VISION 2020, THE MULTIMEDIA SUPERCORRIDOR AND MALAYSIAN UNIVERSITIES[1]

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Malaysia is one of the most 'globalised' countries in the Asian region. This statement is based on Kearney's ranking of 62 countries using 14 indicators to test the degree of globalisation. Table 1 ranks some of the important Asian countries - from those that are the least integrated into the world system to the most integrated. Integrated and globalisation in this sense, are used as synonyms throughout this paper. Malaysia's global position in 2004 reflected the achievements of the previous decades. In the 1990s, for example, the Malaysia government decided push the country in the direction of transforming itself from an industrial base into a K-economy based on knowledge and information technology. The universities were expected to play a role in this, but have they? This paper seeks to map out the contours of Malaysia's integration in the world system, how this relates to Mr Mahathir's 'Vision 2020' and finally how all of this has impacted on the higher educational sector.

Malaysia's integration into the world system

According to Kearney, Malaysia in 2004 ranks in the upper half of the 62 countries that form part of the Foreign Policy/Kearney annual index: 20 out of 62. That ranking is largely driven by the high level of economic integration between Malaysia and the international economy: 8 out of 62, placing Malaysia into the top ten most economically globalised countries. Malaysia forms the cut off point for the top 20 most globalised countries in the world, the first ten being: Ireland, Singapore, Switzerland, Netherlands, Finland, Canada, USA, New Zealand, Austria, Denmark. As Table 2

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shows, Malaysia is ahead of some of these in terms of its economic integration alone, namely its ranking is higher than the ranking for Canada, USA, New Zealand, Austria and Denmark. Amongst the 2nd tier of most globalised economies, Malaysia's economic integration into the world system outstrips all except the Czech Republic: namely Sweden, UK, Australia, France, Portugal, Norway, Germany, Slovenia.

The driving factors behind high levels of economic integration are the degree of export orientation (whether in goods or services) and the size of a country. One of the most dramatic features of Tables 1 and 2 is the correlation between large country size, large populations and low levels of economic integration. The case of the US is especially noticeable with her economic integration ranking right at the bottom of 62 countries at level 56. The redeeming feature of the US is its leadership of world innovation, as measured here by the level of technological integration. Malaysia technical integration, by comparison is lower than its economic integration, although it still ranks in the top half of the 62 economies measured by Foreign Policy and A T Kearney.

Table 1.
India's Globalization Relative to Other Selected Countries in 2004
Ranking in 2004 from the Least to the Most Globalised

	Economic Integration	Personal Integration	Political Integration	Technological Integration	Total Integration
India	61	53	57	55	61
Indonesia	47	61	53	51	59
China	37	59	56	49	57
Bangladesh	62	43	35	62	56
Philippines	32	20	51	47	33
Sri Lanka	41	34	60	56	51
Thailand	28	48	58	40	48
Pakistan	55	36	34	59	46
Malaysia	8	14	46	26	20
Australia	26	28	13	5	13
USA	56	35	28	1	7
Singapore	2	3	40	10	2
Ireland	1	2	11	14	1

Source: Kearney, A. T. (2004) 'Foreign Policy Globalisation Index', *Foreign Policy Magazine*, March-April 2004, at <http://www.foreignpolicy.com>.

When and how did the Malaysian economy pull itself up to these levels and what in particular has driven this high level of economic integration? We cannot attempt a full answer to these questions in this paper, but in the next section we begin to discuss the

transformation of the Malaysian economy that was in evidence by the early 1990s when Dato' Seri Dr. Mahathir Mohamad, the Malaysian PM, gave his assessment of the distance that Malaysia had travelled and the distance yet to traverse in order to deliver a equitable and productive society for all. Known as Dr. Mahathir's 'Vision 2020' speech of 1991, this was a rough 'road map'[2] for the future economic evolution of Malaysia.

An analysis of Mahathir's 'Vision 2020'

Much has been said and written about Mahathir's vision for Malaysia's future. Typically, these reports oscillate wildly between unbounded praise or extreme derision. In our search to understand the meaning of Vision 2020 for the evolution of the Malaysian economy during the 1990s, we discovered only one attempt to analyse exactly how the 'Vision 2020' speech delivered to the inaugural meeting of the Malaysian Business Council in Kuala Lumpur in late February 1991 led to the establishment of the Multimedia Super Corridor (hereafter MSC) and its various projects some five years later in 1996. That research revealed some surprising insights into the nature of contemporary policy formation within the Malaysian government.

The first thing we noticed was that the 'Vision 2020' speech was not a precise or extended statement about the importance of information technology as we had been led to expect from many accounts that assume that the Multimedia Super Corridor operationalised a fully elaborated vision expressed in 1991. Indeed, the word or concept K-economy does not appear once in Mr Mahathir's speech. Nor is there any reference to anything that might even been interpreted as an embryonic version of the MSC, let alone a basic model for such an IT hub. Many other words and concepts that are now routinely associated with the MSC and how its purposes are projected in Malaysia and abroad, did not appear in that speech either – missing from the text was any reference to Silicon Valley, or the Silicon Valley Model, or ICT, or Stanford University or information hub.

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[2] We have borrowed this description of 'Vision 2020' from the ITU 2002 report on Malaysia because it seemed to be such an appropriate summary of what Vision 2020 stands for: see Vanessa Gray, Michael Minges and Lucy Firth (2002), *Multimedia Malaysia: Internet Case Study*, ITU, March 2002, www.itu.int/ITU-D/ict/cs/malaysia/index.html accessed on 23 June 2004.[ITU:International Telecommunications Union].

Only two paragraphs appear in the 'Vision 2020' speech, which should be correctly termed 'The Way Forward' speech because that was its title at the time.[3] Those paragraphs reveal a firm understanding of the process of industrialisation – how land was the basis of the agrarian revolution; how the agrarian revolution was surpassed by the industrial revolution; and how in late industrial or post-industrial society 'knowledge will not only be the basis of power but also prosperity'. Malaysians had to 'keep up' and 'no effort must be spared in the creation of an information-rich Malaysian society'. Dr. Mahathir had a good grasp of how all rich countries were also information rich and that there was 'no information-rich country that is poor and underdeveloped'.[4] These statements constitute the most explicit statement about the importance of the information revolution for Malaysia's future – although it needs to be stressed that he did not himself talk of the information revolution, or the K-economy or any IT hubs or Silicon valley.

The bulk of the 'Vision 2020' speech at the inauguration of the Malaysian Business Council focussed on the strengths and weaknesses of Malaysia's experience with industrialisation. In particular, Dr. Mahathir understood how the patterns of Malaysian development up to 1991 were about to act as constraints on future development. He firmly grasped the importance of taking Malaysia into a different direction if the growth momentum of the previous decades was to be maintained. Above all, there was in Dr. Mahathir's vision a sense of urgency and an understanding of how the right kind of economic growth and development had a critical role to play in Malaysia's ongoing transformation into a more equitable and just society. He identified the need to grow annually at the rate of 7 per cent for the next thirty years[5]; he placed a high priority on developing a competitive economy;[6] and he affirmed the government's commitment to ongoing economic reform and liberalisation.[7]

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[3] Our analysis in this paper is based on the following document: YAB Dato'Seri Dr Mahathir Mohamad, Prime Minister of Malaysia and Chairman, Malaysian Business Council (1991), *Malaysia: The Way Forward*, Text of the working paper presented by the PM at the inaugural meeting of the Malaysian Business Council held in Kuala Lumpur on February 28, 1991, Centre for Economic Research & Services, Malaysian Business Council, Kuala Lumpur, pp.23.

[4] Ibid., p.20.

[5] Ibid., p. 7.

[6] Ibid., p. 8.

[7] Ibid., p. 10.

The critical central part of Dr. Mahathir's speech goes to the heart of the economic weakness of Malaysia – the country's narrow manufacturing base and its dependency on imported components. In a passage that would read well in a classic textbook on the limits to development in poor countries, Dr. Mahathir talked of the 'weak industrial linkages' between free trade and the demand for local, Malaysian components:

> Despite the most rapid development in the free trade zones insignificant demand has been
> generated for local intermediate products. We will have to deal with the problem of industrial linkages'.

Dr. Mahathir had identified the failure of free trade to act as an engine of sustained economic growth. In expressing this concern his statement fits into a long tradition of national thinkers who have been exercised by the same problem – a tradition that goes back to the concerns of the 'late industrialisers' such as France, Germany, Tsarist Russia and Japan in the nineteenth century.[8] But he went further than this; he also identified the lack of sufficient skilled manpower as an obstacle to the development of a more diversified industrial base.[9] In expanding the industrial base, Dr. Mahathir insisted that Malaysia had to do it in the tough way, namely in the context of liberalisation, competition and increasing privatisation of the state sector. He rightly saw that there was no point in developing, at this advanced stage in Malaysia's economic evolution, highly protected industries that could not compete on global markets. The new, more diversified infant industries 'must grow up ….and this cannot be done if they are over-protected'.[10]

Competition, more vigorous SMIs (small medium industries), export orientation plus privatisation was the formula that Mahathir set before the newly formed Malaysian Business Council in 1991. In giving them this brief, he did not explore any ideas that would have identified the establishment some five years later of the Multimedia Super Corridor. His references to the need for Malaysia becoming an 'information rich'

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[8] See Alexander Gershenkron, *Economic Backwardness in Historical Perspective, a book of essays*, Cambridge, Belknap Press of Harvard University Press, 1962.

[9] YAB Dato'Seri Dr Mahathir Mohamad, Prime Minister of Malaysia and Chairman, Malaysian Business Council (1991), *Malaysia: The Way Forward*, p. 13.

[10] Ibid., p.15.

country was simply one ingredient of many others that Dr. Mahathir saw as necessary prerequisites for sustained Malaysian growth.

The genesis of the Multimedia Super Corridor

Malaysian ambitions and intentions have been misunderstood by the international community, largely we believe in reaction to the self confident manner in which Dr. Mahathir has asserted his own ideas and aspirations for Malaysia. This, together with his literary flourishes have acted as irritants to western diplomats. In many ways, Mahathir sought to do for Malaysia and Asia what Jawarhlal Nehru achieved for India and Asia during the 1950s- striking out on a new path of political and economic development that did not imitate western models in the sycophantic manner that perhaps the ex-colonial powers expected. Malaysia's economic transformation was much faster than India's in the post colonial period, a reflection of the combined impact of a smaller Malaysian population, a more manageable geographic spread, and less social and religious division than the caste system had generated in India over millennia.

By the time that the MSC was announced in 1995, Malaysia had been transformed from a predominantly rural economy into an urban one. As Table 2 shows between 1980 and 1995, the rural population declined from 58 percent to 46 percent of the total, with a commensurate rise in urban dwellers. That growth coincided with a significant increase in total population from about 14 million to about 21 million. The labour force also grew and most important of all the rate of unemployment fell from 7 percent in 1985 to a mere 3 percent ten years later (Table 2). The shift in employment brought about a ten percent increase in employment in the industry and services sectors and a decline by almost 50 percent in rural employment in the fifteen years between 1980 and 1995 (Table 2). As Table 2 shows, that economic transformation was accompanied and facilitated by a significant increase in adult female literacy from 62 percent to almost 80 percent between 1980 and 1995. In other studies of industrial transformation, female literacy has been taken as a good predictor of the necessary social changes that are needed to achieve sustained socio-economic development. These changes were reflected in school enrolment rates that by 1995 exceeded 100 percent in the case of primary schools and

reached almost 60 percent in the case of secondary schools. Tertiary education, by contrast lagged far behind although between 1980 and 1995 it trebled from a mere four percent to 12 percent. This gap between basic education and advanced college education, certainly proved that Malaysia in 1995 was indeed an 'information poor' society despite its many other achievements.

It was these facts of Malaysia's development that enabled Dr. Mahathir to focus on the achievements of Malaysia and at the same time the long distance that still had to be traversed in order to achieve development for all. The 'Vision 2020' speech recognised these considerations and the subsequent development of the Multimedia Super Corridor (hereafter MSC) sought a uniquely 'Malaysian' way of progressing beyond the development constraints that existed in 1995. In the perception of what was needed, the Malaysian government made much of the 'digital divide' and the need to develop a skilled labour force. However, as we argue below, the MSC is not in fact a 'unique' experiment in the literal sense of that word but rather a unique combination of the 'Silicon Valley model' and Malaysian conditions.

Our analysis of the 'Vision 2020' statement alerted us to a vast gap between Dr. Mahathir's statement to the Malaysian Business Council in 1991 and the design of the MSC as announced five years later, in 1996. Indeed, nothing in 1991 hinted at the birth of the MSC, in itself a very complex conceptual plan. Nor has it been easy to find in statements about the history of the MSC any explicit account of exactly how and why the MSC was formed. Rather explanations have tended to lean towards romantic imaginings of a project that increasingly began to strike us as a 'magical incarnation'. If there was no direct link between the Vision 2020 statement and the genesis of the MSC, something must have intervened to give birth to the MSC. What was that catalyst?

As we surmised, the MSC was not born fully fledged like an Indian goddess with multiple arms and capacities. There had indeed been a genesis rather than a miraculous birth, and that genesis was found in the conceptual gap that emerged between Dr. Mahathir's inspired vision of sustained economic growth at the rate of 7 per cent per annum for thirty years after 1991 and the conservative nature of the Malaysian planning system that appeared incapable of developing a strategy that could deliver continuous growth at that speed. Without that growth, Dr. Mahathir was convinced that it would be

impossible for Malaysian living standards to reach European levels by 2020. The critical intervening factor in helping Dr. Mahathir to realise that vision was the multinational consultancy firm McKinsey & Company.

It was McKinsey that persuaded the Malaysian PM that conventional planning and simply more manufacturing of the kind that Malaysia was familiar with, was incapable of delivering the structural changes that were a prerequisite for meeting the growth targets identified in 1991.[11] Something more dramatic and strategic was required. It was McKinsey that came up with the solution of building an IT hub in Malaysia. McKinsey's strategy focussed on Malaysia developing multimedia industries in such a hub whose productivity would allow Malaysia to 'leapfrog' into the future. The McKinsey intervention also introduced the Malaysian government to the notion of transforming Malaysia into a K-economy. All these ideas went well beyond the Vision 2020 statement that hinted at none of them. Finally, and perhaps most conclusively, it was McKinsey that made explicit the connection between Malaysia's industrial needs and the achievements of Silicon Valley.

Malaysia's intention of building the MSC was announced in August 1995, and in the following year chapter 14 of the *Seventh Malaysia Plan 1996-2000* spelt out the linkages between the MSC, the country's export orientation, the role of multinationals and Malaysian productivity. Most important of all, 2.3 billion ringgit were set aside in the plan for investment in Malaysia's IT strategy.[12] The 7th plan was also explicit about the form that the MSC would take. Physically, it would measure 50kms by 15kms and be located to the south of the capital Kuala Lumpur. This virgin estate would house both Putrajaya, the new administrative headquarters of the Malaysian government, and Cyberjaya, the section of the MSC that would act as an EPZ (export processing zone) for foreign multinationals and export oriented domestic firms. In addition to the usual inducements provided by governments in developing countries to attract firms to EPZs (e.g. tax holidays and subsidised electricity, water and land facilities), Cyberjaya would also provide the latest communications system. Running alongside the magnificent

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[11] The information in this paragraph is based on Roger, W Harris (1998), 'Malaysia's Multimedia Super Corridor', An IFIP WG 9.4 Position Paper.

[12] Economic Planning Unit, Prime Minister's Department (1996), *Seventh Malaysia Plan 1996-2000*, Kuala Lumpur, p. 467.

highways that criss-crossed Cyberjaya, communications cables were installed to ensure that the firms based in the MSC would have immediate and reliable 'connectivity' – that is, connections with the essential communication systems including phones, broadband internet connections etc. The southern most point of the MSC provided direct linkages to one of the most modern airports in Asia, thereby facilitating the movement of government and corporate executives. The administration of the whole complex was allocated to a new government backed entity called the Multimedia Development Corporation with an annual budget of 30 million ringgit.[13] The MDC was also given the task of promoting the MSC.

To integrate the MSC into the Malaysian economy, various 'flagship' projects were established to demonstrate the benefits of linking up with Malaysia's IT hub. These flagship projects were:

- The development of a multipurpose card
- The development of telemedicine
- The beginning of electronic government
- Building a research and development cluster
- Establishing smart schools
- Promoting a worldwide manufacturing web
- Borderless marketing.

Given that the original Vision 2020 statement of 1991 had identified the need to develop a more highly skilled labour force, it does strike us as remarkable that the only pedagogical element in these flagship projects was the 'Smart Schools'. We have already written a paper about the Smart Schools and raised the question of whether they have or can deliver a more skilled labour force of the kind that Malaysia needs.[14] In the MSC there was no flagship relevant to the tertiary sector, whether university or polytechnic. The implications of this are discussed in the next section.

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[13] Mohammad, M. 1998. Multimedia Super Corridor. Subang Jaya, Pelanduk Publications (M) Sdn Bhd, p. 42.

[14] M Puteh and M Vicziany (2004), 'How Smart are Malaysia's Smart Schools?', *Conference Proceedings*, 4th Global Congress on Engineering Education, Bangkok, Thailand, 5 - 9 July, 2004.

The Malaysian transformation and the role of higher education

Given the urgent need to develop a skilled labour force, we were very puzzled by the failure to develop a tertiary educational component in the original flagship projects of the MSC. More than this, we also discovered that the Malaysian government did not have an IT policy for the college sector. Nor did any of the five-year plans set out any strategies or budgets for developing IT approaches in tertiary education. Instead, the universities and colleges were left to decide for themselves whether or not to develop an IT learning and administration strategy. A recent informal interview with the official from the Educational Ministry did, however, reveal that the Higher Education Department under the new government of Prime Minister Datuk Seri Abdullah Ahmad Badawi had recently commenced an inventory of the IT infrastructure in Malaysian public universities..[15] However, the missing ingredient remains – namely the necessary linkages between IT development in Malaysia and the higher institutions. The establishment of the MSC, if not the original Vision 2020 speech, certainly led to expectations that the Malaysian government would develop an IT strategy for higher education.

In his opening speech at the Malaysian Education Summit 2004 Abdullah Badawi asserted that education now will be the priority area for his government and that one particular objective was to create in Malaysia world-class universities.[16] As a first step, he announced the division of the education portfolio into a Ministry of Education and a Ministry of Higher Education with the latter responsible for community colleges, polytechnics, public and private training institutions as well as public, private and foreign universities[17] These reforms focus sharply on the nature and role of higher education in Malaysia; as such they are much overdue and come almost a decade after the establishment of the MSC and some 13 years after Dr. Mahathir's Vision 2020 statement

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[15] Informal Interview with Head Deputy Director, Policy Unit, Higher Education Department, Ministry of Education Malaysia, Kuala Lumpur, 12 July 2004

[16] Ahmad Badawi, A. (2004). "Revitalising Education: Equipping Malaysia for the Realities of the 21st Century". Opening Speech delivered at the Malaysian Education Summit 2004, Sunway Lagoon Resort Hotel, Selangor, Malaysia. 27 April 2004. Available at http://www.moe.gov.my/ucapan/educationsummit_pm.pdf Accessed 25 May 2004

[17] Ministry of Education Malaysia. (2001). Educational Planning 2001-2010: Concerted Efforts towards Educational Excellence, Kuala Lumpur, p.4-1.

in 1991. They also suggest that in the original conceptualisation of Malaysia's IT revolution, the focus was on making the private sector of the economy more dynamic rather than directly addressing the issue of education and Malaysia's skilled manpower needs.

How can we explain what appears to be the neglect of the tertiary sector in the years between 1991 and 2004? The Indian experience with the IT revolution points to the need to promote tertiary education in order to take advantages of the new IT jobs that are becoming available for educated manpower in developing countries. Historically, India has always invested more in the tertiary sector than in either primary or secondary education. The resulting mass illiteracy has been devastating for the poor and ultra-poor in India. At the same time, a vigorous tertiary sector enabled India to emerge as a world leader in customised software during the second half of the 1990s[18] at precisely the same time that the Malaysian government was trying to promote export oriented growth via the MSC. Each year, the Indian tertiary sector produces some 122,000 skilled graduates of direct relevance to India's expanding IT software sector,[19] an achievement that reflects the heavy investment made in universities, Institutes of Management and Indian Institutes of Technology.

These arguments can be countered by evidence showing the extent to which Malaysia had moved in the direction of a K-economy even before the MSC became fully functional. Malaysia has a major exporter of electronic components, especially hard disk drives, for example. The level of ICT penetration in Malaysia in terms of mobile phones, land lines and internet subscribers was also higher than was typical of other Asian economies. At the same time, these superficial indicators have been misleading. First, Malaysia's electronics exports were driven by foreign firms.[20] Indigenous Malaysian firms were typically located in the low technology sector of the economy and were not export oriented. Second, Malaysia's IT indicators demonstrate a high level of inter-regional disparity so that the national average is especially misleading. Unequal development in Malaysia is especially noticeable in the persistent differentials between

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[18] Marika Vicziany, 'Opportunities in Information Technology: The Emergence and Growth of the Indian IT sector', Report for the East Asia Analytical Unit, Department of Foreign Affairs and Trade, Canberra, July 2001 available at http://www.arts.monash.edu.au/mai/mas/index.html

[19] Ibid., Table 4.

[20] Harris, p. 16.

urban and rural areas, not to mention the outlying provinces of Malaysia that remain remote from the main urban hubs.[21] Third, as Harris and others have argued, the Malaysia IT drive was too preoccupied with technological factors and paid too little attention to organisational issues. Citing Hanna, Guy and Arnold, Harris pointed out that there are many other important options in pushing a country towards sustained growth and export orientation. Generalising the usage of IT is only one factor and not necessarily the essential one. Modern production methods and improving the value chain through value addition, depends much more on organisational changes within the production and marketing strategies of Malaysian firms. This suggests that the Malaysian governments focus on technology as the critical driver of improved productivity may have been misplaced, especially if the objective was indeed to diffuse the usage of IT:

> …….investment in organisational change should be a higher priority than technological change where IT diffusion is desired. Specific initiatives that target organisational development in Malaysian enterprises, as opposed to technological development, are hard to find amongst MSC publicity.[22]

Fourth, little attention has been paid to the need to improve the conditions that currently prevent Malaysian firms from being more innovative. In particular, the lack of venture capital for local companies remains a major concern. Larger firms have been acting as mentors for smaller Malaysian companies involved in the MSC,[23] but this has not evolved as a more generalised model of supporting other Malaysian enterprises. On the other hand, government support for the bumiputera companies has been severely criticised and one survey of Australian firms in Malaysia indicated that Australian companies were concerned with the lack of transparency and competition in awarding government contracts to bumiputera firms.[24]

Fifth, the bold Malaysian strategy which involved the support of leading US IT firms and entrepreneurs including Bill Gates, did not consider Malaysia's IT

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[21] The teledensity in 1999 ranged from 35.8 in Selangor to 8.0 in Sabah: ITU, Multimedia Malaysia: Internet Case Study, March 2002, Figure 2.3 p. 14. Similarly, internet subscribers in 2000 ranged from 10.4 per 100 in Kuala Lumpur to 1.3 in Kelantan: ibid., Figure 3.3 p. 22.

[22] Harris, p. 15.

[23] Harris. p. 16

[24] M. Vicziany et al., 'Australian Business Attitudes to Malaysia', in Chris Nyland, Wendy Smith, Russell Smyth and Marika Vicziany (eds), *Malaysian Business in the New Era*, (Cheltenham, UK and Lyme, US Edward Elgar, 2001), pp. 29-49

competitiveness relative to Asian countries that were ahead of Malaysia. The framework used by the Malaysian government focussed on historical comparisons between Malaysia's potential and her past. There was, in this sense, a lack of hard-headedness in the MSC strategy as one oppositional politician in Malaysia has been emphasising for some time (Lim Kit Siang).[25]

Most important of all, the Malaysia strategy did not fully appreciate how the success of the Silicon Valley model was based on the intellectual and scientific dynamism of Stanford university. It is impossible to think of Silicon Valley without Stanford in the forefront of global research in the same way that Cambridge University served as an intellectual hub for the innovation cluster that has developed around it. Stanford University did much more than provide skilled labour for America's advanced industries- it generated a research atmosphere that was so dynamic and commercially successful that it created a new generation of entrepreneurs. These entrepreneurs grew up in an atmosphere where imaginative ideas generated urgently needed commercial solutions to technical problems. The Stanford Research Institute provides only one example of what can happen when scholarship, research and commercial opportunities come together. Formed in 1946 as a research centre of Stanford University, some 55 years after the establishment of the university in 1891, by 1970 its commercial strength was so great that it became independent of the university and in 1977 assumed the new name SRI International.[26] Until now, the only reference we can find to Stanford University in the available literature on the MSC is about the first meeting of the

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[25] Cited in Harris, p. 20; Harris also cites Mustapha Anua from the Science University of Malaysia: Lim Kit Siang (2000), 'IT and Governance in Malaysia', Paper presented at the International Workshop on Social Usage of Internet in Malaysia. Organised by Universiti Kebangsaan Malaysia and Kom Tech, Germany, Boell Foundation, Bangi Selangor, Malaysia, nd., http://www.malaysia.net/dap/lks0298.htm Accessed June 2004; Lim Kit Siang (2004), Media Statement on 'Education Revolution to make Malaysia a Center of Excellence', Malaysiakini website http://www.malaysia.net/dap/lks2067.htm Accessed June 2004.

[26] For a brief history of SRI see: SRI International's website: http://www.sri.com/news/factsheet.pdf accessed June 2003. The history of the unique relationship between Stanford University and the growth of Silicon Valley has been recorded in the Stanford-Silicon Valley Archives Project at Stanford University: http://svarchive.stanford.edu/ accessed June 2004. Stanford University has also established an oral history centre called the Silicon Genesis where many of the critical pioneers of various inventions have left their impressions of how Silicon valley grew and why. Silicon Genesis focusses on the oral histories of the individuals who pioneered semi-conductors which made the information revolution possible in the same way that the inventors of the steam engine kicked off the original industrial revolution: see Silicon Genesis at: http://silicongenesis.stanford.edu/about.html accessed June 2004.

International Advisory Board to the MSC that met at Stanford University, California, on 29 January 1997.[27]

In short, our argument is that the conceptualisation of Malaysia's IT revolution between 1991 and 2004, was preoccupied with technological change to be implemented by Malaysian and foreign companies working within the MSC or via holding MSC status. The institutions of higher education were not identified as critical players in this revolution, despite Dr. Mahathir having identified skilled Malaysian labour as a critical missing variable that was holding back the possibility of sustained Malaysian growth. Nor did the initial conceptualisation of Malaysia's IT revolution place university based research at the forefront of the country's development strategy. In the concluding section of this paper we consider how Malaysian universities responded to this paradoxical situation: namely, the government's general call to get behind the IT revolution coexisting with a lack of specific policy direction or strategies for involving the tertiary sector in that process.

The reaction of Malaysian universities

As we noted in the first section of this paper, the key instrument that Mahathir had identified in 1991 for ensuring the ongoing growth of the Malaysian economy, was privatisation. That priority was also applied to the higher educational sector with the result that during the 1990s Malaysia opened its doors to foreign public and private universities. Monash University, was the first foreign university to be given a license to operate a full campus. But many other initiatives were taken including new laws to legalise the growth of private tertiary institutions in Malaysia (Act 555), various twinning programs between local and foreign educational providers and new laws to ensure quality assurance and standards in the education sector. This new law include the national Accreditation Board Act 1996 (Act 556). Finally, in December 1997, the MSC launched a scheme that provided MSC Status to local and foreign institutions of higher learning. On application, and with the approval of the Malaysian government, MSC status could be conferred on local tertiary institutions provided that their mission included significant IT

[27] For a list of the members of this Board see Harris pp.30-31. At first the board consisted of 29 advisors and by 1998 it had increased to 41. Some of the world's major IT companies are represented.

training, would encourage a growth in the supply of local IT knowledge workers and contribute to the development of Malaysia as an IT educational hub.[28]

In effect, the focus on privatising the higher educational sector also meant that any particular IT strategies and policies for the universities and polytechnics were now left to the individual institutions to develop and implement. No particular policy direction came from the Malaysian government and nor was any funding set aside in the Malaysian budget to build something approximating the Silicon Valley-Stanford model. Should we regard this gap in the planning of Malaysia's IT revolution as a policy failure? How important is it for governments to develop coherent IT strategies that incorporate the educational sector, especially the universities?

A recent report on the IT policies and strategies of European governments and universities helps to shed light on this question. As Table 4 shows, countries that did not have a national strategy for integrating ICT into the learning programs of the universities were not automatically disqualified in their efforts to achieve this. For example, Sweden has a National Virtual University yet the Swedish government lacked a proper ICT educational strategy. At the same time, the EU report noted that national or regional policies could help promote the uses of ICT in education:

> …the study clearly showed that the priority and attention given to ICT integration and e-learning which exists at the central level (ie among either the national ministries or the regional authorities) is an important drive for ICT integration.[29]

In its recommendations the PLS Ramboll Management report argues that for IT education to deliver its potential not only must national governments have policies in place that give the ICT integration a 'key priority' but that governments also need to define the 'strategic goals and objectives'.[30] Such national commitments will help to accelerate university education into more dynamic and innovative directions. A critical component of that requires governments or their agents to set up systems of quality assurance and

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[28] Multimedia Development Corporation, Guidelines For Achieving Msc Status For Companies Or Institutions Of Higher Education Or Faculties, available at http://www.msc.com.my/cs/hecsu/guidelines.asp. Accessed June 2004.

[29] PLS Ramboll Management (2004), Studies in the Context of the E-learning Initiative: Virtual Models of European Universities (Lot 1), Final Draft Report to the EU Commission, DG Education and Culture, Brussels, February, p. xviii.

[30] Ibid., p. xxii

accreditation to ensure that e-learning strategies are indeed superior to traditional, face to face and on-campus approaches.[31] These recommendations for the EU would apply with greater force to a developing country like Malaysia that in recent years has slowly turned to IT learning strategies as a way of accelerating educational development.

National policies and strategies also need to be internalised by the universities. The EU study indicated that unless individual universities had plans to promote ICT learning strategies, even enthusiastic staff would be limited by what they could achieve. PLS Ramboll Management's second tier of recommendations includes the need for universities to develop ICT strategies as 'a key driver for ICT integration'.[32] Components of a university based ICT plan are pilot projects, organisational and funding support, finding administrative and teaching staff who are willing to act as 'leaders' in promoting ICT strategies, training programs to give staff and faculty the skills to use ICT is more sophisticated ways, technical and administrative support to ICT programs, development of innovative e learning materials, internal quality assurance and promoting domestic and foreign links with like minded universities to share experiences and encourage faculty and student exchange.[33]

The EU study provides us with benchmarks with which to assess the degree to which Malaysian universities have moved in the direction of integrating ICT strategies into the administrative and learning environments of Malaysia. It is too soon to report in a systematic way on how Malaysian universities compare with the record of those in the European Union. The Ramboll Management studied classified the EU universities' integration and usage of ICT technologies into four distinct groups: front runners, co-operators, self-sufficient and sceptical institutions (see Table 4). At this stage, we cannot apply these descriptors to particular Malaysian universities and colleges- the research work for this is yet to be undertaken. What we can, however, assert with reasonable confidence are the following propositions:

1 In general, Malaysian universities have not taken up ICT in innovative pedagogical ways;

2 With few exceptions, Malaysian universities do not have ICT strategies;

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31 Ibid.

32 Ibid., p. xxiii.

33 Ibid., pp.xxiii-xxiv.

3 Most of the universities that have encouraged ICT have done so in an ad hoc manner that does not go much beyond placing existing course materials (lecture notes for example) onto university course intranets for students to consult.

4 ICT approaches have not been used to develop interaction between staff and students – for example, we are not aware of any discussion groups on line at the universities.

5 Even modest developments such as online lectures notes have been resisted by staff who see the new ICT approaches as being time consuming and difficult to manage.

6 Teacher resistance to using ICT strategies to enhance their teaching reflects the lack of administrative support and training;

7 One of the few exceptions to the above characteristics of IT in Malaysian universities is UNITAR that has an active e-learning approach largely because of its history in the field of distance education.[34] An informal interview with a Ministry of Education official in July 2004 confirmed that the major developments in Malaysian e-learning strategies were taking place in universities such as UNITAR that belong to the private sector.

This brief summary of what we believe to be the situation in Malaysia's 16 public universities and university colleges needs to be confirmed by systematic research that can respond to the concerns expressed in the EU study. Despite the lack of firm data, however, we are reasonably confident in these suppositions. Had Malaysian universities been especially dynamic in promoting the integration of ICT strategies into their learning systems, we would have been able to find the evidence for this more easily. One of the co-authors of this paper teaches in one of the public universities in Malaysia, and as insiders, therefore, we can confirm that with few exceptions, the e-learning system in

[34] Datuk Dr Syed Othman Alhabshi, President and CEO of Universiti Tun Abdul Razak (UNITAR), 'e-Learning: A Malaysian Case Study', Paper to the Africa-Asia Workshop on Promoting Cooperation in Information and Communication Technologies Development, UNDP-Malaysian Government Cooperation, held at the National Institute of Pubic Administration (INTAN), Kuala Lumpur, 26 March 2002.

Malaysia has a long way to go before we can safely claim that the ICT strategies are well integrated into the Malaysian university teaching and learning environment .

Conclusions

The Malaysian government's objective in developing an export oriented K-economy with highly skilled, Malaysian labour servicing the needs of domestic and foreign firms has been a national strategy but one articulated without any proper attention to the universities of Malaysia. A recent study from the EU indicates, that national strategies can play an important role in promoting the integration of ICT into universities. That this has not happened in the Malaysian case is especially puzzling given the manner in which Vision 2020 has constantly reinforced the need to promote a more 'intelligent' approach to national development. Even more surprising is that the MSC never paid sufficient attention to Malaysian universities, even though the formation of the MSC's was clearly based on Silicon Valley as an innovative, industrial cluster. As is widely known, the history of Silicon Valley was to a considerable extent also the history of Stanford University, which developed many of the innovations that were then commercialised by American capitalism and also threw up new research centres and entrepreneurial companies that made R & D a key focus.

Table 4

E LEARNING IN EUROPEAN UNIVERSITIES 2003

Type of universities	*Which nations?*	*% of 200 surveyed universities in the EU*	*ICT on campus learning plus linkages*	*Partnerships with private companies*
Front runners		16 %	ICT plus links strong	
Co-operating types		33 %	Some ICT plus local/foreign collaboration	
Self sufficient#		36 %	Some ICT but little collaboration	
Sceptical *		15 %	Resistance on all fronts	
Partnerships with private companies				Only 18% use private firms as suppliers of ICT services and joint training courses
Universities with internal ICT strategies				
Countries with national ICT strategies (not a precondition for integrating ICT into education)	Austria Finland France Germany Greece Luxembourg			

	Portugal			
Countries without ICT strategies but objectives integrated into general national objectives	Denmark Italy Ireland Sweden			
National Virtual Universities	Sweden Finland France UK			

Notes: # 28% of these were large universities with more than 20,000 students p.vi; *only 13% have ICT policy and 45% of the universities in this group have less than 10,000 students. NB ICT infrastructure was available in all universities and access to IT for administration, email, internet and intranet were also widely available. The difference between front runners and the rest is the degree to which IT is used for innovative teaching and pedagogy; most universities use IT in traditional ways and the PC as sophisticated typewriters. 7% of the sample did not expect to have on line course registration and 24% did not expect to have on line exam registration in future years.

Source: PLS Ramboll Management (2004), *Studies in the Context of the E-learning Initiative: Virtual Models of European Universities (Lot 1),, Final Draft Report to the EU Commission, DG Education and Culture,* Brussels, February .

The recent restructuring of the Malaysian educational ministry suggests that things are about to change. In the meantime, our impressions of Malaysian universities is that little has been done to integrate ICT into administrative or learning approaches. As such, this new policy reform is much overdue. To the extent that such policies have not been in place despite the objectives articulated in Vision 2020, Malaysia has lost about a decade in establishing the kind of K-economy that has been projected as Malaysia's priority and development strategy since the mid 1990s. Despite the lack of progress in fostering e-learning in Malaysian universities, the potential is very high given that in 2002 the International Telecommunication Union reported that all public and private universities were linked to the internet thereby providing 'connectivity' to some 500,000 students.[35] That same report described Malaysia's ICT infrastructure as 'enviable' given its relatively low per capita income by American and European standards:

> At the end of 2000, Malaysia ranked 30th in the world in Internet penetration, above several more developed nations.[36]

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See also attached Table 2 in landscape form

[35] ITU, Multimedia Malaysia: Internet Case Study, March 2002, p.33.

[36] Ibid., p.40.

Table 2 : Key Indicators for Malaysia for the past 20 years

Indicators	1980	1985	1990	1991	1995
Population (total)	13,763,000	15,677,000	18,202,000	18,657,000	20,610,000
Rural population (% of total population)	58	54	50	49	46
Internet users (per 1,000 people)	NA	NA	NA	NA	1
Mobile phones (per 1,000 people)	0	NA	5	7	50
Mortality rate, infant (per 1000 live births)	31	NA	16	NA	11
Labour force (total)∗	5,294,626	6,087,379	7,131,544	7,337,798	8,229,573
Unemployment, total (% of total labour force)	NA	7	5	NA	3
Employment in Industry (% of total employment)	24	24	28	NA	32
Employment in Services (% of total employment)	39	45	47	NA	48
Employment in Agriculture (% of total employment)	37	30	26	NA	20
GDP per capita (constant 1995 $US)	2,297	2,587	3,104	3,317	4,310
ICT Expenditure per capita ($US)	NA	NA	NA	NA	221
Literacy rate, adult total (% of people ages 15 & above)	71	76	81	81	84
Literacy rate, adult female (% of females ages 15 & above)	62	69	74	75	79
Expenditure per student, primary (% of GDP per capita)	NA	NA	NA	NA	8
Expenditure per student, secondary (% of GDP per capita)	21	23	17	18	18
Expenditure per student, tertiary (% of GDP per capita)	141	126	117	111	54
School enrolment, pre-primary (% gross)	NA	NA	35	39	48
School enrolment, primary (% gross)	93	101	94	95	103
School enrolment, secondary (% gross)	48	53	56	57	59
School enrolment, tertiary (% of gross)	4	6	7	8	12

∗ The Malaysian National Information Technology Council (NITC) in its website http://www.nitc.org.my/Infosoc2000/AccessEquity.pdf defined labor force as people who falls between the age of 15 and 65 who were either employed or unemployed.

∗∗ The summary of the data and statistics for Malaysia are selected from the World Development Indicators Online (WDI) 2004 available at http://www.worldbank.org/data/onlinedatabases/onlinedatabases.html