On confronting some of the common myths of Information Systems strategy discourse: towards a revised framework[1]

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Abstract

Over the relatively short history of Information Systems planning and strategy[2], a number of general principles have arisen that are often taken as being axiomatic. Three such principles that have appeared in the mainstream literature include:

- *alignment*: ICT systems should align with the business strategy;

- *competitive advantage*: ICT systems can provide a firm with an advantage over its competitors, and

- *knowledge management*: ICT systems can and should be a repository of an organisation's knowledge resources.

I shall question each of these 'self evident truths' with a view to developing an alternative perspective. This perspective focuses more on the process of *strategising* rather than on the outcome of the strategy process: the strategic plan. I argue that benefit is to be gained from a more inclusive, exploratory approach to the strategy process. This perspective is set against the common view, which is concerned more with exploiting the potential of ICT systems for business gain. An attempt at synthesising the arguments will be attempted, utilising concepts of architecture and infrastructure (Star & Ruhleder, 1996), of ambidextrous organizations (Tushman & O'Reilly,1996), of organisations as knowledge systems Tsoukas, 1996), and of communities of practice (Wenger, 1998) – all with a view to developing a more inclusive information systems strategising framework.

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[1] This paper builds on and extends arguments first presented in Galliers & Newell (2003) and Galliers (2004); a revised version will appear as Galliers (2006).

[2] Early academic literature on these topics dates back to the work, e.g., of Young (1967); Kriebel (1968); McFarlan (1971), and Lincoln (1975).

1. Background

I wonder if we could contrive … some magnificent myth that would in itself carry conviction to our whole community

Plato: *Republic*, Bk 3; 414

In the above quotation from Plato's *Republic*, the word 'myth' is sometimes translated as 'the noble lie'. Whether the myths – or lies – common in the mainstream treatment of Information Systems strategy are noble or not, deliberate or not, I'm uncertain. Whether the misrepresentation of the field of Information Systems as being uncritical that is found in much of the critical management and organizational behaviour literature is deliberate or not, no matter. Irrespective, these myths – let's call them misconceptions – certainly need to be confronted. This is the purpose of my contribution to this conference.

The paper is structured as follows. I shall first consider the myths of alignment, competitive advantage and knowledge management (systems). Arising from these considerations, I shall conclude with a synthesis of the arguments that leads to the development of an holistic framework – a kind of Weickian 'sensemaking' device – for information systems strategising.

2. Alignment

A central plank on which much of Information Systems (IS) strategy theory and practice has been built is the concept of alignment. For example, almost thirty years ago, McLean and Soden (1977) compared the theoretical need for a "strong link" between the business plan and the Information Systems plan with the then current practice. They found that in less than 50% of cases in their US study was there this strong link. A similar figure was reported by Earl (1983) in the UK. In later work, Earl (1989) makes the important distinction between an Information *Systems* strategy and an Information *Technology* strategy. He notes that the Information Systems strategy should be concerned with identifying what information is needed to support the business, and what information services need to be provided. In other words, the Information Systems strategy is demand-oriented. Conversely, he sees the Information Technology (IT) strategy as being supply-oriented. It demarcates what is and will be available in terms of IT infrastructure,

applications and services. His argument is that these two aspects of IS/IT strategy should be aligned. Other proponents of alignment include, for example, Parker, *et al*. (1988), MacDonald (1991), Baets (1992), Henderson and Venkatraman (1992), and Peppard & Ward (2004). These different perspectives on alignment make a telling point: what is being aligned with what? The examples given here refer to alignment between the business and IT strategies; between IS and IT strategies, between business performance and IT acquisitions; between the internal and external environments, and between Information Systems capability and organizational performance.

While the alignment concept may be intuitively appealing, an issue that has remained relatively unchallenged and unquestioned is how to align ICT that is relatively fixed, once implemented in an organisation, with a business strategy and associated information requirements that are constantly in need of adjustment, in line with the dynamic nature of the organisation's business imperatives.[3] Despite the useful distinction made between IS and IT strategies, Earl's (1983) model, for example, is relatively static and does not account adequately for the *changing* information requirements of organisations, in line with a *changing* business strategy. While a subset of those requirements will doubtless remain relatively constant over time, the dynamic nature of the competitive, collaborative and regulatory environments in which organisations conduct their business, dictate that constant and careful attention should be paid to the ever-changing nature of information need. In addition, and as I have pointed out elsewhere (Galliers, 1991; 1993; 1999), information is needed to *question* whether an existing strategy continues to remain appropriate, given the changing environmental context - *external* considerations in other words - and lessons learned from the unintended consequences of actions taken and IT systems implemented (Robey & Boudreau, 1999) - the *internal* considerations.

This issue leads us to the conclusion that information itself is a medium through which alignment might take place, and that this might usefully be perceived to be – at the very least – a two-way process: 'top-down' and 'bottom-up'. Indeed, this is implied by Earl's

(1983) model. I say "at the very least" a two-way process because, as indicated above, alignment between the internal and external environments is an additional dimension to be incorporated into the alignment debate. Note, however, that from the perspective that information is the alignment medium, the focus is on such artifacts as technology, the strategic plan, and bottom-line business benefit. There are, however, those whose approach is more focused on *exploration* rather than *exploitation* (cf. March, 1991). The former approach is otherwise known as coming from the processual school (e.g., Whittington, 1993), being more concerned with the process of strategising than with the strategy itself.

This brings us to the issue of *emergence* – a topic of debate in the business strategy literature for the past twenty years or so (e.g., Mintzberg & Waters, 1985). In practice, Information Systems strategy approaches tend to be based on a rational analysis of need – either in response to an extant business strategy, and/or an analysis of current ICT capability – or in a proactive manner, based on a 'clean slate' approach. With respect to the latter, the argument was essentially that revolutionary change would lead to 'order of magnitude' business benefits (Hammer, 1990; Davenport & Short, 1990; Venkatraman, 1991; Davenport, 1993). The approach was based on identifying and streamlining key business processes and key customer requirements, and then on identifying how ICT might support (and often automate) these processes and requirements, with a view to improving efficiency and effectiveness, and cutting costs. The approach involved quite some risk (Galliers, 1997) and often led to what was euphemistically called 'downsizing', with many middle managers being required to leave the company. This had a consequent, unintended (cf. Robey & Boudreau, 1999) deleterious effect on organisational memory and available expertise (Davenport, 1996; Galliers & Swan, 1999).

But what of innovation and serendipity? As indicated above, there is a school of thought that argues for the *emergent* nature of strategic processes. In the field of Information Systems, Ciborra used terms such as bricolage (after Lévi-Strauss, 1966), drift and

[3] Sabherwal, *et al*. (2001) being an exception – these authors refer to the concept of punctuated equilibrium in noting the natural tendency of organisations' Information Systems strategies and business strategies

tinkering (Ciborra, 1992; 2000; 2002) to propose a more incremental, ad hoc approach to strategising. He argued that even in situations where strategic advantage had been gained from the astute application of ICT, the resultant gain was by no means always expected and in no way pre-ordained. Rather, the organisations concerned had benefited from creating an environment – or infrastructure – in which innovation might emerge. The approach he advocated smacks of *playfulness*. Others see benefit in combining incremental and radical change. Tushman and O'Reilly (1996), for example, speak of 'ambidextrous' organisations, while He and Wong (2004) confirm this hypothesis in a study of more than two hundred manufacturing firms (see also Gibson & Birkinshaw, 2004).

All in all then, the question of alignment is a vexed one. I posed the question "alignment with what?" earlier. There is the question of "alignment with whom?" in addition. Given the advent of inter-organisational systems, and more so, of the Internet, alignment is also presumably required along the virtual value chain, with relationships with suppliers and customers, for example, needing to be taken into account. It is in such circumstances that we note the need for human interaction, rather than an almost total reliance on rational analysis of *organisational* need or on ICT per se. As will be argued in the context of knowledge management, there is a need for 'boundary-spanning' (Tushman & Scanlan, 1981) activity, for understanding, and trust (Newell & Swan, 2000), and the natural development of 'communities of practice' (Brown & Duguid, 1991; Lave & Wenger, 1991) – both within organisations and externally – in order for new knowledge to emerge.

But let me conclude this discussion regarding the contentious issue of alignment, as a means of providing something of a link between this discussion and the discussion that follows on ICT and competitive advantage. We have seen that alignment has been considered from different perspectives – alignment between 'what' and 'whom' are key questions. There is a more basic point to consider here though, and that is the conceptual link that appears to be missing between what is after all a conceptual business strategy

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falling in and out of alignment over time.

and a physical, technological artifact. I earlier pondered whether the missing ingredient might be information, and there is certainly a reasonable argument here. In addition, however, it should be remembered that organisations often comprise many technologies and many – often dispersed – individuals[4]. Increasingly, these individuals are 'organised' on a project-by-project basis, thereby adding increased dynamism to the mix, and compounding the issue of alignment still further. Hansen talks of the need for weak ties across organisational sub units. Gheradi and Nicolini (2000) call for the establishment of safety for individuals to form communities of practice for sharing understanding and knowledge. The processes of developing weak ties and safe communities are learned – and these learning processes are as important as the content knowledge itself (Newell, *et al*., 2003).

3.   Competitive Advantage

Considerable attention was paid in the 1980s and 1990s to what became something of a Holy Grail of Information Systems – the gaining and retention of competitive advantage from the astute and proactive use of ICT in and by organisations. ICT "changes the way you compete" noted one venerable proponent of the cause (McFarlan, 1984). Later, during the 1990s, and as indicated above, radical business transformation on the back of business process change – and enabled by ICT – was all the rage (Hammer, 1990; Davenport & Short, 1990; Venkatraman, 1991; Davenport, 1993). But rage of a different kind soon ensued and the bubble burst as the millennium dawned. Why was that? There are many answers to this question of course, but let me highlight two of them. One relates to the purchase of so-called 'best practice' solutions, such as Enterprise Systems, off-the-shelf. The other relates the question of sustainability.

It was always the case that ICT in and of itself would not provide a firm with competitive advantage, despite the more popular press claiming this to be the case. And this is certainly even more the case these days with the commoditisation of ICT. The advent of

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[4] Indeed, it is instructive in this context to recall that the Department of Organisation, Work & Technology in the Lancaster University Management School was known formerly as the Department of Behaviour *in* Organisations (my emphasis), rather than by the more usual term, Organisational Behaviour.

the Internet and Enterprise Systems has seen to that. What is perhaps surprising is that we are still treated to claims of 'best practice' solutions (sic.) as if there were no contradiction between an advantage to be gained over others by the purchase of a 'solution' that could be obtained just as easily by those same competitors, from the same vendors! Thus, vendors of off-the shelf 'best practice' Enterprise Systems make the implausible claim that advantage will ensue with the purchase of a technology and services that are equally available to one's competitors.[5] But there is more: this so-called 'best practice' technology – this readily implementable 'solution' – also turns out to require on-going support and consultancy.[6]

Even in the 1980s, it became clear that there was an issue of sustainability that had to be addressed. While there *may* have been first mover advantage from the purchase of new technology, the lead gained needed to be sustained over time (e.g., Porter, 1985; Ghemawat, 1986; Hall, 1993: Suarez & Lanzolla, 2005). And it was Porter who provided something of an answer to those who proclaimed advantage from the technology alone (Porter& Millar, 1985). The important point he raised at that time was that it was the *use* made of the technology that mattered – it was *information* that could provide the advantage, not the technology. Later, others joined the fray. Senn (1992), for example, echoed the later thoughts of Ciborra and others in criticising the very concept of strategic

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[5] For example: (i) "Oracle ROI Series studies document the quantifiable values and strategic benefits of Oracle-enabled business transformations." (http://www.oracle.com/customers/index.html); (ii) "You've stretched every budget and trimmed every expense. Or have you? SAP solutions give you real-time visibility across your entire enterprise, so you can streamline your supply chain, bring products to market faster, get more out of procurement, and eliminate duplication of effort. SAP is a world leader in business solutions, offering comprehensive software and services that can address your unique needs." (http://www.sap.com/solutions/index.epx).

[6] For example: (i) "Oracle Consulting builds creative solutions for modern businesses. Drawing on industry best practices and specialized software expertise, Oracle consultants help you assess your current infrastructure, create your enterprise computing strategy, and deploy new technology. With Oracle's flexible and innovative global blended delivery approach, we assemble the optimal team for your organization by matching the right expertise, at the right time for the right cost in every phase of your project. Whether you have a new Oracle implementation or a system upgrade, Oracle Consulting helps you face today's most complex technology challenges and increase the financial return on your Oracle investment." (http://www.oracle.com/consulting/index.html); (ii) "Ensuring the value of your SAP investment takes more than software. It takes SAP Consulting -- and the expertise and skill we've gained from 69,000 implementations over 30 years. With more than 9,000 consultants, plus a global network of 180,000 certified partners, SAP Consulting can provide the depth and breadth of coverage your business demands." (http://www.sap.com/services/consulting/index.epx)

Information Systems, and later still, Land (1996) questioned the basic premises on which the BPR movement was built.

What is perhaps both surprising and disappointing about the faddishness of much of the literature on Information Systems strategy is that many key lessons were soon forgotten as a new technology or movement emerged. Thus, for example, Leavitt's (1965) argument that organisations could usefully be viewed as complex socio-technical systems, comprising four elements – objectives, structure, technology and people – seems to have become lost in the excitement, the *zeitgeist*, if you will. The focus in the age of BPR was primarily on ICT and processes, and in the age of Enterprise Systems, it appears to be primarily on a technological architecture that actually *dictates* how processes should be undertaken.[7] Even one of the founding fathers of the BPR movement proclaimed that it had become "the fad that forgot people" (Davenport, 1996) – of which more in the section on knowledge management.

With the emergence of the Internet and e-business, again we are confronted with considerable hyperbole, notwithstanding the bursting of the dotcom bubble. Again, we have been treated to many arguments that another new technology would fundamentally change the basis of competition. In his compelling *Harvard Business Review* article, Porter (2001) refutes any such suggestion. Porter sees the Internet as something that complements rather than cannibalises organisations and organisational ICT as we have come to know them. As I have noted previously (Galliers, 2004; 254), "while some have argued that 'the Internet renders strategy obsolete … the opposite is true … it is more important than ever for companies to distinguish themselves through strategy' (Porter, 2001; 63)". While Porter sees the Internet as just another means of doing business, opening up a new channel, he makes the point that it is likely to increase competition and make it *more* difficult for companies to sustain their competitive advantage. Thus, in his view, ICT in and of itself, rather than being a force *for* competitive advantage, becomes a force *against* competitive advantage. He goes on to argue that "only by integrating the

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[7] Two special issues of the *Journal of Strategic Information Systems* are devoted to providing insights into the contextual issues of Enterprise Systems (Howcroft, *et al.*, 2004; Wagner, *et al.*, 2005).

Internet into overall strategy will this powerful new technology become an equally powerful force for competitive advantage" (ibid.; 78).

To develop this argument further, competitive advantage may be gained by those companies that can integrate uses of the Internet with their core competences (Prahalad & Hamel, 1990). Porter's contention is that it may well be easier for 'traditional' companies to do this than for dotcoms to adopt, develop and integrate such competencies themselves. He argues that these core competencies and traditional strengths are likely to remain the same, with or without the Internet, and it is these that will provide competitive advantage, not the technology.

Thus, we might argue that ICT's impact on competitiveness may well be negative rather than the positive view most often expounded in the mainstream literature. In addition, we have seen companies attempting to utilise ICT to in an attempt to increase efficiency and reduce costs. Having said that, and as noted in the discussion on BPR and Enterprise Systems, in adopting this approach, companies run the risk of reducing their effectiveness, dexterity and innovative capacity. Unless they can develop the ambidextrousness of which Tushman and O'Reilly (1996) speak, they face the common dilemma of gaining efficiency at the expense of innovation (Clark & Staunton, 1989; March, 1991; McElroy, 2000). And they also run the risk of losing their capacity for organisational learning – and knowing – as discussed in the section that follows.

4.   Knowledge Management (Systems)

Knowledge is considered by many to be a key organisational resource, and the knowledge management movement that followed the BPR era has encouraged organisations to attempt to exploit more strategically their knowledge assets (e.g., Grant, 1996; Kogut & Zander, 1992).[8] Companies are thus lured by the suggestion that they can gain competitive advantage – that expression again! – by managing their knowledge assets more astutely, and in particular, by transferring knowledge across individuals, groups and organisational units, using ICT to achieve this end. There is a knowledge

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[8] A special issue of the *Journal of Strategic Information Systems* is devoted to the issue of Knowledge Management and Knowledge Management Systems (Leidner, 2000).

management aspect to the Enterprise Systems phenomenon, and I shall introduce this section by attacking these myths before progressing to a consideration of knowledge management systems (KMS) themselves. Incorporating knowledge management considerations into a discourse on Information Systems strategising will be left to the final section of this essay, but it is perhaps worth noting the current relative lack of such considerations in mainstream Information Systems strategy discourse. This is somewhat surprising given the common view that knowledge is a strategic organisational resource, and that ICT systems are means by which such knowledge can be transferred across time and space.

As already discussed, Enterprise Systems are often promoted as a means of transferring 'best practice' knowledge. An Enterprise System's built-in processes require the adopting organisation to adapt its existing processes to the exigencies of the software. The argument is that, since these inbuilt processes are based on 'best practice' industry standards, the organisation concerned will automatically benefit as a result. But, as we have seen, vendors of Enterprise Systems make much of the consultancy services they offer during and after implementation. Presumably, these services are provided in order for the 'best practice' solution to become 'better', and the off-the shelf 'solution' to be customised. Research undertaken by Wagner (Scott & Wagner, 2003; Wagner & Newell, 2004) demonstrates how these so-called best practices have to be molded and adapted to the realpolitik of organisations, to some extent at least, *despite* the services of the vendor. In addition, and in relation to the earlier discussion on alignment, Enterprise Systems are often implemented to replace legacy systems, which presumably have drifted out of alignment – presumably, too, to become legacy systems in their own right over time.

Moreover, by advocating copying 'best practices' to improve efficiency, organisations are, potentially at least, running the risk of actually reducing their ability to create the new knowledge needed to innovate and respond creatively to changing imperatives. Given that this is a key concern of business strategy, and that KMS are meant to support and inform the process of strategising, it appears we may have another problem here. ICT such as Enterprise Systems and the Internet can be thus seen to be a force for

standardisation, thus speeding competitive convergence, given that the technology is more or less common – and increasingly commoditised – irrespective of the organisation implementing it. But there is more to this enigma, as presaged by the earlier comments on *knowing* as opposed to *knowledge*.

The myth of KMS emerged in the 1990s. That is, ICT-based KMS can store and transfer knowledge. Thus, existing knowledge can be collected and re-used, utilising ICT. From this perspective, knowledge is 'out there', ready to be mined, harvested. We thus return to the mythology of 'best practice' that underpins much of this kind of thinking. Presumably, for such knowledge to be worth re-using, knowledge of what *is* 'best practice' is required[9]. But, let us consider some basic principles here. Checkland (1981) reminds us that, while ICT can be exceptionally powerful and proficient in processing data, it is human beings who apply meaning (their knowledge) to selected data in order to make sense (cf., Weick, 1990) of these data, for a specific purpose. Data may therefore be context-free, while information can only be informative within a particular context. ICT systems are therefore data processing systems – nothing more, nothing less. Information systems require the presence of human beings who apply their knowledge to turn data into information. Knowledge is therefore tacit (cf. Polanyi, 1966) and embedded. "It resides within our brains, and enables us to make sense of the data we [choose to] capture" (Galliers, 2004; 253). It is also "sticky" (Szulanski, 1996; Szulanski & Jensen, 2004) in that its contextual nature means that it is less easily transferred than the KMS perspective might otherwise suggest.

Responsibility for the myth of codified knowledge that can be captured in ICT systems can, partially at least, be laid at the doorstep of Nonaka (e.g., Nonaka & Takeushi, 1995). Their model depicts the transformation of tacit knowledge into codified knowledge and is widely known and frequently cited in this context. An alternative perspective has also appeared on the scene, however, one that is much more in line with the perspective

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[9] Nonaka and Takeuchi (1995) define knowledge as "justified true belief", following Plato. Given adherence to the social construction of reality (cf., Berger & Luckman, 1966), knowledge here might better be interpreted as "justified belief".

adopted in this essay. Blackler (1995), Boland and Tenkasi (1995), Tsoukas (1996) and Cook and Brown (1999), among others, raise issues of knowledge transfer and *knowing* rather than knowledge capture and codification. Individuals working with colleagues in organisations learn (e.g., Bogenreider & Nooteboom, 2004) from their interactions with each other and their interactions with formal (and informal) data processing systems (cf. Land 1982). Similarly, Wenger (1998) talks of situated learning in the context of communities of practice, while Sole and Edmondson (2002) develop the concept further in relation to geographically dispersed teams. The contrast between these perspectives on knowledge and knowing, on capture and creation, and on explicit and tacit knowledge is similar to the personalisation-codification distinction of Hansen, *et al*. (1999), and the community-codification distinction made by Scarbrough, *et al*. (1999). In taking the more processual perspective, I would argue that there is potentially considerably more to be gained from the process of knowing, of knowledge creation, of learning and human interaction – in the context of this essay, the process of strategising[10] – than the mere transfer of 'knowledge' (sic.) per se.

5.   Synthesis: Towards a Revised Framework for Information Systems Strategising

An attempt is made in this final section to bring together aspects of the foregoing arguments as a basis for the development of a revised framework for IS strategising. Thus far, we have considered the issues of alignment, competitive advantage, and knowledge management, as they each relate to the development and use of ICT systems in and between organisations. An attempt has been made to raise serious doubts about some of the mythology that has surrounded these concepts in the more popular, mainstream literature. With regard to the topic of alignment, we have noted, *inter alia*, that there are vexed issues associated with aligning dynamic information needs with a relatively static technology. Alignment with what and with whom were issues that were also raised. Competitive advantage on the back of an increasingly commoditised technology also presents us with something of a conundrum, with the importance of ICT use and

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[10] Building on the concept of alternative interpretations of the same data, and thus alternative futures, or scenarios (cf., Galliers, 1993, 1995), Cummings and Angwin (2004) use the metaphor of the Chimera to

capability, core competence, and the key role of information each being highlighted. In relation to knowledge management and KMS, questions were raised as to whether ICT systems could in fact capture and transfer knowledge and, just as importantly, the *process* of knowing and knowledge creation was privileged over knowledge capture and transfer.

In attempting to synthesise these arguments, with a view to developing a revised, integrated framework for Information Systems strategising, the socio-technical concept of an information architecture or infrastructure is a useful building block (e.g., Ciborra, 2000; Hanseth, 2004), Monteiro, 1998; Star & Ruhleder, 1996), as argued in Galliers (2004). In introducing this framework, it was argued that organisations could be ambidextrous (cf. the arguments introduced earlier, based on the work of Tushman and O'Reilly, 1996) in combining an ability both to exploit current capability and to explore new possibilities. Modes of exploitation and exploration, I argue, may be facilitated by an environment – an information infrastructure or architecture – that provides a supportive context for learning and interaction. I shall take each of these components of the proposed framework in turn, as a means of refining the framework and describing how it might be used a sense-making (cf. Weick, 1995) device in organisations.

The process of exploitation adopted in the revised framework bears many of the hallmarks of mainstream thinking on Information Systems strategy. This is the deliberate – as compared to the emergent – strategy of which Mintzberg speaks (Mintzberg & Waters, 1985). A deliberate attempt is made to identify and develop ICT applications that both support and question the organisation's strategic vision, and current need for information and expertise. Here, we find both the IS and IT strategies that Earl (1989) proposes. It is likely that Enterprise Systems and so-called KMS, and standardised procedures for adopting ICT products, hiring ICT personnel, and developing customised applications will each contribute to this exploitation strategy. And in line with the models introduced in Galliers (1991; 1999), an aspect of this strategy will relate to the organisational arrangements for IS/IT services, including sourcing considerations (cf. Lacity & Willcocks, 2000, for example). Policies on such issues as risk, security and

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discuss potential future developments in strategic thinking.

confidentiality will also need to be considered in this context (e.g., Backhouse, *et al.*, 2005).

With respect to the exploration aspects of strategising, here the emphasis is much more on issues associated with situated learning, communities of practice, and cross-project learning. Ciborra and colleagues (Ciborra, 2000) talk of drift in this context – as against control – but there is nonetheless a sense of direction and purpose associated with this activity. I therefore prefer the term emergence in this regard, but there is certainly a sense of bricolage (cf. Lévi-Strauss, 1966) and tinkering at play here, to return to terms favoured by Ciborra (1992). As noted, organisations are increasingly reliant on project teams whose membership may well be in flux and distributed. Considerations of trust (Sambamurphy & Jarvenpaa, 2002) and learning from one project to another (e.g., Scarbrough, *et al.*, 2004) are key features at play here. The role of communities of practice (e.g., Wenger, 1998) is crucial in knowledge creation as we have seen, as is the role of boundary spanning individuals (Tushman & Scanlan, 1981), or what we might term knowledge brokers – (see also, Lave & Wenger,1991; Hansen, 1999).

While the concept of the ambidextrous organisation has been postulated (Tushman & O'Reilly, 1996), and some empirical research has been conducted to test the thesis (e.g., He & Wong, 2004), there remains little in the literature that might be of assistance to organisations in providing an enabling, supportive environment that might foster this sought-after 'ambidexterity'. Relating concepts of infrastructure introduced earlier to the concept of ambidexterity would appear to hold some promise in this regard. "In the 1980s and 1990s, the term information infrastructure usually connoted the standardization of corporate ICT, systems, and data, with a view to reconciling centralized processing and distributed applications. Increasingly, however … the concept has come to relate not just to data and ICT systems, but also the human infrastructure" (Galliers, 2004; 256). Thus, the kind of socio-technical environment proposed by Star and Ruhleder (1996), Ciborra (2000) and Hanseth (2004), for example, would combine information and knowledge sharing services – both electronic and human – that would facilitate both exploration and exploitation of knowledge, and the kind of flexibility necessary to enable

appropriate responses to changing business imperatives. In some ways, this kind of infrastructure would help circumvent the alignment issue that was introduced at the beginning of this essay.

I have also stressed the importance of on-going learning and review, given the processual view adopted here, the unintended consequences arising not only from ICT implementations (Robey, & Boudreau, 1999) and the dynamic nature of alignment (Sabherwal, *et al*., 2001), but also the emergent nature of strategising (Mintzberg & Waters, 1985). The whole process of strategising is one of visioning, planning, action taking, and assessing outcomes, all with an eye to changing circumstances and imperatives, *and* the actions of individuals and groups outside, and notwithstanding, any formal strategy process. There are countless books on breakthrough change management focusing on the role of ICT (e.g., Lientz & Rea, 2004) and on so-called transformational leaders (e.g., Anderson & Anderson, 2001). The major features of this genre include prescriptive, deliberate approaches that suggest guaranteed, order-of-magnitude gains. Organisational realities suggest an alternative, incremental approach more akin to 'muddling through' (Lindblom, 1959), however. The incremental exploration of possibilities - the tinkering (Ciborra, 1992) and bricolage (Lévi-Strauss, 1966) - along with the more deliberate, analytical approaches that incorporate oversight of implementations and review of outcomes (e.g., Willcocks, 1999) is what is envisaged here.

Bearing all this in mind, the following framework is an attempt to further refine the IS strategising framework introduced in Galliers (2004; 256). The framework is not meant to be a prescriptive tool, or a solution. It is a sense-making (cf. Weick, 1995) devise, meant more as an *aide memoir*, to be used to raise questions and facilitate discussion concerning the strategising elements and connections that may or may not be in place in any particular organisation.
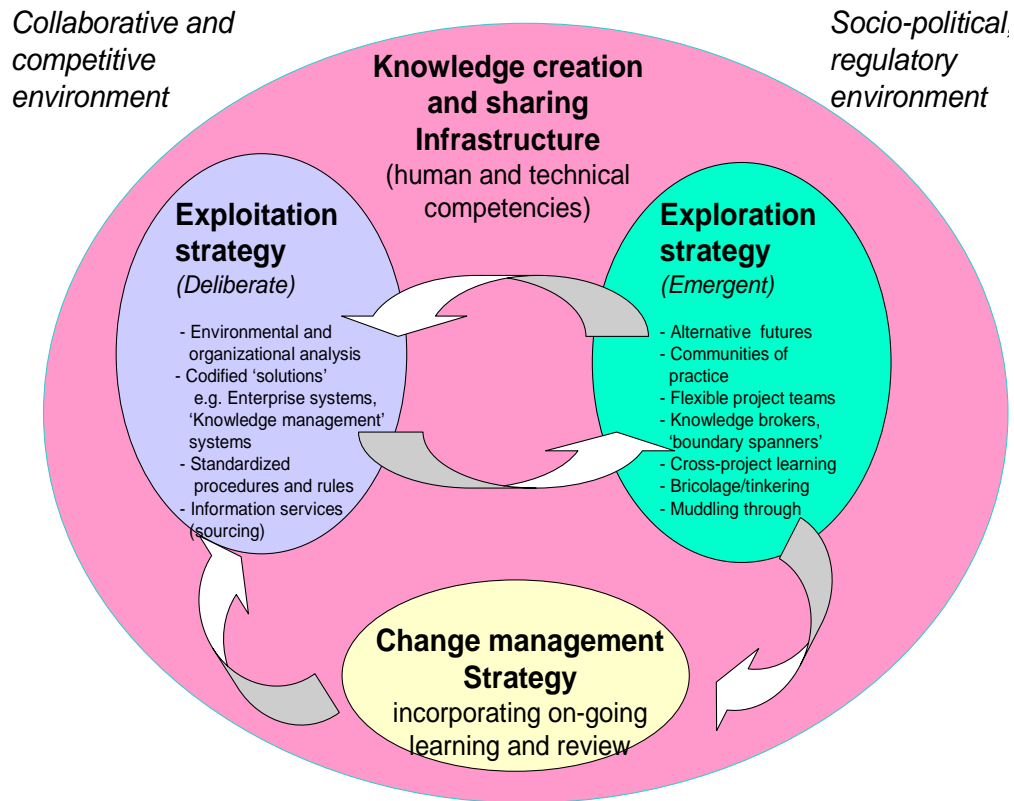
Figure 1: A Revised Information Systems Strategising Framework

One final point in closing: the fact that I continue to refer to the strategising framework as one concerned with Information Systems (as opposed to either ICT at one pole or knowledge sharing and creation at the other) is deliberate. There are two primary reasons for this. The first relates to the above discussion of the nature of data, information and knowledge. The socio-technical infrastructure depicted in Figure 1 comprises human beings who can make sense of data provided by both formal and informal systems via the application of their (situated) knowledge. In doing so, they turn data into purposeful information. The second reason is to provide an otherwise missing link between the literatures on IS/IT strategy, on knowledge management, and on strategies for organisational change. Too often viewed as discrete, an underlying argument in this essay is that the concepts emerging from these lieratures should be viewed as complimentary and synergistic (Galliers, *et al*., 1997). If I may be permitted to misquote Porter (2001; 78):

> The next stage of strategy evolution will involve a shift in thinking from business strategy and knowledge strategy, to Information Systems strategising. By integrating Information Systems considerations into the discourse on business and

knowledge strategy, the resultant thinking and practice will become mutually constituted and significantly more robust.

In saying this, I realise that I may have unintentionally constructed a new myth. Please accept though that my intentions – my 'lies' if you will – are 'noble'.

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