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Transformation towards the Knowledge Economy: An Interpretive Case Study of Policy Formation in an Asian Country

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Abstract

Various Asian governments are launching strategic blueprints to transform their countries from a production economy to a knowledge-based economy whereby the production, distribution and utilization of knowledge constitute the primary bases for economic growth and wealth creation. These initiatives are seen as crucial to maintaining national competitiveness as new information communications technologies and globalization rapidly erode traditional advantages. The processes by which these k-economy initiatives are developed and implemented are complex social political decisions but sparsely documented. In this paper we describe the context, content and process of developing a knowledge-based economy blueprint in an Asian country. In the formulation and implementation of that blueprint, we were simultaneously action researcher and reflexive practitioner, generally guided by an interpretative methodology. From the analysis, we draw implications regarding the concept of strategy, the practice of strategy and aspects of reflexive methodology in an Asian context. We re-conceptualize strategy formation as a complex process whereby a reflexive practitioner constantly revises, modifies and adapts policy propositions in the light of incoming knowledge and new information from various actors and consequences, intended and unintended; consciously evaluates the sources of authority and individual perspectives; consciously leveraging on mindsets, power relations and divergent organizational values; and accommodates as many knowledge domains and influential stakeholder interests as feasible. We propose that the effectiveness of the strategy formation process can be enhanced with an approach based on structuration theory. From a methodological perspective, a key implication is the need to distinguish between the espoused theoretical framework and the theory-in-use as the action researcher interprets the reality of the problem situation.

Keywords

structuration theory, government policy formation, knowledge-based economy, interpretive action research, reflexive practitioner, Asian developing country.

Introduction

An increasing number of countries are embracing the concept and practice of the knowledge-based economy (hereafter refer to as the k-economy). In the last five years, the US, UK, Canada, Ireland, Finland, France, Japan, South Korea, Australia, New Zealand and Singapore have articulated national positions and strategies for the development of their k-economies. Although each country defines its k-economy somewhat differently, all of these definitions revolved around the New Growth Theory of an economy based on the production, distribution and utilization of knowledge, which constitutes the primary engine of economic growth and wealth creation. More than 50 % of the Gross Domestic Product (GDP) in the major OECD economies is now based on the production and distribution of knowledge. In the US, more than 60 % of workers are classified as knowledge workers, defined as "symbolic analysts" who manipulate symbols rather than machines, and they include architects, bank workers, fashion designers, pharmaceutical researchers, teachers and policy analysts.

Developing countries, not wanting to be left behind in these developments, are also attempting to formulate policies and strategies to transform their production economies (p-economies) based on the conventional inputs of land, labour and capital into the new k-economies (Rosenberg 2002). The strategy documents produced in developing countries, however, are fairly similar to those of the developed economies, giving the impression that k-economy strategies are readily transferable across different countries. Thus, the 2002 knowledge-based economy masterplan of one Asian country defines its k-economy and the rationale for the transition as follows:

> "….k-economy is one in which knowledge, creativity and innovation play an ever-increasing and important role in generating and sustaining growth. This contrasts with the conventional production-based or p-economy where economic growth was driven largely by the accumulation of the traditional factors of production, namely, land, labour and capital. The most valuable asset in the k-economy is human capital or the pool of educated and skilled human resources, whose core competency is the ability to create, acquire and exploit knowledge….."

> "…Why is it imperative that our country makes the transition towards the k-economy? Our international competitiveness has been on the decline, as indicated in the slip from rank x^{th} in 1994 to n^{th} in 2001 in the *World Competitiveness Report*. Increasing foreign competition from countries such as China, India and Vietnam means that the country has to re-position itself in niches with distinct competitive advantages. Globalization and liberalization make local and world markets indistinguishable, and this requires the country to differentiate its offerings in the marketplace. Furthermore, as costs escalate and profit margins shrink in traditional industries, we would have to seek higher value-added to its products and services, seek new sources of growth,

> and move into both pre- and post-production stages. The development of the k-economy will enable our country to enhance its international competitiveness and sustain socio-economic development…."

The reading of strategy documents, or for that matter most government public domain documents, is generally an interpretive act that reveal to the reader as much as it conceal from him/her. The social-political dynamics that underpinned the decisions reflected in these strategy documents are not fully known to those outside the policy making bodies. Authors such as Hearn and Rooney (2002) argued that "…to provide an appropriate starting point for policy makers, we must first set out a theory of knowledge or, more specifically, of knowledge systems...and specify key behaviours of such systems….that provide insights about how policy should be formulated…". They further asserted that instead of a diminishing role, governments have an important strategic role in designing the policy systems of the twenty-first century, by virtue of the relational nature of knowledge and knowledge-based economy.

While we are in agreement with the need of prescriptive tools based on pos-industrial analytical framework for designing policy relevant the k-economy, we suggest that better prescription will need to be derived from a rich description of the contexts and processes of specific countries. In this paper, we attempt to develop an account of the policy formation processes in a developing country in Asia using a reflexive methodology, and illustrate how new concepts and theories of strategy are built that in turn provide a basis for developing and enhancing practical methodologies.

Theory and Method

In the past decade, the research literature in the area of information communications technologies (ICT) has shown much interest in the process of managing compared to earlier emphasis on technical issues of system design and development (Orlikowski etc, 1996, Walsham, 2000). One stream of work draws on social and organizational theories to analyze social, political, organizational and cultural issues in the design, development and implementation of ICT. In this paper, we draw on the increasingly influential stream of work in the area of structuration theory (Jones, 1998) as the theoretical basis. We specifically appropriate the work on structuration theory as interpreted and used by Prof Geoff Walsham and his collaborators at the University of Cambridge (Barrett and Walsham 1999, Walsham 1993, Walsham and Han 1993, Walsham 2001).

Beginning from 1989, the Cambridge group has incrementally applied at different points in time different aspects of Giddens' concepts to analyzing social and organizational dimensions of ICT. Recently, Walsham pulled these diverse strands of work, usually undertaken with his PhD students, into a coherent theoretical framework, which is summarized in Table 1 below.

Walsham interprets and appropriates structuration theory as a sensitizing devise to analyze cross-cultural work with ICT, presumably after intensive reflection of a

decade of cross-cultural work informed by a diverse repertoire of theoretical perspectives as contained in his 2001 book *Making A World of Difference : ICT in a Global Context*. In his 2001 Cambridge working paper, Walsham provides a readily understandable clarification of Giddens' concepts on the duality of structure, systems of meaning, forms of power relations, norms of behaviour, conflict and contradiction, reproduction and change, and culture. In addition, he incorporates ICT within the theoretical framework of structuration theory as follows :

> "….IS (or ICTs more generally) are drawn on *(by human actors, added)* to provide meaning, to exercise power, and to legitimize actions. They are thus deeply involved in the duality of structure…."

Table 1 : Structuration Theory and ICT (Walsham, 2001)

Concepts	Key Elements
Duality of Structure	• Structure as memory traces in the human mind • Action draws on rules of behaviour and ability to deploy resources • in so doing, produces and reproduces structure • Three dimensions of action/structure : systems of meaning, forms of power relations, sets of norms
Information Communications Technologies (ICT)	• Embody systems of meaning, provide resources, encapsulate norms • thus, deeply involved in the modalities of linking action and structure
Reproduction and Change	• Reproduction through processes of routinization • but human beings reflexively monitor actions and consequences, creating a basis for change
Conflict and Contradiction	• Conflict is actual struggle between actors and groups • Contradiction is potential basis for conflict arising from divisions of interest eg divergent forms of life • Conflicts may occur if differences affect actors negatively and they are able to act
Culture	• Conceptualized as shared views in a social collectivity such as a country or an organization • Meaning systems, power relations, behavioural norms not merely in the mind of one person • Structural properties of cultures display enough 'systemness' to speak of shared values • whilst recognizing intra-system variety

In other words, Walsham sees ICT as a medium and tools through which people leverage on meanings, power relations and values to achieve outcomes, and in so doing, reproduce or change the extant structure or organic basis of human knowledgeability. Conflict and structural contradiction are highlighted as of

considerable theoretical value in the study of cross-cultural working with ICT. Giddens (1984) defines conflict as actual struggle between actors or groups and contradiction as a structural concept:

> "…contradictions tend to involve divisions of interest between different groupings or categories of people…Contradictions express divergent modes of life and distributions of life chances….If contradiction does not inevitably breed conflict, it is because the conditions not only under which actors are aware of their interests but are able and motivated to act on them are widely variable."

Walsham takes cultural differences as an aspect of "divergent modes of life" and these may result in conflict if actors feel that the cultural differences affect them negatively, and they are able and motivated to take positive action of some sort.

The use of structuration theory as the guiding framework in this study is subjected to the usual limitations of employing and thereby emotionally fixating on a particular way of thinking and a particular way of seeing and perceiving the world, as we generally tend to see what we want to see and the empirical material largely confirming the theory. We attempt to circumvent this somewhat by emphasizing on reflexivity and the creative rather than mechanistic interaction between the theoretical framework and empirical research. Reflexivity means interpreting one's own interpretations, looking at one's own perspectives from other perspectives, and turning a self-critical eye onto one's own authority as interpreter and author. Reflexivity is particularly significant because as action researchers we are carried our own implicit social-political-ideological assumptions, and far from being detached observers.

We are informed and influenced by methodological insights from Mats Alvesson and Kaj Skoldberg's 2000 book, which provides a useful starting point to try and operationalize a reflexive methodology in intensive research. They described their book as a report on work in progress on the intellectualization of method. In it, reflexive research is defined as a qualitative methodology characterized by 1] systematics and techniques in research procedures, 2] clarification of the primacy of interpretation, 3] awareness of the political-ideological character of research, and 4] reflection in relation to the problem of representation and authority. Reflexive research needs careful interpretation and reflection. The first requires the utmost awareness of the theoretical assumptions, the importance of language and pre-understanding, all of which constitute major determinants of the interpretation. The second element, reflection, can be defined as the interpretation of interpretation and the launching of critical self-exploration of one's interpretations of empirical material, including its construction. Systematic reflection, when conducted from several levels, can endow the interpretation with a quality that makes empirical research of value.

The use of structuration theory, and possibly augmented by other theoretical frames such as complexity theory, combined with a careful application of reflexive methodology should increase significantly our ability to develop a more sophisticated understanding of the real world, which would provide a strong foundation to develop new theories of the human condition. As a matter of record, to the best of our

knowledge, based on the literature search and my research networking, we do not know of anybody else attempting to deploy the methodological package described above to address the social, organizational and cultural aspects of ICT or in the other management sciences.

In order to illustrate the application of the structuration theory/reflexive methodology package, and to assess its value in analyzing real problem situations and prescribing pragmatic solutions, we will draw on an in-depth case study of the dynamics of government policy formation in one of the Asian countries that was trying to transition to the k-economy. We shall call this country AsiaOne and disguise the case for reasons of confidentiality. We state upfront that our analysis is based on individuals' subjective interpretations of events and processes, which might not concur with the views and interpretations of the various key players who were the subjects of the case study. As in all analyses of policy, which invariably involve power relations and politics, people often attempt to rationalize their actions and conceal their motives to protect what they perceive as their self-interests.

Case Description

Context

AsiaOne is one of the more progressive nation states in Asia with a visionary ICT agenda aimed at leading the information revolution. Launched in the mid-1990s, the ICT Valley programme was a major initiative of the national ICT agenda. The ICT Valley has a two-pronged strategy to attract world-class companies to do research and development work and simultaneously for the Government to pilot a number of showcase ICT projects that would transform the machinery of Government, the way of doing business, and the everyday lives of the people of AsiaOne. While the senior managers of the ICT Valley has regularly reported on the increasing number of world-class companies from the developed countries setting up shop in the valley and of successful local technopreneurs created in the valley, by 2000, senior technocrats in AsiaOne were considering ways to learn from the pilot ICT Valley and turn the whole country into a technology-based hub. A study was undertaken by a government think tank and this resulted in the launching of a National Knowledge Economy Masterplan in late 2002. The new national strategy aimed to make a paradigm shift from a production-based economy (p-economy) to one in which knowledge, creativity and innovation would play a key role in economic and social development.

A week after the announcement of the national strategy, a state government in AsiaOne launched a pioneering k-economy blueprint to transform the state from a manufacturing hub to a knowledge hub in the Asian region. We shall call this state IntelligentState to reflect the stated intention of its government to make the state fully wired with electronic intelligence by the turn of the decade. We next provide a brief description of the contents of IntelligentState's K-Economy Blueprint, and then describe the processes by which the blueprint was produced and its current early

implementation stage. We were action researchers in the last two years, simultaneously functioning in a dual capacity as consultants and policy practitioners. We hope to track its implementation in a longitudinal fashion in the next few years to report on its successes, intended outcomes and unintended consequences.

Content

Unlike many other strategy documents of the Government of AsiaOne, IntelligentState's K-Economy Blueprint (hereafter refer to ISKE Blueprint) was a public domain document.

Its vision statement read as follows :

> "IntelligentState will be a world-class competitive k-economy and a pervasive k-society through knowledge enrichment and ICT excellence within the context of its national vision statement"

The justification statement for the new strategy was a message of urgency positioning IntelligentState at a "defining moment and critical turning point in its history and development efforts". The business case was the diminishing competitiveness of IntelligentState caused by new technologies, competition from lower wage countries in the region, liberalization pressures from WTO, APEC and AFTA, and globalization. These factors were said to erode the profitability of IntelligentState's traditional strength in manufacturing, and the turnaround strategy was the seamless transition to the k-economy.

The targets to be achieved within a ten-year period cover all aspects of business, education, government, society and the individual, namely,

- All the people in IntelligentState will have access to information and knowledge, education, entertainment and culture, goods and services from everywhere. With affordable ICT and accessibility to the Internet, knowledge and digital equities will characterize the population of IntelligentState.
- The people of IntelligentState will practice life-long learning and are life-long employable. With an innovative education and training system, high quality knowledge workers who are adaptable, creative, flexible and responsive will be produced for the workforce.
- E-business will be the prevalent mode of conducting business transactions in all sectors of the economy.
- The government of IntelligentState would be a lead role model of electronic good governance, through the implementation of a fully-networked e-

government and delivery of client-focused services that emphasize convenience, speed and value.

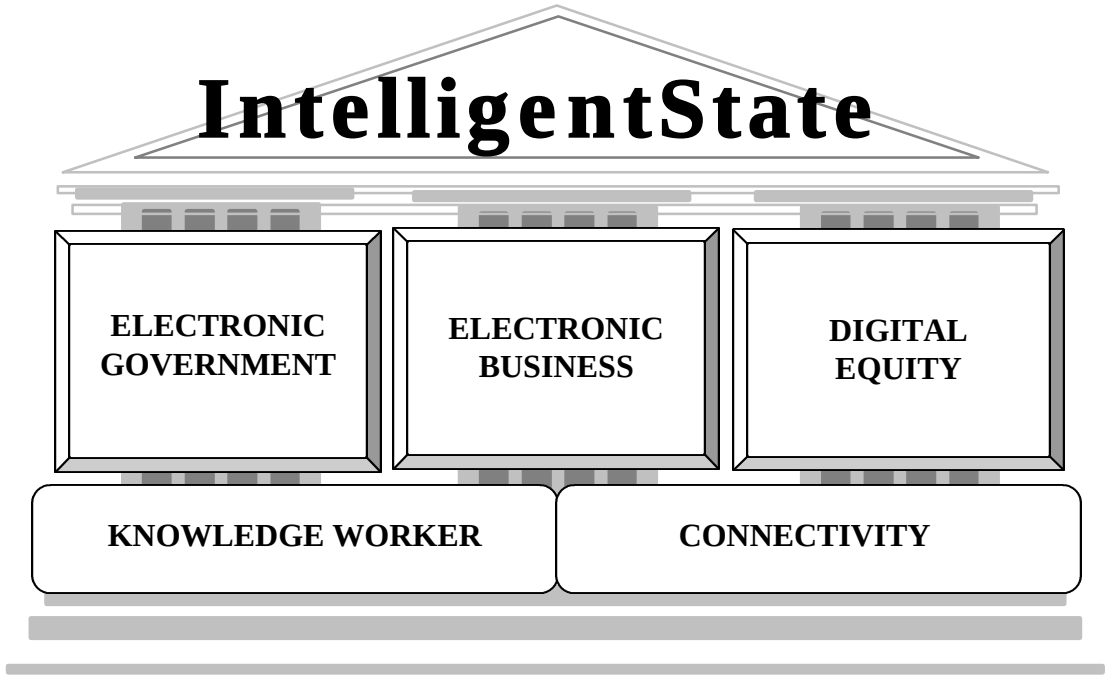
- IntelligentState's rich cultural heritage will be kept vibrant and dynamic through online access and multimedia technologies.

The respective roles of the government, the private sector and the community were defined, with the government playing an enabling role, the private sector in the vanguard driving the development, and the community sector a full partner, as the stated approach is one of inclusiveness of all affected parties in planning and implementation.

The strategic goals were:

- ensuring equitable and affordable access to information and knowledge,
- producing a critical mass of quality knowledge workers,
- creating the learning economy and organizations,
- promoting the widespread adoption of e-business,
- moving up the manufacturing value chain towards the more knowledge-intensive pre-production and post-production processes,
- e-enabling the government machinery for efficiency, effectiveness and customer experience,
- eliminating the knowledge and digital divide for social sustainability, and promoting local content development.

Five strategic initiatives were formulated to achieve the vision, targets and goals, depicted and briefly outlined below.



The knowledge Work and Connectivity Flagships were the basic building blocks of IntelligentState's k-economy. The Knowledge Worker Flagship aimed to ensure that sufficient knowledge workers would be trained, retrained and recruited to power the k-economy, beginning from the schools and extending to a life-long journey of learning. The action plans focused on upgrading knowledge and skills to effect the k-economy transition; promoting e-learning and life-long learning at all levels of society; and adding value to existing e-learning initiatives in schools. The Connectivity Flagship ensured that the IntelligentState would be fully connected by the mid-term of the programme, with reliable, fast and affordable broadband network infrastructures and ICT products. The action plans focused on upgrading connectivity to an intentionally competitive level and develop IntelligentState into a full-fledged intelligent state.

The E-Government Flagship would reinvent the entire government, with its structure and mindset transformed through a fully networked government machinery that was client-focused, efficient and transparent. The E-Business Flagship is the pillar for private sector participation. Under this flagship, the manufacturing sector would be expanded into higher value-added activities, e-business and e-commerce systems would be deployed in all sectors, and new k-based industries would be created. The Digital Equity Flagship would bridge the knowledge and digital divides through the creation of k-communities and promotion of local content development.

Under these five flagships, a total of nearly 30 programmes were outlined for implementation over three phases during the ten year period.

The ISKE Blueprint was a compelling strategy document even by international standards, available in book form, CD format and at the government website. It was launched in a ceremony attended by some 800 people, and made IntelligentState the first state government in AsiaOne to articulate a strategy for the k-economy. Subsequently, other state governments declared similar strategic intents.

Processes

A reading of the ISKE Blueprint would reveal that IntelligentState had a clear understanding of where it was now in relation to national and international developments, a compelling vision of where it wanted to be in the next ten years and how it was to get there. However, the processes, both the institutional and social organizational forces, that both enable and constrain the production of the ISKE Blueprint can barely be discerned from the public domain document. A rich description of the institutional and social organizational dynamics not only enables process improvement or methodology to be designed for increasing the effectiveness of policy formulation but, importantly, provides an insight into estimating the probability of implementation success. In the next sections, we provide a description of the organizational mechanisms and the structures of meanings, power relations and values that various actors worked with to generate the ISKE Blueprint.

Organizational Mechanisms

In late 2000, the Governor of IntelligentState decided to re-activate the state-level ICT coordinating mechanism, which was the administrative arrangement recommended by the National ICT Board in the mid-1990s to all state governments in AsiaOne for managing ICT projects. For some time now, the Governor of IntelligentState has recognized the importance of ICT at the state level, no doubt seeing the various mega ICT projects that have been undertaken on a grant scale in the ICT Valley.

Modelling along the national thrust areas defined by the National ICT Board, five working committees were set up to address specific themes on e-economy, e-services, e-learning, e-community and connectivity. These working committees reported to the Central ICT Committee chaired by the governor himself. Membership of both the working committees and the central committee include ICT-related national agencies, such as the agencies responsible for the ICT Valley, national ICT R & D, government computerization, communications, and the national k-economy masterplan. In addition, major industry players were also included. The total number of members was more than 100.

In the year 2001, the Central ICT Committee met every two months to consider the progress of the five working committees. The working groups were charged with developing the strategies and action plans in their respective areas, which would be pulled together into an ICT blueprint for the whole of IntelligentState. This latter task of coordinating the production of blueprint was assigned to a blueprint committee comprising of the secretaries of the five working groups and several individual members.

Structures and Actions

In mid-2001, the blueprint committee chairman, a local university professor circulated a template for the production of the working group reports. These terms of reference provided 3 templates, namely the strategy, critical factors and context/content/process templates. The strategic template contained the standard SWOT analysis, short/medium/long term programme and project design and redesign, and implementation plan in terms of targets, measurements, institutions and creative reconstruction of organizations. The critical factors template operationalized the Jeffrey Sachs Harvard e-development model and outlined variables that each working group are to initially focused on and must minimally addressed in their reports. The context/content/process was a mechanism to explicitly link the contents of the strategies and action plans to overall blueprint objectives and institutional players.

By the third quarter of 2001, the working committees were sending in their reports. Each working committee defined their own terms of reference and generally each report reflected the perspectives of the chairpersons and key driving members. Thus,

the e-learning working committee produced a project proposal for a large-scale e-learning integrated project to be driven from the chairman (who was dean of computer science)'s university. The e-economy report was a macro-industrial analysis of e-commerce and e-business, and why IntelligentState must make the transition to the new economy. This committee, chaired by the CEO of a large multi-national, comprised largely of businessmen, and they are trying to understand the need to embrace the new economy concepts in their daily operations. The e-services report collated the existing and planned projects of the government computer centre. A system analyst from the national agency responsible for e-government provided the inputs pertaining to directions of national plans. The e-community working group was chaired by a government minister, and they produced a project-level proposal and budget for the establishment of several pilot e-communities. The connectivity working group was chaired by the head of the government agency for development and supported by members from ICT companies. A status report on connectivity in IntelligentState was generated, with a list for recommendations for changes at the national and state levels.

The process of pulling the disparate reports into a cohesive whole was the task of the blueprint lead writer. Using the framework he designed earlier, he extracted from the reports those parts that clearly made sense to him. A slide presentation was made to the Central ICT Committee in December 2001, which drew criticisms on format and contents. A text version was circulated in early 2002 and the blueprint working committee meeting with 17 members convened to discuss the report. The revised version was then again circulated to the Central ICT Committee members but only one working committee secretary submitted a commentary. In a Central ICT Committee in February 2002, it would seem that only the Governor himself read through the report word for word, when he asked for amendments to the blueprint report.

Even a revised draft of ISKE Blueprint was being worked on, one of the working committees was already pushing for project implementation and attempting to get the Central ICT Committee's approval for projects. At Central ICT Committee meetings in April and June, industry partners in the project were making presentations and hoping to get the governor's go-ahead.

By April, however, a major change in the organizational structures took place, when the blueprint chairman recommended that the working groups be reconstituted into steering groups. The consensus of opinions among the blueprint committee members were that the working committees are not functioning at the working level expected, with poor attendance at meetings, let alone allocated time for fact finding, preparing project proposals and writing reports. The chairmanship of the new steering groups were appointed on the spot during the same Central ICT Committee meeting, without a premeditated consultation. These were later to have several unintended consequences. Three of the new steering groups have a politician helming them, and the previous working committee chairmen now becoming the co-chairs. In AsiaOne, as in most Asian countries, politicians form a powerful elite, command formal respect, and have both a symbolic and real mandate for power and influence.

The new steering groups, which now have changed names with a more catching sound bites, started to work on their terms of reference. In June, the blueprint committee submitted the post-blueprint implementation strategy. A new Technical Group is being instituted, which would vet through the projects on their technical and economic merits, before presenting them to the Central ICT Committee for approval. This new institutional mechanism was aimed at overcoming the ad-hoc manner in which projects were presented for discussion at the Central ICT Committee meetings, agreed upon at one meeting and only to be reversed at subsequent meetings.

During the next several months, the new steering groups, with their reconstituted memberships were defining their next steps. Broadly guided by the draft blueprint, the steering groups were attempting to move projects into implementation. Most of these projects were not new, but have been worked on at least during the period of the blueprint preparation. For example, an e-library project was submitted for national project funding and rejected but now revised and re-submitted for state-level funding. Various e-business projects were initiated at the national level, with funding either from the national government or private sector, but now subsumed under the umbrella of the blueprint. An e-learning project of a private technopreneur, which has not taken off since 1999, was reformatted as an e-learning centre with state funding. The e-community pilots were at an advanced stage of preparations.

In September 2002, AsiaOne see the unveiling of the National K-Economy Masterplan in a modest ceremony, after a long wait of more than two years since it was first announced by the President. Nine days, later, on a Chinese auspicious date, IntelligentState became the first state to have a state-level strategy and action plans for the k-economy.

Analysis

As interpretive action researchers, the boundary between description, analysis and prescription is a blur. All three are interpretations, albeit at somewhat different levels. We present below an analysis, which is our interpretation of the structures and actions in relation to the creation of the ISKE blueprint.

Structures

Throughout the production of the ISKE Blueprint, broader structures were drawn upon to justify the rationale for the transition to the k-economy, allocation of resources and responsibilities, and ensuring alignment with national and state policies.

The committee structure, both the Central ICT Committee and its working committees, was a common organizational mechanism used in AsiaOne for policy formulation purposes. The Central ICT Committee, when it was revived in early 2001, was slightly

different from the IT committee first set up in the mid-1990s. It has a new dimension added in – that of knowledge, so that the formal label became K-ICT. K-ICT read as knowledge minus ICT, which the governor himself noted when he was preparing for his speech for the ISKE Blueprint launching ceremony and he suggested at the ceremony that it should be changed to K+ICT to better reflect the coverage of the strategy.

But the scope of coverage, both the k-economy component and the ICT component in the Blueprint, was defined by incrementally in various working committee meetings. Every where in the country, the ICT community was talking about the national ICT Valley projects and the k-economy. IntelligentState, being geographically isolated from the center stage of ICT initiatives, was learning the new terminologies and technologies of the new economy. For much of 2001, the working committees were functioning in a brainstorming mode. Meetings after meetings were devoted to clarifying concepts such as knowledge, k-economy, e-learning, e-commerce, e-business and e-government.

In pulling together the different working committee reports, the blueprint chairman has practically work alone. He and one of his team members were the only paid parties and hence the responsibility of drafting fell onto them. The structure and contents of the blueprint presentations and of the final report actually captured only a small proportion of the contents of the working group reports. His explanation was that given the different type of contents contained in the working group reports, some containing details up to the project level while others without any project-level proposals, he would have to write a report consistent across the five strategic thrust areas. The final blueprint was a general strategy document for most of the parts, except for the e-government component with well-defined and structured projects because these are often replicates of national mega projects already being tried and tested under the national ICT agenda.

Actions

The chairpersons of the various working committees have a major influence on the way each committee went about defining the type of work. The e-economy working committee focused on e-business as the chairman was from a multinational corporation in chip manufacturing currently implementing various types of e-business and knowledge management projects and hence naturally perceived e-business systems as the wave of the future. The e-community chairman was a politician, and getting the project off the ground and launching it in a ceremony was an important demonstration of his contribution to the grassroots. Strategy was simply an academic matter. The e-government chairman headed the government administrative machinery and e-government applications were new to him. By default, the report was compiled by the government computer centre staff. The e-learning working group chairman was dean of computer science in the university in IntelligentState and he re-combined previous proposals he has worked on into an integrated new whole. The connectivity chairman was dependent on members of his committee, mainly ICT vendors and engineers.

Finally, the blueprint committee chairman was a university professor with a background in ICT strategy and organizational transformation, and who have been involved in policy projects at the national ICT R & D organization, the ICT Valley and his own university. But being an academician, he has a tendency to systematize and to flesh out theory, in this case structuration theory ! It is little wonder that the ISKE Blueprint, and other previous AsiaOne's government documents, contained explicit references to issues of meaning systems, power and resource relations, and value systems.

The ISKE Blueprint can be considered both a top-down and bottom-up document. It was noted earlier that during the 18 months period of its production, existing and new projects were being championed by various stakeholders and these got grafted into the blueprint document. There was no grand design on the portfolio of projects, neither would it be possible for the blueprint committee or central ICT committee to draw up the project portfolio. Formulation and implementation occurred concurrently, with sources of innovations and new projects coming from the national government, international agencies and multinational corporations. The chairman of the central ICT committee, being the head of government, also means that both strategy and projects would have to be seen politically viable. Indeed, he was extremely realistic about what is feasible and realizable given the resources at his disposal. It would be politically disastrous to launch an overly ambitious project, found that its achievement fell short of expectations and thereby giving ammunitions to his political opponents. The ISKE Blueprint document, seen from these vantage points, can be considered a patchwork and a template for both change and continuity.

An analytic summary is provided below:

Table 2 : Structuration Analysis of ISKE Blueprint Formation

Analytic Devices	Key Aspects
Duality of Structure	• Regional competitive pressures to the state's traditional manufacturing-led strategy necessitate a review of developmental options. The k-factor provides a new structure of signification • The Central ICT Committee, chaired by the governor and have leaders of key agencies and institutions in its membership, becomes the strategy formulation and implementation coordination mechanisms • The focus on k-economy and ICT resonates with national strategic directions, is politically correct, and forms the structure of legitimization
Knowledge and Information Communications Technologies	• Knowledge and ICT become the new variables underlying state socio-economic development, embodying a new system of meaning for enhancing significantly the competitive advantages of the state, encapsulating norm of aligning with the stated national strategic intent regarding the k-economy, and providing a new engine for wealth creation through reengineering and k-intensification
Contradiction and Conflict	• The committee structure ensures that the views of multiple players are represented • But it also means that influential players from diverse positions and platforms could influence policy to their own organizational interests • Working groups produced reports that support the different perspectives and, in some cases, predetermined projects of their leaders
Dialectic of Control	• State-level policy formulation for the k-economy is a top-down and bottom up, learning and re-learning process • The committee structure facilitates drawing from the knowledge domains and perspectives of more than 100 persons • Knowledgeability and interests of influential players becomes a critical determinant of the design, diffusion and implementation of policy
Reproduction and Change	• The production of the blueprint spanned more than 18 months from inception to launch. During that period, strategy formation and implementation occurred concurrently • In addition to new projects initiated by the state and federal governments, MNCs and international agencies, existing projects in the state were re-conceptualized and re-framed to retrofit with the emerging strategic map • The final blueprint document is a historical account of a stream of incremental decisions across time, and a template for change and continuity

Reflexive monitoring of actions, in particular, actions and decisions undertaken by powerful players was endemic to the way the different aspects of policy and strategy were crafted. Three significant points in history can be discerned, namely, the set up of the central ICT committee and its five working committees, the restructuring to a purportedly steer function for the committees, and adding in the technical committee to "take over" from the blueprint committee now that the formulation phase is over and implementation began. The trigger for the change from the working committees to steering groups was the perceived little interest shown by the various committees, one of which rarely met. In addition, some industry members tended to walk away when they perceived that there was limited opportunity of getting projects from the government unless they are from government companies. The impetus for the second change, namely, the formation of the technical committee came from the experience of project proposals being presented to the central ICT committee for approval. In AsiaOne, final decisions on project tended to be more a political decision rather than based predominantly on technical economic rationale. Industry players would want to connect directly to politicians. In the case of IntelligentState, the central ICT committee was chaired by the governor and getting the ears of the governor was the goal of many a businessman. This change came about, surprisingly, not from what is standard project management practice in the government machinery of AsiaOne, but from unexpected project presentations for approval during the central ICT committee meetings.

Conclusions

The foregoing case description and analysis of strategy formation and implementation of a macro-level blueprint for k-economy and ICT illuminates important aspects of the dynamics of strategy not presented in the traditional strategy literature. Most of the literature on strategy, both the descriptive and prescriptive, tended to be based on a positivist mode of thinking. Where the interplay of formulation and implementation was captured in the concept of "formation", that conceptualization was of a sequential process, and not the complex process of muddling through, learning and relearning, and ad-hoc decision making we witnessed in our case study. The role of reflexivity of players in altering strategy positions and project decisions is a critical explanation of outcomes. We can now re-conceptualize strategy formation as a complex process whereby a reflexive practitioner constantly revises, modifies and adapts policy propositions in the light of incoming knowledge and new information from various actors and consequences, intended and unintended; consciously evaluates the sources of authority and individual perspectives; consciously leveraging on mindsets, power relations and divergent organizational values; and accommodates as many knowledge domains and influential stakeholder interests as feasible.

In a related study of developments in Southeast Asian countries, Ahlering and Smallman (2001) examined reflexive impacts of market and economic change on state institutions and policy. Our analysis of structures and actions in policy formation suggests that "altered states" are better understood as outcomes of structurational processes whereby reflexive actions of various of various stakeholders who shape and reshape policies and create and recreate institutions according to their perceived

interests. Reflexive institutional theory may have emphasized the role of institutional forces at the expense of human agency. A description of Asian ICT initiatives in *Newsweek, December 2002 – February 2003* presented Asian projects as "… at best hollow replicas of the real Silicon Valley, mere real-estate developments… high-technology-related sweatshops where cheap local labor does simple programming or call processing for foreigners. **But there's no sign that any Asian country is rethinking** *(emphasis added)*…". Evidently, from our case description of an Asian country, such a sweeping statement failed to consider the reflexive monitoring of policies and their implications done by skilful actants and players as they constantly rethink, reinvent and recreate their strategies and projects to their best interests.

The flagship journal, *MIS Quarterly*, has devoted a whole volume (March 1999) to the critical issues of rigor and relevance in information systems research. A major difficulty of conducting intensive research is gaining access to data in the organization. Thus, Walsham and Sahay's paper addressed how accessibility was improved by the fact that they presented themselves as coming from a famous university, the University of Cambridge. They also referred to limited results from their ad-hoc intervention in the implementation process. In the context of Southeast Asian countries, access is an even greater problem given the security regimes there where most government documents are either labeled "confidential" or "government secrets". Our experiences suggest that action research is a useful way to acquire and share knowledge as well as pushing forward the impact frontier of management and organizational research.

The development of the ISKE Blueprint was an exercise where we appropriate structuration theory as a sensitizing device to gain an understanding of the systems of meanings, power relations and values, with a view to producing a strategy that is owned by the stakeholders in that country. While we were necessarily limited by the espoused use of one particular theory and therefore one window to a complex reality, we have gained from acquiring experiential knowledge of structuration theory applied, appropriated and focused on a practical problem situation. We propose that structuration theory offers potential for the development of practical approaches and tools for the effective management of organizations. On a methodological point, other implicit theories might well that influence our thinking on particular topics and impacted our decision making as policy practitioners. A greater measure of reflexivity on the part of the interpretive action researcher is required in order to generate more powerful theory for enhancing practice.

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