The cultural context of information management
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In this chapter we consider some of the diverse fields and alternative perceptual viewpoints that are embraced by the notion of MIS and add the cultural dimension. Three principal arguments are advanced.   First, that what is needed is not so much a unifying theory or framework for MIS, but answers to some fundamental questions. This is not the time for testable hypotheses and a pervasive scientific paradigm, it is argued, but for perceptual pluralism which can offer relevant insights, knowledge and experience.   Second, the study of management information systems has become the study of information management. The successful application of IT is less of a challenge than the effective use of information. Third, as information management has become global, the cultural dimension, though seldom articulated, has become fundamentally important at the levels of the individual, the enterprise and the state. Empirical evidence to support this later thesis is drawn from three areas: a study of individuals' perceptions in strategic decision-making which contrasts Western and Asian managers' experience; joint research on IT infrastructure within corporate groups around the world; and case research on the development of state-wide EDI (electronic data interchange) in Singapore and Hong Kong. In the concluding discussion, some current issues in information management which have cross-cultural dimensions are used to support the principal arguments.

In search of a pervasive paradigm
MIS (management information systems) has been studied for over thirty years. Yet the subject still lacks a coherent conceptual framework, a pervasive paradigm or even clear boundaries. But does that matter?

The diversity of topics within the field can readily be seen in the subjects suggested in three recent information system conferences - the 1996 Harvard University conference on the internet and society; the 1996 Pacific Multimedia Information Systems Workshop; and the 1997 Pacific Asia Conference on the confluence of information systems theory and practice:

* electronic commerce
* marketing on the internet
* government information industry strategy
* information security management
* video on demand and home shopping
* hypermedia design methodology
* cultural imperialism on the net
* democracy in the digital age
* the government's role in the internet
* multi-paradigm visual information systems
* global and long-term impact of ATM
* security and encryption
* new organisational forms
* who owns the internet?
* distributed multimedia data modelling
* 3D application programming
* information brokering
* information literacy
* groupware and work flow
* cross-cultural studies in information systems

The organisers of the 1996 Pacific Multimedia Information Systems Workshop, further suggested that "the development of National Information Infrastructure (NII) is under way in many countries. NII is a seamless web of communications networks, computers, databases and consumer electronics that will put a vast amount of information at users' fingertips (and) transform the way people live, work and interact with each other. Every kind of business will be changed as commerce, finance, government services, manufacturing of all kinds, education, entertainment and healthcare employ multimedia." [Lee (1996)]

Given such diversity of topic, where is the coherence in the subject? What is it about, other than, perhaps, that all the topics involve computer-assistance in some way or that all relate to the use of information? But can such diversity really be presented as part of a integrated whole? Can the boundaries, functions and levels for such a subject be determined? Indeed, does a valid subject really exist?

From the outset the body of knowledge referred to as management information systems (MIS) has not lacked commentators. There has long been discussion about the scope, structure and standing of the subject that is taught as MIS. [to take some examples from the past decade - the ACM/IEEE-CS Curriculum Task Force (1991), Ang and Lo (1991), Avison (1994), Bacon (1992), Boaden and Locket (1991), Buckingham et al. (1987), Laribee (1992), Probert (1994), Swanson et al. (1991)]

Others have offered or commented on the conceptual frameworks, theories and academic paradigms underlying the study of MIS. [Anthony (1965), Backhouse et al. (1991), Bariff and Ginsberg (1982), Banville and Landry (1989), Bell (1973), Bjorn-Andersen (1985), Brehaut (1991), Cavaye and Cragg (1993), Cheon et al. (1993), Culnan and Swanson (1986), Davies and Ledington (1991), Gorla (1989), Grimshaw (1992), Keen et al. (1987), Landry and Banville (1992), Lucas et al. (1974), Lyytinen (1987), Reponen (1993), Sabherwal and King (1991), Stamper (1985), Tricker (1992), Van Gigch and Pipino (1986), Weber (1987), Zubhoff (1988)]

Like spotlights casting beams onto a stage, some of these insights provide a penetrating but narrow light, illuminating part of the scene but casting the rest into shadow. Other viewpoints offer a broader but softer light. None is capable of giving an overall, balanced and focused perspective. In the early days MIS was seen as a component of accounting. More recently, MIS has been treated as a sub-set of organisational theory, of strategic management theory or of management and computer science. But is an agreed theory set, an accepted discipline base important?

The significance of Western thought in MIS studies
Predominantly, contributions to our knowledge about MIS teaching and research have been based on Western scholarship - on an academic tradition rooted in the conventions of a classical philosophy of science, dominated by the English language, reflecting Western values influenced by Judao-Christian religious thinking, the renaissance and the reformation: a scientific tradition that embraces typically unarticulated (and often unrecognised) beliefs in individualism, personal freedoms

and the common law.   But this is not the only cultural milieu in which information and its management can be studied.   In Japan, for example, the developments in science and technology that followed the Mediji restoration, were not held back by English beliefs in the nobility of science and the need to intellectualise it.

Compounding the ethno-centric, Western domination of the process of discovery are the cultural and subject paradigms preserved by learned journals published in the West.   Typically rooted in a single discipline, limited to specific theoretical constructs, often set in the concrete of inordinate conservatism, the boundaries and paradigms of subjects can be fanatically protected by editors, referees and contributors alike, not least because all in this inner elite have a vested interest in maintaining the status quo of their shared perceptions.

The catch 22 of scientific method in the Western world is that anyone who seeks to challenge a conventional paradigm will not get published within it: yet not being published in the top journals is tantamount to the work being classed by other scholars as second rate and inferior.   Such cultural imperialism denies the chance of changing or even challenging the paradigm.

In "the structure of scientific revolutions", Thomas Kuhn argues that developments in scientific thinking do not progress smoothly from one rational step to the next, but lurch from one uncertainty to another in stages that are at best only partially rational. Significant contributions, he argues, occur when basic concepts, or paradigms, were seen no longer to meet the anomalies that had been recognised - and a new theory needed to be developed. If the new thinking was accepted, a paradigm shift then occurred.   Rational choice between the competing paradigms was not an alternative, Kuhn believed, because the different paradigms represented different ways of thinking about the underlying phenomena. People had to change their beliefs. The adoption by scholars of systems theory, or more recently of agency theory, provides examples.   Do MIS studies need a new paradigm?

No subject has an automatic right to existence. The history of management-related scientific thought is littered with subjects which were once paraded as penetrating and pervasive insights into management issues, ultimate solutions to management problems - the behavioural theory of the firm, cybernetics, industrial dynamics, management control systems, operations research, general systems theory - only subsequently to become the preserve of small bands of specialists and enthusiasts. In the long term the standing and status of a subject comes from its contribution to understanding, and ultimately to practice; not from its publications and proclamation.

For thirty years the scope of MIS teaching has been decided by answers to the question: what do academics want to teach? For thirty years the content of MIS research has been determined by the topics that academics want to study and write about.   For thirty years these have been the wrong questions. We have been talking to ourselves. More appropriate questions might have been:
- what do people need to know to live successful lives, build effective organisations and create worthwhile societies?   In other words, what information is needed to achieve such ends?
- what data needs to be managed and made available, to provide such information?

- and what are the implications for individuals, organisations and states?

Essentially, the study of management information systems has become the study of information management.   [An idea recognised by Earl and Hopwood in 1980]. What is needed is not so much a unifying theory or framework for MIS, but answers to some fundamental questions. This is not the time for testable hypotheses and a pervasive paradigm, but for perceptual pluralism which offers relevant insights, knowledge and experience to help change society.

This leads to the central tenet of this chapter that, as the effects of information and information management become global, the cultural dimension is not just an interesting attribute of information systems development, of occasional relevance when cultures conflict, but is of fundamental significance to effective information management.

The cultural dimensions of information management
In reviewing the theoretical background to this field, the definition of culture becomes crucial. Many attempts have been made, drawing from the concepts of anthropology, social psychology, organisation theory and other fields. Deal and Kennedy (1982) suggest that culture can be thought of as:
> "the integrated pattern of human behaviour that includes thought, speech, action and artefacts and depends on mass capacity for learning and transmitting knowledge to succeeding generations."

Notice the emphasis on learning and the conveyance of knowledge between people and over time: an essential functions, some might argue, of information systems.

An insight into organisational culture is offered by Hucznyski and Buchan (1985):
> "the pattern of values, beliefs, norms and rituals which define the essential character of the company. Just as the social group may socialise its members, so too will the organisation socialise its new recruits to accept the status and power distribution, language, reward and punishment system and its ideology and philosophy."

For this chapter we will simply consider culture as the systems of beliefs, values and perceptions that influence what people think, expect and do, systems which are reflected in their language and routines, myths and rituals, records and artefacts.

In essence, culture is reflected in the information that is utilised by individuals, organisations and states. People perceive situations in the light of information available to them, take decisions in response and implement them in their cultural context.   Organisations develop a corporate culture, richly reflected in its information processes, that affects the expectations, behaviours and decisions of all the players involved. Likewise, the information processes of states, nations and ethnic groups influence and shape their cultural contexts. Differences between them are presented as cross-cultural issues.

Yet none of the major MIS texts that have been used in the past decade have offered a cross-cultural perspective on the subject.   Indeed, culture has seldom been offered as a relevant concept, except at the organisational level, where the

corporate culture has been seen to influence the development of information systems.   Conversely, other studies have shown that organisational culture can be influenced by information system developments.   [Ahituv and Neumann (1990), Cash et al. (1992), Davis and Olsen (1985), Dickson and Wetherbe (1985), Earl (1989), Jackson (1986), Martin et al. (1994), McFarlan et al (1988), McNurlin and Sprague (1989), Parker and Case (1993), Robson (1994), Ward et al. (1990)]

 In their paper "Knowing *Wu Li,* sensing *Shi-Li,* caring *Ren-Li*: the methodology of the WSR approach" (1996), Jifa Gu of the Institute of Systems Science at the Chinese Academy of Sciences in Beijing and Zhichang Zhu of the Centre for Systems Studies at the University of Hull in England, outline a systems methodology derived from the philosophies of Taoism, Buddhism and neo-Confucianism. Their study is also related to the work of Sawaragi et al. (1988) at the Japanese Koran University and the development of the Shiayaka systems methodology.

Emphasising the potential for cross-cultural learning in systems developments, the authors recognise limitations in both Western "hard-systems" concepts developed in operations analysis and formal systems analysis methodologies and "soft-system" concepts involving more value related, participative, social systems analysis and design.   Power relationships are involved in all systems development, they argue, and it can be difficult, given an existing political context, to have an open dialogue between the various stakeholders involved in and affected by a new system. Modelling the "real" world inevitably draws on the culture of those involved: the training, knowledge, experience, values systems and beliefs of the modeller affect their expectations and what they perceive.

The alternative approach, derived from the Chinese insights, accepts the need for subjective modelling.   Other players, they argue, inevitably (and perhaps desirably) identify different models, which can be as valid as any others.   An optimal solution cannot be derived analytically or mathematically; nor can one philosophically 'best' or organisationally most desirable design be created. Successful solutions depend on the perspectives of the participants.   Contrast this view with the paradigm-dependence anticipated by many Western thinkers, as discussed earlier.   Rather, the Chinese writers argue, convergence towards a mutually acceptable solution can best be achieved by adopting the concepts of mutual understanding or knowing (*Wu Li),* sensing (*Shi-Li),* and caring (*Ren-Li).*   The concept '*Li'* in each of the underlying philosophies is concerned with laws and patterns in the way things are and emphasises harmony in both nature and human affairs.

Research on organisation-cultural and cross-cultural aspects of information systems in the Western literature to date has been quite limited.   To consider a few representative examples:

Cooper (1994) argued that when IT implementation conflicts with an organisation's culture, the analysis and design process may be undermined, the implementation process sabotaged and the system under-utilised in practice. The author drew on the organisational literature on culture and conflict resolution to develop a methodology for evaluating the likelihood of cultural conflict in MIS analysis, design and development, which identified competing value systems and offered the means to move towards a resolution.

Gover et al (1994), in their paper "Organisational practice, information resource deployment and systems success: a cross cultural survey", compared information technology utilisation and projects that were seen to be successful in the USA, France and Korea. Similarities in the use of IT resources were found across the varying cultures. However "very distinct differences in IT practice were observed, including the role of IT, integration of strategic and IT planning, and the extent of risk taking in the different IS projects. South Korean entities, the authors argued, "seemed to view IT in a more traditional, operational vein with little tolerance for risk taking". The study concluded that cultural differences, at the national or ethnic level, need to be recognised and their potential influence on IT policy and use appreciated.

Robey and Rodriguez-Diaz (1989) drew on case research into the efforts of an American-centred multi-national corporation to implement computer-based systems in their Latin America operations.   They concluded that the local culture impeded implementation efforts because of the different perceptions of the meaning and likely effects of the system between the different players. For better results, compatibility between local and international managers and workers was essential.

But, overall, the significance of cultural and cross-cultural aspects in the study of MIS has tended to be peripheral to mainstream concerns. We now turn to some empirical evidence to support the thesis that, as information management becomes global, the cultural dimension, though seldom articulated, is of fundamental importance, at the levels of the individual, the enterprise and the state.

Three empirical studies
The empirical studies cited in this chapter draw on three pieces of research: at the level of the individual, a study of' decision-making perceptions in a major company in Asia-Pacific; at the level of the corporate organisation, a research project on IT infrastructure within companies in Australia, Asia Pacific, Europe and North America; and at the level of the state, case research on the development of state-wide EDI (electronic data interchange) systems in Singapore and Hong Kong.

A study of the use of information in strategic decision-making
The top management team of a major company in Asia Pacific consisted of the chief executive (who was also chairman of the board of directors) and seven other senior executives each responsible for one of the main functions in the organisation, such as finance director, personnel director and company secretary.   Recognising the need for succession planning, the executive board wanted to identify the potential among the next level of executives for the appointment to executive directorships, perhaps after further job experience and management development. The drew an important distinction between managerial competencies as general managers and corporate governance competencies as directors.

A study was made of the core competencies required of executive directors in that company and an assessment centre was developed to assess the potential of the participants.   These were thirty four senior executives, each reporting to a member of the company's executive board.   They came from a range of professional and academic backgrounds, had diverse functional and business experiences and

included both Asian and Western born and educated members. Various exercises and psychometric instruments were employed in the assessment centre. [For a detailed case-study description and discussion of the project, see Tricker and Lee (1996)]

One of the exercises was a test of the strategic-thinking capability of each individual, which took the form of a three hour written analysis of a case, undertaken without prior preparation or discussion, in examination conditions. Participants were asked to write a brief for the chairman of their company in reaction to merger proposals which the case explained had just been received between their company and another in the same industry.

Each participant was given an identical set of papers, containing historical, operational, financial, organisational, and governance information about both companies involved in the proposed merger. Each participant had the identical remit in the form of a simulated memo from the chairman explaining that:

> "I have an initial meeting with the other party in three hours. Please write a briefing paper for me to be able to make an initial response to the proposal. I appreciate that you do not have nearly enough time for a comprehensive strategic review, but give me an outline of the key issues. Let me know what other information we shall need to be able to make a considered response in due course."

However, despite having identical data, the executives tended to perceive the strategic issue at quite different levels of abstraction. The resultant written briefs could be readily grouped into four sets.

- Level 1 respondents took a viewpoint in which they were, effectively, inside their own company looking out. They wrote about the anticipated effect of the proposed merger on their own organisation. Their comments were frequently negative. For example: "a merger would result in a conflict of cultures. They do things quite differently from us. They have a more bureaucratic, authoritarian style of management; whereas we give managers more discretion..."

- Level 2 respondents had both companies in their reference frame. They articulated the pros and cons of the potential merger. Positively they saw potential benefits from a combined organisation, such as scale benefits, cost-savings, and other synergies. Negatively they identified problems that might arise on such an integration, such as adverse effects in the market-place, a lowering of employee morale, concerns about the share price, and so on...

- Level 3 respondents took an industry wide perspective. They felt the need to have present and potential customers, competitors and strategic allies, in their frame of reference. Their strategic review was wider, incorporating the interests of many more stakeholders. Consequently, their strategic conclusions and recommendations were necessarily more politically sensitive. They also felt the need for much more and varied information.

- Level 4 respondents set their brief to the chairman in a competitive industry wide setting but added a broader political, economic, social and technological context.   Their perceptions were the most truly strategic, taking into account many, if not most, of the significant strategic variables in the simulated merger situation. In effect, they looked at the strategies being pursued by the other company as well as their own. They were capable of seeing the world through the eyes of the other company's directors. "What do they want to achieve from this merger" they asked; and in the process utilised information in a significantly different way.

Although the form of the exercise did not permit rigorous relationships to be identified between the outcomes and the various personal characteristics of the respondents, the results demonstrated conclusively that respondents, who came from diverse cultural backgrounds, perceived the issue over a range of different levels of abstraction and perception and, consequently, produced strikingly different strategic insights.

In other words, despite being in receipt of identical information, the cultural background of each subject - their expectations, beliefs, and values which had inevitably been influenced by family, education, business experiences and other cultural determinants - significantly affected the interpretation of that information and the resultant outcome.

A study of IT infra-structure

The second piece of work involved an international study of the provision of IT infrastructure within groups of companies and was undertaken by scholars in the Business Schools of the Universities of Melbourne, Boston, London and Hong Kong. The assumption underlying this research was that all corporate groups had a strategic option in the extent to which IT infrastructure (defined as the availability of networks, access to data, and the provision of systems support) was provided centrally to all subsidiary companies in the group or was the individual responsibility of each subsidiary.

IT provision and IT investment, it was argued, can be categorised into four elements - transactional, informational, strategic and infrastructure.   Infrastructure investment is often more difficult to justify economically because the benefits are shared across the organisation. The analogy used was the development of road or other utility networks within countries, where the benefits are shared by a wide variety of users. Notice that the underlying paradigm reflects Western organisational assumptions and experience.

However, the Hong Kong experience did not appear to fit the model [Whitman, Farhoomand and Tricker (1995)].   The organisational approaches to IT in two important trading houses (Jardine Matheson and Hutchison Whampoa) and a major bank (The Bank of East Asia) were studied initially. Two problems became apparent.

Firstly, unlike the Australian, American and British respondent companies, none of the Hong Kong companies were prepared to disclose any financial or commercial

quantitative data. This precluded any bench-mark or other comparative analysis.
One explanation could be the business culture among "overseas" Chinese managed
companies. On the one hand, these are typically family businesses in which high
inter-personal trust between members, rather than legal contract, exists. On the
other hand, this is a low trust society in which commercial information has to be
jealously guarded.

Secondly, the companies' approach to the provision of IT within their corporate
groups did not seem to map onto the model underlying the research - that in large
and complex organisations IT infrastructure will be provided at the level of both the
corporate and the individual strategic business unit.   IT seemed to be provided
solely business by business. In the trading companies particularly there was seldom
a central IT strategy or provision of IT infrastructure. Where there were central IT
staff, they only offered consultancy support to strategic business units on request.
However, given the conglomerate nature of these companies, with activities ranging
from import/export agencies, bottling, transport, retailing, property, as well as
businesses in China and other countries in the region, this may not be so surprising.
The strategic synergy in such corporate groups lies less in the core competencies of
a well-focused industry and market presence, but in group-wide entrepreneurial,
financial and managerial competencies.   Consequently, there was less call for the
provision of group wide IT services than in the Western companies
.
These findings were supported by a related piece of research which explored the
use of IT in Hong Kong, focusing on some of the major IT users. In every case
subsidiary companies were expected to develop their own independent IT strategies
and IT infrastructures. No attempt was made by a central function to impose or even
offer infrastructural support, and there was no evidence that anyone expected it.   It
was also observed that, by international comparison, each of these companies was
highly profitable (reflecting economic growth rates in Asia Pacific).

In essence, this research demonstrated that Western organisational and business
paradigms do not necessarily map onto Asia Pacific approaches to doing business.
Business strategies, organisational structures, indeed many aspects and
assumptions about the way business is done, differ across the corporate cultures.
So, too, must approaches to MIS.

In the Western influenced companies, the provision of corporate IT infrastructure
was consistent with the strategic thinking at group and strategic business unit (SBU)
levels - strategic thinking influenced by concepts of 'core competencies', 'sticking to
the knitting' and an aversion to conglomerates, with the strategic advantage, even
the strategic necessity in some industries, of a group-wide IT strategy being well
recognised.

In the firms influenced by overseas Chinese experience, by contrast, business is
more often seen as trading, with companies themselves being treated as
commodities.   The family, rather than the corporate group, is the central focus of
business strategy, with the dominant head using personal power to affect strategic
decisions which tend to be more flexible, more emergent and far more hidden than
their Western counterparts.   The provision of IT is seen as a support to the

operations of each individual business and, consequently, is more significant at the business, rather than the group, level.

Two different interpretations can be advanced for this dichotomy. One is that the overseas Chinese approach reflects business cultures that are still developing and that, with the next generation of business leaders, the context and the concept of business will converge towards Anglo-American practices both operationally and strategically.   The other is that Asia-Pacific overseas-Chinese success reflects an alternative way of doing business, involving dynamic relationships in changing business networks which owes little to and will be uninfluenced by Western experience.

Indeed, some might argue that this experience offers a model of the strategy, structure and style of business for the coming millennium - more flexible and evolutionary, relying on shifting strategic alliances (sometimes between competitors as well as allies) rather than the nineteenth century concepts of the bounded joint-stock, limited-liability company.

A further finding of the Hong Kong research was that, although firms had not invested in IT infra-structure *within* corporate groups, there had been significant IT system developments *between* companies not connected through ownership, but through their added-value chains and networks - what the researchers termed the development of IT 'superstructure'.   Such strategies for information systems reflected the companies' business strategies, which frequently involved strategic alliances, joint ventures and outsourcing.   Consequently, the effect of strategic developments between firms might, in information system terms, be the advent of systems at the industry-wide meta-level, linking together enterprises throughout the added-value network or chain with the ultimate users, rather than group or firm-specific information systems.

Even though it may appear that the application of information technology is converging around the world, the actual need for management information, the practical development of information systems to support business strategies and the real use to which information technology is being put, can have significantly different dimensions because of the cultural influences and expectations.

Comparative case study research of the development of state-wide EDI

The third piece of research involved information management at the state level and contrasted the experiences in building state-wide EDI (electronic data interchange) systems in Hong Kong and Singapore. The sources for this work included contract research involvement with the Hong Kong EDI project since 1990, an MBA dissertation on the Hong Kong experience [Griffith, E. K. (1995)], Harvard Business School case studies on the Singapore experience [Harvard Business School (1993)] and a case study on the Hong Kong experience [Surman, Western Business School, Canada (1994)]

Singapore is an island of 625 square kilometres at the southern end of the Malaysian peninsular, with a population of 2.65 million.   Under the direction of President Lee Kwan Yue, the country sustained remarkable economic growth over more than

twenty years. Significant government involvement in the economic life of the country, including public housing and ownership of telecommunications, airport, port, airline and government business enterprises, was funded significantly from the mandatory employee retirement savings scheme.

Typical of the Singaporean Government's involvement in the economic direction of the state was the IT2000 project.   In April 1992, the government announced an information technology vision and plan for the next 15 years, with 95% of homes and all offices cabled for Internet and interactive TV and cable services.   This, said the report, would turn Singapore into an "intelligent island", providing an Asia Pacific centre for expertise, goods, services and information. At the heart of this plan was a national information infrastructure that would capitalise on information as a key factor of production and an important ingredient for enhancing the quality of life of its people".   Soh et al. (1993)

The development of a state-wide EDI system, called TradeNet, was already well developed, having been launched in 1989.   Today TradeNet facilitates the electronic exchange of all inter-company trade transactions, in a standard format, for Singapore's traders, including freight forwarders, agents and carriers; shippers and freight receivers; banks, finance houses and insurance companies; the Changi Airport; the Port of Jurong; and government agencies such as customs and excise, statistics and the Trade Development Board.

Increasingly, TradeNet is being used to connect Singapore's business community to their counterparts around the world.   The underpinning IT system runs on IBM equipment linked by dial-up or leased telephone lines to all members of the trading community, each of whom uses appropriate terminals to access the system. Tradenet has adopted the United Nations EDIFACT international message standards.   It is now possible, for example, for a container ship en-route to Singapore to connect via satellite to the Singaporean EDI system to arrange docking, un-loading, customs clearance, and the notification of all other parties involved, including the shipping agents, the freight forwarders, banks, insurance companies and the customers to make the necessary trans-shipment, transportation or storage of cargo before the ship even arrives.

All trade transactions in Singapore now go through TradeNet, not least because the government no longer accepts anything other than electronic information for customs, excise and trade reporting purposes. Cost savings and other benefits have been reported by some of the business users; moreover government departments have been able to cope with increasing volumes of transactions with greater speed and accuracy than would otherwise have been the case with manual paperwork systems.

The Hong Kong experience of EDI, however, has been very different. Hong Kong has a population of some 6.2 million and has also been economically highly successful in recent years. The early initiative to develop EDI in Hong Kong predated Singapore's.   But unlike Singapore, this was led by a consortium of businesses, including leading banks, shippers, airline and shipping companies and the Hong Kong Telephone Company.   The government did not lead in the project,

but participated 10% of the initial consultancy costs, with the other nine consortium members contributing the balance.

The initial consultancy proposal suggested that the provision of a business community-wide EDI system, catering for the needs of over 10,000 small businesses (five times more than Singapore), coping with trade documents in Chinese (the Singaporean system demands that all transactions be reported in English), and developing the system and educating user firms, would not be commercially viable in a free competitive market like Hong Kong. The consultants felt that a state-led initiative was not consistent with the *laisez-faire*, minimal government policies of Hong Kong. Consequently, they proposed that the provision of EDI services be left to the private sector to provide on a piecemeal basis, as and when commercially viable.

Nevertheless, in 1990 the consortium members, now called Tradelink, and including the government as a minority partner, decided to explore the possibilities of a territory-wide EDI utility further, funding a development study under the name SPEEDI. In 1991 Tradelink commenced discussions to implement the proposals. The Executive Council of the Government (Hong Kong was then a British colony with a Governor appointed in London) agreed that Tradelink be given an exclusive franchise to generate a secure revenue stream that could be used to fund the uncommercial community activities, and a seven year right to offer EDI services for government trade transactions (such as import/export documentation) was given the following year.

Tenders for the provision of the hardware and software were received in 1992 and 1993 and IBM was announced as the lead systems integrator. Subsequently, IBM withdrew and were replaced by Hewlett Packard. Systems development and testing was expected to be carried out in the following two years. However, in 1996 an emergency meeting of the Legislative Council were called on to make an emergency allocation of funds to enable the project to proceed. Although trials were continuing, the system had not accepted responsibility, at that time, for carrying any live transactions. In 1997 the sovereignty of Hong Kong reverted to the Peoples' Republic of China (PRC) with the British Governor being replaced by a Chief Executive chosen by an electoral college nominated by the PRC and a new Executive Council, again appointed by the PRC authorities.

What might be concluded by comparing the Singaporean and the Hong Kong experiences in providing state-wide EDI? The Singapore TradeNet was successfully implemented quite quickly and is now carrying all trade transactions in the territory. This was achieved by strong government strategic leadership, government funding (both directly and through subsidised support from government agencies and enterprises) and government edicts to business that required them to use the EDI system.   Singapore now has centralised EDI, facilitating and recording all trade transactions in the country, under government control.

By contrast, the Hong Kong Tradelink system lacked a government sponsor: indeed, some government departments appeared less than enthusiastic to the idea. Similarly, there was no major government funding in the earlier years.

But, by the same token, Hong Kong does not have centrally addressable files that record all trade transactions in the territory in detail: files which are potentially available to government departments and others in power seen to have a legitimate "need to know" about prices, trading details, market shares or whatever.   Both case studies will provide on-going evidence of the importance of political and cultural issues in information system developments.

Discussion
Each of these three studies shows the significance of the cultural dimension in understanding the management of information.

In the first study, individuals drew fundamentally different conclusions for a strategic decision even though they were in receipt of identical information.   Their perception of the nature of the issue was at differing levels of abstraction: some saw only the operational implications in their own narrow confine, whilst at the other extreme, some were able to ride the conceptual helicopter seeing the situation from on high and through the eyes of the other players.

Consequently, we can conclude that, in analysing needs for management information and designing appropriate support systems, an understanding of the cultural context of the individual players is vital.   Such an appreciation of culture needs to go far beyond national, regional or ethnic cultural differences (the cross-cultural differences which are typically associated with the concept of culture) to embrace differences of belief, knowledge and expectation.

The second study, which looked at differences in the provision of IT infra-structural support within corporate groups around the world, found that some (predominantly Western) assumptions about the way business was done and enterprises were organised did not map onto the experience of successful groups of companies run by overseas Chinese entrepreneurs.

This work emphasises the importance of an appreciation of corporate or organisational culture in the development of IT and information system support. Again, whilst the cultural differences may be influenced by national, regional or ethnic cultures, the appreciation of culture needs to go deeper to incorporate differences in corporate and organisational cultures, which may have be influenced by the history of the firm (the significant learning experiences of its opinion-formers to date), the personality of its leaders, how power is exercised, its industry, its scale, its ownership, indeed any experience that has created its values, beliefs and expectations.

The third study introduced issues in the management of IT and information at the level of the state. In contrasting the experiences of Singapore and Hong Kong in the development of state wide EDI, we saw the importance of the culture at the national level, with its political, social and economic implications.   Again an understanding of the development of effective IT and information management support at this level calls for an appreciation of the cultural context.

The three pieces of research support the original thesis that culture influences the use of information (and consequently the development of information systems and

the successful application of IT) at the levels of the individual, the enterprise and the state.   Consequently, it is argued, culture needs to be an inherent component in all studies of information management, management information systems and the application of information technology. It is not an optional extra.

Furthermore, it is now apparent that, as information management becomes increasingly global, the cultural dimension, though seldom articulated to date, has become fundamentally important.   This is again true at the levels of the individual, the enterprise and the state.

Finally, we can conclude that the study of management information systems has become the study of information management. The successful application of IT is much less of a challenge than the effective use of information. That needs an understanding of the cultural context.

Some conclusions - issues in information management
In conclusion, we can now consider some of the outstanding issues in the appreciation of the cultural context of MIS studies; issues that need to be addressed by scholars and practitioners of the subject at the level of the individual, the enterprise and the state.

- state involvement in information management
The ideological underpinnings of information management have typically been ignored in IS studies to date. The mainly Western orientated literature frequently makes sweeping and unarticulated ideological assumptions: for example that individual freedom is to be preferred to state controls, that private ownership is preferable to state ownership and that open-market competition is preferable to state planning.   But totalitarian, centralist, and authoritarian regimes do not necessarily share such perspectives. Yet they may develop information systems for management decision-making that are highly successful.

 As George Ayittey, President The Free Africa Foundation wrote in the Economist June 15 1996, "an efficient and competent authoritarian state, pursuing the right polices, can lift its people out of poverty. People may be willing to give up some of their liberties and cede massive resources to the state to improve their economic lives (Chile); to combat an external communist threat (the Asian tigers); or to redeem nationalistic pride (Japan after 1945).

Issues of free speech, civil liberties, state security and control are all involved.   An unanswered question is whether free access to economic information underpins long-term economic success.   Regulation and enforcement of many aspects of information management can fall to the state, including the ownership and control of information, rights of access to information, and the privacy and security of information.   This area promises to be an important field in future MIS studies - and a fascinating one because, ultimately it is about the use of power.

- the ownership and control of information
Issues currently being faced by countries in Asia-Pacific demonstrate dramatically some of the issues that need to be part of MIS studies.

In China, with a population of over 1.2 billion people, all Internet users must be registered with the Ministry of Posts and Telecommunications (MPT).   All networks are supposed to be controlled by the MPT, using regulated portals that the ministry provides. CHINANET, the national Internet backbone joint venture between the MPT and the Ministry of Communications, may well become the world's largest wide area network.   However,the "spreading of information that would "hinder public order" is forbidden.   Xinhua the official news agency, which is under the authority of the Central Committee of the Communist Party, is one of China's principal propaganda organs.   It also has exclusive authority to regulate the distribution of economic information in China.

Foreign wire services including Reuters have been blamed for destabilising the financial markets, the Chinese authorities complaining of "aggressive reporting" of problems in its stock markets.

> "Approved foreign economic information providers will be punished ... if their information to Chinese users contains anything forbidden by Chinese laws and regulations, or slanders or jeopardises the national interests of China."

Essentially, China needs to control the dissemination of information, to uphold Communist orthodoxy and prevent opposition, particularly campaigning by exiled dissidents.   Investigative journalism is not allowed.   To quote Li Kehan, vice-director of the Ministry of Radio, Film and Television, "radio and television at all levels in China should be the tongue and throat of the Communist Party and the people of China." To reinforce their commercial advantage, the Australian News Corporation's Star TV satellite broadcasts to China withdrew the BBC World Service in 1995 and entered a joint venture with the state-owned China Central Television.

By contrast, Hong Kong with 6 million people has more Internet service providers than any Asia Pacific country except Japan. With the change of sovereignty in 1997, from a British colony to a reunification with China, the availability and access to the internet and the uses to which it is put, may prove to be the economic and political battlefield on which the contrasting ideologies of Hong Kong and China, and the reality of "one country, two systems" are fought out.

Meanwhile the overseas Chinese businesses in other countries throughout the Asia Pacific region continue to enhance their increasingly global power by international information access, using IT networks to reinforce their 'guanxi' relationships, which tend to be based on mutual respect and trust, rather than relying on contract and law.

Singapore (which has 100,000 Internet accounts for its 2.6 million people), also exercises tight controls over broadcast and print media, prohibiting anti-government comment.   A government minister commented, has said that "the information highway that passes through Singapore must be clean: Internet providers down to cybercafes must register with the Broadcasting Authority .. the influx of objectionable materials via the new electronic media, if left unchecked, will undermine our values and traditions." (George Yeo, Minister of Information and the Arts,   Singapore Times 6 March 1996)

Thailand has a high quality Internet based on its universities and technical institutions, with many Internet literate people. Fidel Ramos, President of Philippines has his own WWW page; but so does the military junta that runs Burma Myanmar. Vietnam prohibits access to the WWW, permitting only Email.

- rights of access to information
But there is the other side of the argument on the ownership and control of information described above.

The Communications Decency Act passed by the US Congress in February 1996, as part of a telecommunications control bill, attempted to ban offensive material from any net or on-line site that could be accessed by a minor, was ruled unconstitutional by a Philadelphia court in June because it conflicted with the US constitution's guarantee of free speech. Free speech and civil liberties groups had already mounted a world-wide protest campaign on the Internet opposing the anti-pornography measures in the act.

The importance of appreciating cultural (in this case the cross-cultural) differences in applying IT and developing MIS is apparent.

- privacy and security of information
The right of access by individuals to files containing personal data has been enshrined in the statutes of many Western countries. It is far from being a universal right.   Freedom of information laws, which enable individuals and organisations to access government information are available in some but certainly not all Western countries.

What is the appropriate answer to questions about the privacy versus freedom of access to information, what is 'right' in a given context, is another issue determined by culture.

Meanwhile a degree of global convergence in information systems can be seen, for example, in the mutually agreed access to share price movements between members of IOSCO, the international organisation of securities trading commissions, which includes the regulators of over 80% of the world's traded stock market capitalisation.   The global convergence of securities trading, forex trading and other aspects of financial markets further reflects this trend.   The growing recognition of international accounting standards, auditing standards and IT standards (such as the UN EDI standards) also illustrates this trend. Yet differentiation because of cultural differences remains significant.

-the future structure and style of organisations
The implications for the structure and style of organisations as a result of professional information management are legion.   Indeed, an alternative way to perceive an organisation is as an information network linked through its information processes.   In addition to corporate-wide information systems, bounded by ownership, information networks mirroring the organisational relationships linking suppliers, manufacturers, distributors, merchants, customers, finance houses and

other elements in industrial and commercial added-value networks have become significant.

At the level of the firm, it is well known that organisational changes can be facilitated by the development of management information systems. Organisations can be 'flattened', power drawn towards the centre or distributed towards the periphery, individuals can be given the opportunity to search for information relevant to their decision-making needs.   Indeed, in many industries these days, the professional application of IT is a commercial necessity as well as providing a strategic opportunity. (Retail banking ATM networks, airline reservations and operations, procurement and distribution systems in manufacturing and retailing, to name but a few)

Nor have the organisational implications of such IT applications yet been fully reached. Over 2 million copies of the program Lotus Notes Groupware, were sold in the early 1990s, to facilitate the information and communication processes prevailing in the conventional organisational wisdom of that time: team management, flattened bureaucracy, empowered workers and open communications.   In 1995 IBM bought Lotus for $3.5 billion -a record for the software industry (Economist 13 January 1996).   But now such facilities are being replaced by intranets - networks internal to companies, replicating the internet at the corporate level, running on private networks with similar network equipment and software , web server, browser and Email software for employees own PCs, user-friendly with multi-media access - linking parts of an organisation round the world, fenced off from the rest of the internet by "firewalls", allowing employees to access corporate files and communicate with each other and, in the process, significantly influencing organisational structures and styles.

Such developments are inevitably affecting the cultures of organisations.   The importance of an awareness of the cultural context of the application of IT and the management of information are self-evident.

And yet …
The underlying theoretical paradigms in the practice of information systems management and the theory building of MIS research, to date, have tended to be economic and managerial, sociological and organisational, overlaid on a basis of operational information technology and computer science. Contingency theory, organisational theories, agency theory and transactional analysis, plus the systems and expectations approaches have each provided relevant theoretical structures.   In this chapter it has been argued that it is now essential to add a cultural and cross-cultural element, not as an optional extra, but as a fundamental foundation of the subject.

The management of information systems (and the teaching of MIS) can be approached from two quite different perspectives:
- the application of information technology to organisational processes
- the satisfaction of individuals', organisations' and states' information needs.

If MIS is perceived as being essentially about the application of IT to organisational processes, then the research, writing and teaching will be about IT hardware and

software, system analysis and design methodologies and data management techniques. Decision-makers information needs can be predetermined. They can be treated as a required output. Cultural aspects will be 'outside' the system under focus.

On the other hand, if MIS is perceived as meeting the information needs of individuals, enterprises and states, then the research, writing and teaching has to be about objectives, strategy formulation, decision-making and the processes of control and accountability. IT becomes the means to the end, not the end in itself. The cultural context becomes a primary concern. Those with such a cultural orientation will see that decision-makers in different cultural contexts think and act differently and, therefore, need access to different information.

Both perspectives are entirely legitimate. Each are necessary. But they are fundamentally different in their scope, focus and content.

Of course, information technology needs to managed professionally. The level of IT investment in many organisations is now immense. But in managing information, information technology is seldom the issue that determines overall success. For many years information technology has been far ahead of the ability of top management to appreciate the strategic opportunities and threats of that technology and of operational management to perceive the organisational implications. Information is a crucial resource for individual, enterprise and state. Data, even information, may be culture free but knowledge is culturally determined. And in the end of day it is knowledge that determines the ultimate effectiveness and success of individuals, of enterprises and of nation states.

Discussion questions

1. What might the successful organisation of 21st century look like? Which companies will succeed - which fail, and why?

2. What might the consequences of the information explosion in networked communication be for the nation-state?

3. Can we better the odds that individuals of different ages, languages, experiences and cultures will be able to assimilate and use the knowledge to which they now have shared access?

(Inspired by a talk reported in The Washington Post 16 January 1996, by Dr. Charles M. Vest, President, Massachusetts Institute of Technology)

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