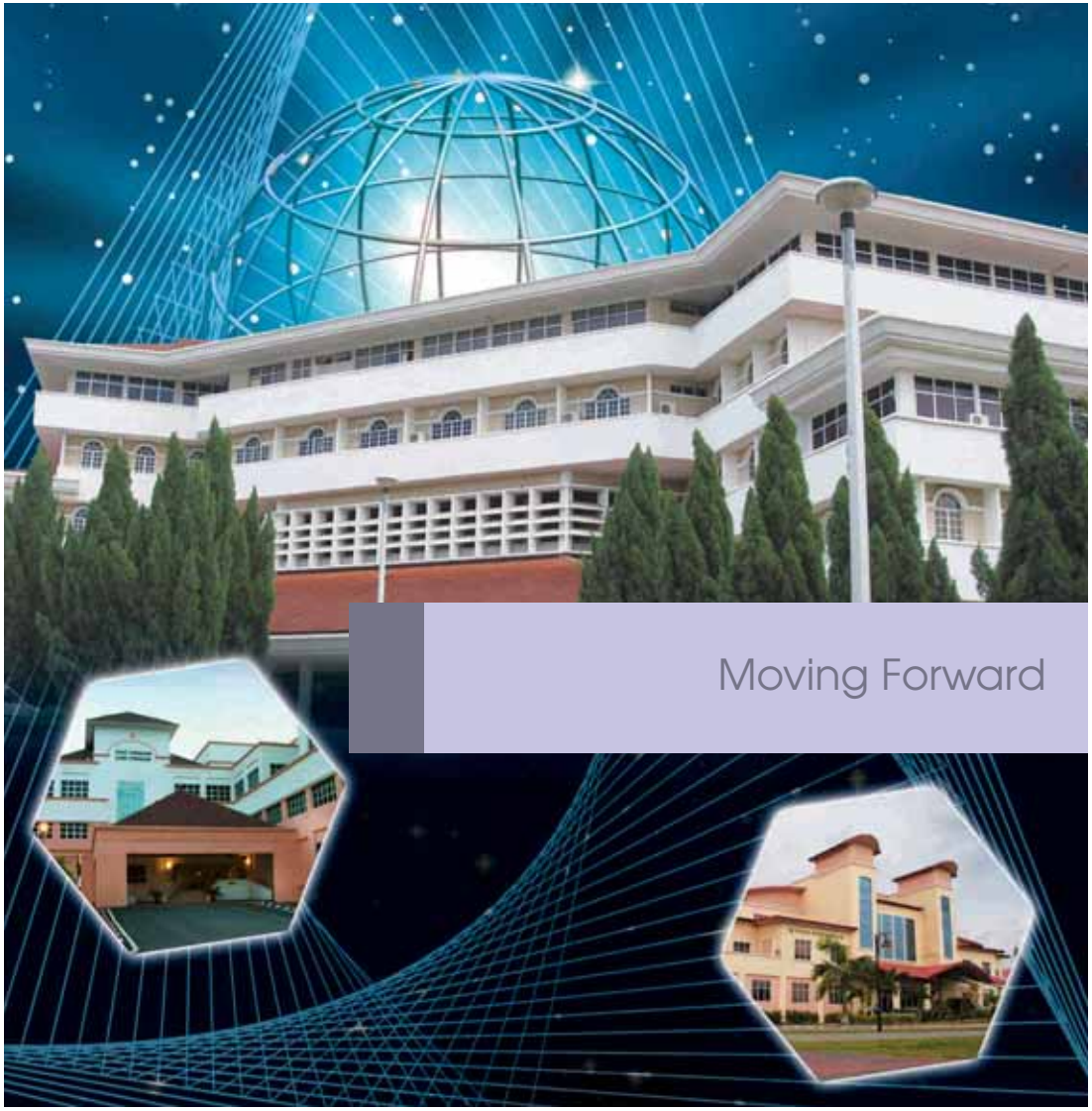
9. Indicators of intangible value-sharing: ethics, human rights, social justices, sustainability and those espousing the IQ principles of Islam Hadhari.

REFLECTIONS AND CONCLUSIONS

The scenario-building process ended with participants discovering the emerging 4S vision, backcasting this 4S vision and exploring future indicators. The five alternative scenarios represent an analytic range which describes the nature of the vision in full range, whereas, the emerging 4S vision signifies an open space, allowing participants to create an authentic picture. It is subjectively shared by workshop participants, who operate within the philosophy of social and collective visioning. Backcasting empowers and perturbates participants to creatively determine important historical future events regarding the 4S vision. The future indicators represent benchmarks that would guide USMers to function at a strategic/action step level, while at the same time, move towards making the emerging vision as the preferred vision. However, these benchmarks ought to be reviewed every so often (1–3 years timeframe) with respect to situational/global/regional changes. The end objective of such future studies is to enable USM to become an organic (emergent) living culture, tweaking with the benchmarks and simultaneously moving towards materialising the emerging vision as the preferred vision.

What is most insightful is that working on the future of USM has at one level, revealed that there is a need to tap into the myths of a university culture as well as identify the match between the external and internal environment. Two important questions that needs to be answered are: What is the appropriate culture that works for a university in Malaysia? What is the peculiarity? At another level, a crucial point is that university needs a leadership which enables, but not necessarily "sell" the vision to the stakeholders.

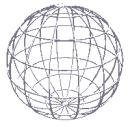
Enabling, as opposed to convincing is about connecting at a deeper authentic level with the stakeholders. Of significance, the future academic culture centres on the need to remove hindering structures and sort the ensuing tension between the green and red tapes (e.g., enabling an "anywhere everytime" philosophy vs. instituting command-and-control system via smart card).



Chapter 6

Moving Forward

Chapter 6
Moving Forward



Predicting the future is not an exact science as there are too many variables and unknown factors involved. Nevertheless, stakeholders of educational institutions need to peer into the desired future. A future which is contoured and mapped with alternative scenarios opens possibilities for stakeholders to have positive influence over whether current policies, programmes and initiatives are creating results and impact that opens the pathway for realising the desired future. In doing so, we would develop certain influence of control in shaping the present outcomes *vis-à-vis* the future landscape. At the very least, it means that there is a possibility that the future is being shaped more thoughtfully, more creatively, and with more urgency.

This publication has deliberated at many levels and angles. Chapter One provided a backdrop to conceptualisation of the USM future scenarios project while Chapter Two provided a comprehensive elaboration of the methodology and theoretical frameworks that underpin the project, as well as the actual underlying processes which led to the development of the future scenarios. Chapter Three outlined five future scenarios generated by the various workgroups, followed by Chapter Four which explains the survey findings conducted amongst the stakeholders.

Last but not least, Chapter Five builds the discussion towards the emerging vision arising from the alternative scenarios.

The Future of Higher Education project has provided deep and "original" insights into the current and future orientations of the stakeholders of a higher education institution such as USM. The alternative scenarios as well as the emerging vision: the Symbiotically Sustainable Study Space (4S), are outcomes of various levels of reflections, workshop discussions, as well as focus group discussions. The end desire is to develop a preferred vision for the university. The rich insights obtained through stakeholders' reflections unearthed between May 2005 and December 2005, are the core inputs that would form new directions for the eventual development of the preferred vision for USM. The preferred vision would have to show a resonance in mediating and balancing the different contending needs and wants of stakeholders.

To conclude, this whole exercise is aimed at conceptualising the desired future for USM and its stakeholders. While one could never be certain of what the future holds, to desist from undertaking any such endeavour would imply a reluctance to change increasingly outmoded status quos and would contribute to future organisational ossification and inertia. One could surmise that the future is not to be beheld but to be grasped, moulded and shaped by our caressing thoughts and ideas, and constructing alternative future scenarios affords us the opportunity to do just that.

Appendix A

Survey Questionnaire

What do you think is the future of universities?

Name *(optional)*	
School / Centre	
Position at USM	
Year started working at USM	

SECTION A

Please tell us, in your opinion, whether the following events or phenomenon are likely (or unlikely) to happen in the future? You can use the year 2025 as a guide but you can visualise further into the future if desired. Remember that we are not asking you whether you prefer or want them to happen or otherwise.

Your response in SECTION A does not necessarily have to relate to or based on your assessment of the alternative scenarios presented to you. You are encouraged to use your personal experience and knowledge in marking your responses. Please refer to the following scales for your responses

1 = Very unlikely to happen
2 = Not likely to happen
3 = Uncertain
4 = Likely to happen
5 = Very likely to happen

A1	Funding					
a	The Government is unable to fund the high cost of higher education and research. It directs public universities to be self-funding.	1	2	3	4	5
b	Because of lack of public funds, the Government works with the private sector in order to maintain control of public universities.	1	2	3	4	5
c	Courses at universities will be tailored for the industries.	1	2	3	4	5
d	Companies will tap corporate knowledge to set up their own universities in direct competition with public and private universities.	1	2	3	4	5
e	Universities have no choice but become market-driven to generate enough revenue to sustain research, academic positions, development and operating expenditures.	1	2	3	4	5

A2	Students					
a	Students will mostly be studying part-time and working full-time to finance the high cost of education.	1	2	3	4	5
b	Students will be paid by corporate sponsors to study courses relevant to their employer (job).	1	2	3	4	5
c	Students will not be limited to courses from one university only. They will demand to pick and choose from the best universities all over the world.	1	2	3	4	5

A3	Curriculum/Courses/Knowledge					
a	Courses will be tailored to fulfill industry needs and specifications.	1	2	3	4	5
b	Students (learners) can choose any courses across disciplines (transdisciplinary) in pursuit of knowledge and truth (rather than narrow skills or knowledge for a specific job).	1	2	3	4	5
c	Knowledge is considered a public good to be accessible by everyone, not only by the privileged and the rich.	1	2	3	4	5
d	Knowledge becomes a commodity protected as intellectual property and commercialised for profit.	1	2	3	4	5
e	Knowledge becomes standardised, creating robotic minds and kills creativity	1	2	3	4	5
f	Lecturers become transmitters of knowledge, not creators of knowledge.	1	2	3	4	5
g	Learning becomes student-centred, student-led (students decide what they want to learn). Traditional curriculum becomes obsolete.	1	2	3	4	5
h	Learning becomes a lifelong process leading to a learning society.	1	2	3	4	5
i	Critical thinking and analytical approaches will replace memory-based learning.	1	2	3	4	5
j	Education for sustainable development will become the core for and be integrated into all courses.	1	2	3	4	5

A4	Technology					
a	Digital natives (learners who are techno-savvy) will demand technology-driven lessons.	1	2	3	4	5
b	Digital natives will demand education to be accessible at anytime from everywhere.	1	2	3	4	5
c	Digital knowledge will make face-to-face lectures redundant.	1	2	3	4	5
d	Digital knowledge will democratise education making it accessible to all.	1	2	3	4	5
e	Corporations will own digital knowledge and control access to the knowledge.	1	2	3	4	5
f	Technology will make the working day longer (no more 9 to 5 office hours).	1	2	3	4	5
g	Technology will make working hours more flexible.	1	2	3	4	5
h	Technology will lead to dramatic reductions in demand for physical spaces.	1	2	3	4	5

A5	Tenureship					
a	Most lecturers will be working part-time in the university and hold full-time jobs in the private sector (e.g., in the industry).	1	2	3	4	5
b	Lifetime employment (tenureship) for lecturers will be phased-out in favour of contract employment.	1	2	3	4	5
c	Research and publication will continue to be the dominant criteria to determine tenureship and career advancement.	1	2	3	4	5
d	Lecturers' career advancement will be determined by what they do (i.e. actions) to translate knowledge for the general good and well-being of the community (no more publish or perish).	1	2	3	4	5

A6	Control/Authority					
a	Government continues to maintain control over public and private universities.	1	2	3	4	5
b	Universities will become autonomous and free to pursue intellectual ideals (with or without government funding).	1	2	3	4	5
c	Universities will become more participatory with involvement of all stakeholders including management, academics, students and the community.	1	2	3	4	5

SECTION B

Based on the presentations and handouts given to you, please answer the following questions regarding the Scenarios generated by USM on the future of higher education.

B1	**What did you LIKE MOST about the various Scenarios presented? Why?**
B2	**What did you DISLIKE MOST about the various Scenarios presented? Why?**
B3	**What do you think may be missing in the Scenarios presented?**
B4	**Do you have any other comments or suggestions?**

Thank you for your participation and contributions.

Please direct all enquiries and correspondence to:

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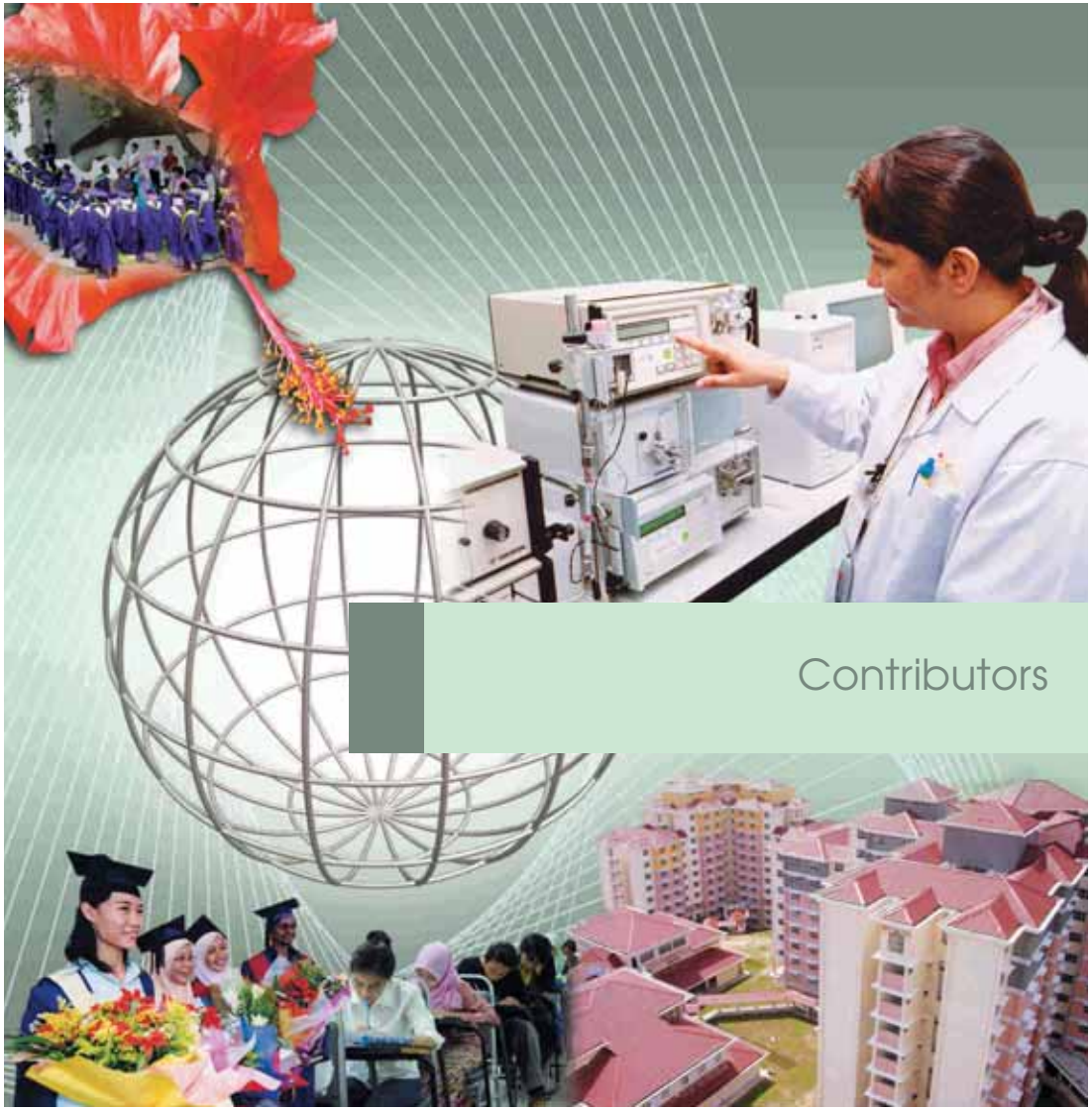

Appendix B

Contributors

Contributors

The chapters of this publication were contributed at various levels by the workshop participants. The chapter contributors are academicians as well as administrators who were involved in the workshops as well as the dissemination exercises with the USM community.

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Chapter two: **Creating the Future of Higher Education in Malaysia** by Ellisha Nasruddin and Linariza Haron

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The A' la Carte University: Aminah Ayob, Khairun Azizi Mohd Azizli, Rosni Abdullah, Rozhan Mohammed Idrus, and Zainal Abidin Ahmad;

The Invisible University: Fong Soon Fook, Lee Lik Meng, Mohamed Izham Mohamed Ibrahim, Wan Mohd Fauzy Wan Ismail, and Zaidun Kamari;

The Corporate University and **The State University**: Ahmad Yusoff Hassan, Daing Nasir Daing Ibrahim, Salmiah Che Puteh, Sam Teng Wah, Ramli Mohamed; and

The University in the Garden: Flowering of the Minds: Azhari Karim, Dzulkifli Abdul Razak, Masrah Abidin, Omar Osman, and Suresh Narayanan.

Chapter four: **Conversations with the Community** by Lee Lik Meng

Chapter five: **Dreaming and Visualising the Preferred Vision for USM** by Ellisha Nasruddin This chapter is written based on elaborate workshop discussions amongst the writers above, including three other workshop participants: Abdul Rahman Mohamed, Mohd Nazalan Mohd Najimuddin, and Noraida Endut.

Chapter six: **Moving Forward** by Ahmad Sofwan Nathan Abdullah and Ellisha Nasruddin

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