IS, Process and Organizational Change and their Relationships to Contextual Dependencies

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IS, PROCESS, ORGANISATIONAL CHANGE AND THEIR RELATIONSHIP WITH CONTEXTUAL DEPENDENCIES

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Abstract

The paper seeks to explore critically specific issues relating to IS, process and organizational change. The authors suggest that IS development should be regarded as a particular case of organisational change – an emergent consequence of individual and organisational learning processes. Empowerment of individuals to express their values, goals and preferences within the political and social context of the business organization is suggested to be at the heart of the development process, and crucial to strategic thinking. The authors conclude that a systemic Hermeneutic Dialectic perspective is essential in helping analysts to recognize (and engage) the inherent ambiguities and uncertainties of socially constructed realities. Vehicles are needed to enable individuals to express and to reflect upon their views. A framework is then proposed which the authors believe to be such a vehicle.

Keywords: Organisational change, IS development, Contextual dependencies, Hermeneutic Dialectics.

1 INTRODUCTION

One variety of organisational change can be seen as an emergent property of IS analysis and processes in IS 'design' and development practice. In this paper the concept of organisational change is used to describe something, which historically can be recognizable as 'intentionally' instigated (or evolved by 'design'). It may be looked upon as an emerging consequence drawing upon a composition of individual and organisational learning processes, and as such is itself in a constant state of change. 'Knowing' regarding organisational change, as an ongoing individual sense-making process, is a continuously shifting sand of lessons learnt, experiential practices and active reflection and is therefore historically unique. Intentionally instigated (or designed) change does however not mean that any consequences which follow are intended or even understood as possible consequences. Even when the balance of individual competencies, skills and attributes would seem to have been sufficient for a particular task at hand failure can still result from a combination of factors within that particular project. Failure in this case means a problematized difference between intended consequences and unintended (but recognized) consequences of 'design' and action, *from a specific observer's point of view* (Markus and Robey, 2004). Organisational sense-making activities suffer from irrationalities of action (Sjostrand, 1997), skilled incompetencies and a plethora of organisational defence mechanisms (Argyris, 1990).

In trying to understand and support good practice (or indeed any aspect of success and failure in attempting to evaluate effectiveness in managing or 'designing' organisational change), concepts of analysis become increasingly important. Good practice, which exploits intrinsic and contextually dependent characteristics of organisational activities, requires understanding, which is dependent upon (relevant) evaluative and analytical strategies (Avgerou and Madon, 2004). This paper attempts to explore some fundamental concepts relevant in IS, process and organisational change and the role of evaluation and analysis in sense-making practices. It also intends to offer pointers towards a theoretical framework under which contextually relevant analysis and evaluation could be utilized in practice.

Evaluation can be described as a result of both inquiring and reflecting thought processes. Such mental activity is then intrinsically dependent upon a demonstrated desire to explore a certain problem space. Without this (contextually dependent) desire, an active and consciously pursued inquiry may be suspected to be non-present or even actively avoided. Best practice in analysis and evaluation can be described as efforts to close a learning circle. The learning circle could be described as a combination of analysis and evaluation activities. Analysis as such would then be defined as an inquiry into the assumed-to-be unknown and /or a questioning of the assumed-to-be known. When evaluation comes into mind it incorporates a consolidating process that is judgmental and puts assumed 'truths' and 'knowledge' into some kind of hierarchy. Together an analysis (e.g. creation of 'new' knowledge) and evaluation (e.g. grading 'existing' knowledge) then creates a basis for closing a learning circle. In practice, this circle is already often experienced as rather challenging and any conscious reflection over the requirements for a higher quality of learning circle can easily become quite a daunting exercise (e.g. raising the quality of 'knowing').

Now suppose that such a learning circle in addition to this, included inquiries into multiple levels of contextual dependencies. The additional inquiries could develop the learning circle into a learning spiral. The relevance of such concepts to 'knowing' can be seen in the many references that exists to multiple orders of learning (as described originally by Gregory Bateson, 1972) and single vs double loop learning (as described by Argyris and Schon, 1978,1996). It seems to the authors of this paper that much of current practice, both within academia and business, is focused within the first order of learning or of single loop learning category.

In the information systems arena these issues can be traced to a confusion of how to apply key concepts in practice. What we are suggesting in this paper is a framework that can be used to support

efforts to create a learning spiral in practice (for a more developed discussion of this transformation of learning circle to a learning spiral see Bednar & Bisset, 2001). The theoretical base is coming from re-interpretation of the above learning circle in combination with a systemic inquiry into multiple levels of contextual dependencies, which includes change over time. Such a combination aims to transform the learning circle into a learning spiral with the purpose to cope with the creation and understanding of complex systems. A purpose may for example be the development of a 'learning organisation' as an intended consequence supported by 'design' of IS as part of an intended organisational change process. In general terms we believe that it is possible to support conscious design of IS for meaningful (future) use from an organisational actor and stakeholder point of view.

We can use the following extract from the conference strand preamble as a structure and a point of departure for our intellectual journey:

> "Information systems in companies tend to preserve their very nature of being *tools* embedded in and dependent on the organisational context ... thanks to the personal and human factors *linked to their implementation* … Their nature tends to belong to that typical of social systems, affected by *goals, values and preferences* of individuals, except for the pieces of technology and flows of data which can be *designed in advance*."
>
> "... IS are *deeply entwined* with working procedures within organisations."
>
> "... *implementation* (has) heavy consequences ... among actors in organisation"
>
> (Authors' italics)

The main aspects (IS as business tools, organizational goals, organisations and individual goals, communication, and implementation) of this preamble and their relationship to contextual relevance are then covered in the following sections.

2 INFORMATION SYSTEMS AS BUSINESS TOOLS?

That a business organisation is a complex social system, affected by goals and values of the individuals within it, is widely accepted (e.g. Handy 1985, Schein 1992). Where there is less agreement, however, is in the nature of these social systems, their sub-systemic structures and the relations, which sustain them over time. Whether IS may be regarded as 'tools' which are embedded in the organizational context, or whether the relation of IS to the organization is more fundamental than that, is open to debate.

Exploration of this issue has been on-going for over 40 years Langefors (1966) pointed out that, in order to manage a business organization, it is necessary to know about the behaviour and condition of its various component parts and its wider environment at any given time. Data must be gathered from all these elements and rendered meaningful by those who are charged with management tasks. The infological equation "I=i(D,S,t)" (Langefors op cit) shows how meaningful information (I) may be constructed from the data (D) in the light of participants' pre-knowledge (S) by an interpretive process (i) during the time interval (t). The necessary pre-knowledge (s) is generated through the entire previous life experience of the individual. Logically, therefore, it is possible to develop a data system to support management tasks, but this could only become an information system through direct and interpretive participation from the individuals using it. The suggestion that 'data and pieces of technology' may be 'designed in advance' therefore poses the question 'in advance of what?' If it is assumed that ICT is only deployed in a purposive way, then it follows that it is relevant to some particular members of the organization who benefit from the provision. Deployment must therefore be seen as inherently contextually dependent (Bednar 2004). The information needs of those individuals will be derived on a continuous basis over time in the context of activity. The system will therefore need to be adaptive to these needs.

In considering factors, which would be of value in informing the development of organizational, IS, a definition of the purpose of the system became important. Langefors originally hypothesized that the purpose of IS was to promote attainment of organizational goals. However, in the course of research during the 1960's, it became apparent that expression of those goals was itself a problematic task and would rely upon the existence of a supporting information system. A reflexive relationship was therefore seen to exist between the defined purpose of IS in promoting the attainment of goals and its role in providing support for goal setting.

Since all the elements of an organisation are interrelated and are co-ordinated through the interconnected generating units of information, it may be preferable to view the organization as an information system (Langefors, 1995, p53). This idea has been further developed by Bednar (Bednar & Green, 2004) through a discussion of what the term 'information systems' is understood to mean. A possible definition of the term might be '...systems where information technique is used for information treatment, which aims to transfer 'messages' in time and space (Bednar, 1999). It would be possible to interpret such a definition in two ways. First (IS1) it might be considered to refer to individuals and their use of hardware and software. Such a restricted interpretation could be expanded, however, to include the range of inter-individual communication activity (IS2). If organizations are seen as comprised of individuals, interacting within social communicational networks, then IS2 may not be viewed as a sub-system of the organization but as equivalent to it in context. Successful use of IS1 would therefore need to presuppose active consideration of IS2. Empirical studies (Bednar & Wang, 1994) highlight the problems, which may arise when the information system is viewed as merely a sub-system within a business. If managers lose sight of the close connection between IS development and organizational matters, there is a danger that development becomes fragmented and the synergy of the system is also lost.

Furthermore, the logic demonstrated by the infological equation suggests that individual learning and organizational development are inextricably bound together. Information systems must therefore provide support for contextually relevant individual learning, and organizational analysis drawing on this learning, as a systemic process over time (Bednar, 2000). Further consideration will be given to the situation of the individual within the organization in later sections of this paper.

3 ORGANIZATIONAL GOALS

A business organization may be viewed as a purposeful human activity system (Checkland 1981). In the authors' experience, most people have an everyday understanding of what is meant by 'a business organization' However, obtaining objective agreement as to the nature of that system would be much more difficult, if indeed possible. For example, when a person enters a bank as a customer, he is likely to view this organization as a system for providing him with financial services. However, to a person who enters that bank as an employee, it may appear to be a system for providing her with a livelihood.

It has been suggested that organizational culture is formed over time through shared goals (Schein, 1992). Such sharing, if possible, would be achieved through a negotiation of differing perspectives held by individuals – what Checkland refers to as *Weltanshauungen*. "Consciousness makes man a meaning-endowed animal" (Checkland 1999, p 218). As such, it is always possible for each individual to select from a range of possible meanings. The authors of this paper consider each individual to have a multitude of competing weltanshauungen. Individual *weltanshauung* will change through time as a result of experience, and the perceptions by different individuals within a group about the same phenomenon will vary. For this reason, agreement on a single description of a 'real' human activity system will be elusive and consensus on its goals difficult to achieve.

Within many companies there is recognition of a need for strategic thinking about the organization's activities. This is the broad, forward-focused thinking about the future development of the business – what products should be developed? which markets should be addressed? what resources must be acquired? what information must be generated? Some authorities have suggested a rational planning

model to be appropriate, in which managers attempt to identify the company's 'mission' which can then be translated into goals, objectives and targets at increasing levels of concrete detail (e.g. Johnson & Scholes 1993).

There has been much criticism of such a model as ignoring the political dimension and the need for negotiation among the diverse values, objectives and power bases of different stakeholders (Mintzberg (1993). The concept of rational business planning has also been criticised as fundamentally flawed in its practice: the scale of the data gathering exercise needed to inform such a rational planning process would be unmanageable (Lindblom (1959). Mintzberg (1993) further suggest that '*…learning, the form of fits and starts as well as discoveries based on serendipitious events and the recognition of unexpected patterns, inevitably plays a key role, if not the key role, in the development of all strategies that are novel.*'.

The criticism is borne out by empirical studies in the 1990's (Currie 1995) which demonstrated that rational planning very often gave way to a more interpretive approach, seeking to 'satisfice' rather than optimise outcomes. Walsham (1993, p 143) states the reality of strategy formation to be *'a dynamic socio-political process within multi-level contexts'*. Notwithstanding these criticisms, the locus of strategic thinking has often continued to rest at Board level, with little practical involvement from other stakeholders.

4 ORGANIZATIONS AND INDIVIDUAL GOALS

'Organization' is a concept used to represent an interacting collection of living individuals, each with a unique life history and worldview. Every individual will produce her/his own unique understanding of context, constructed through interaction with organizational systems and environment by means of a variety of sense-making strategies (Weick 1995). The individual's sense-making is co-dependent with the organizational culture within which it is set, and requires continual construction/re-construction through reflection over time (Schein 1992). Where organizations are perceived to fail, barriers to success may include a lack of shared learning/sense-making about the situation or a process within which ongoing learning may take place. Furthermore there may be organizational impediments to learning, blocking positive change (Argyris 1992, Argyris & Schon 1996, Weick 1995).

Power relationships within the organization are likely to influence the framing of individual responses (Bateson 1972, Berger & Luckman 1966, Mumby 1997). Indeed, management as an activity may be viewed as *'a set of practices and discourses embedded within broader asymmetrical power relations, which systematically privilege the interests and viewpoints of some groups, whilst silencing and marginalizing others.'* (Levy et al (1998), from Alvesson & Willmott (1996)).

Vickers (1970) has criticised the adequacy of goal-seeking as a model of human behaviour, arguing that life consists in experiencing relations rather than seeking 'ends'. He goes on to challenge the cybernetic paradigm which is implicit in goal-seeking, preferring as a model a cyclical process in which experience generates for us norms and values. These in turn create a readiness to notice aspects of our situation, measure them against norms and discriminate between them. These 'appreciative settings' condition perception of new experiences but are also modified by them. Development of the appreciative system is thus ongoing over time as a backdrop to social life. If the individual sense-making is co-dependent with organisational culture there must be some interaction built on communication.

5 COMMUNICATION

If the view of management suggested by Levy (1998 op cit) is valid, then one way in which an asymmetrical power relationship might be expressed is a reluctance by managers to encourage wide involvement in strategic thinking. If strategy is reserved as the province of senior management, to be

declared and disseminated to the organization as a whole, then it is important to consider the role which communication plays within the organizational system. There are a variety of approaches which management could take to the process of communication about organizational goals – which are chosen will depend in part on the size of the company and its cultural history. With the advent of ICT, electronic and mass publishing media are frequently adopted as a medium of convenience for this purpose. Unfortunately, at the same time, a tendency can be observed to see information within the organization as a commodity to be stored for use (Lyotard, 1984; Gherardi 2004), whilst communications are seen as flows of this commodity from one part of the system to another. Melody (1994) points out the danger of such a blending of metaphors in masking the social impact of ICT and services in organizational life, and one such danger lies in deflection from the real purpose of creating a dialogue between individuals.

The word 'communication' could encompass either a one-way process in which a message travels from sender to receiver, or a two-way process in which the receiver gives feedback to the sender. Grunig (1992) considered this in the field of public relations. The nature of the communication process might be symmetrical, reflecting equal degrees of engagement by the participants, or asymmetrical where one party is engaged/empowered to a greater degree than the other. An example of a one-way, asymmetrical process familiar to most people would be publicity associated with an event, e.g. a notice which says 'Next Wednesday the library will be closed for cleaning.' This requires no direct response from the reader other than a possible change of plan. A one-way, symmetrical process would reflect a greater degree of concern and attention on the part of the recipient. A leaflet issued by the Government giving advice on civil defence measures in the event of a terrorist attack might be an example. A person choosing to read the leaflet would be motivated by concern about a serious issue and desiring to receive advice. The author would wish to reassure, without necessarily highlighting all the real issues, which could generate further alarm. However, the opportunity for each to explore the other's concerns would be very limited indeed in the context of leaflet distribution.

Two-way communication provides for feedback between the parties. We have all had the opportunity to experience asymmetrical two-way communication during the period of an election. A political campaign represents an attempt to persuade the elector to a particular point of view by putting a message across in a certain way. Sometimes inconvenient facts will be omitted or distorted in an attempt to engineer the consent of the elector, expressed through a vote. In the course of the campaign there will be opportunities for feedback of a direct nature, e.g. through hustings, or indirectly through opinion polls. In contrast, two-way symmetrical communication would ideally involve a dialogue between parties who engage in an effort to interpret one another's contributions in order to promote a *meeting of minds*. We are not suggesting that two-way symmetrical communication could necessarily be achieved. However a participant in a dialogue may perceive it to be more or less symmetrical. Each makes an effort to put forward a truthful view, listens to the response of the other and proceeds to a discussion of the areas of disagreement. It has been argued that the process of symmetrical two-way communication is a basic foundation without which a learning organisation cannot be sustained (Argyris, 1990). Such a symmetrical communication process is a continuously changing process of inquiry, which is contextually dependent. Some aspects of contextual dependency are further developed in the next section.

6 CONTEXTUAL DEPENDENCY AND IMPLEMENTATION

In business organizations consultation can take place among stakeholders about issues which are the subject of decision-making. The question arises how far this consultation is comprehensive, or represents a true attempt to establish dialogue, and how far the resultant opinions actually inform the decision-making processes undertaken by management. A number of authorities (e.g. Argyris & Schon; Levy et al op cit) appear to suggest that the views of individuals within an organizational setting are not always expressed effectively, nor are they necessarily acted upon.

In the introduction to this conference strand information systems are described as "dependent on the organisational context ... thanks to the personal and human factors *linked to their implementation.*" Some methodological approaches to systems development discuss 'implementation' as a late stage in the total process, linked to effective change management. (e.g. Bennett, McRobb & Farmer 2002). If such a narrow view is taken, then consideration of personal views of users might be postponed to an extent which would be disadvantageous. The authors would suggest that a wider view of implementation is preferable, to include the purpose of design in helping people to be empowered in relation to their organizational environment. Such a perspective would bring the expression of individual goals, values and preferences to the heart of the development process, in the on-going shaping of system requirements. It is suggested that concept of 'project' is not a self-contained and linear process, if it is recognized that a development process is an ongoing contextual inquiry (Bednar, 2001). A number of authors support this view, e.g. Truex et al (2000), Balogun and Hope Hailey (2004), and Mintzberg (1993, p.227) '*We know that the dynamics of the context have repeatedly defied any efforts to force the process into a predetermined schedule or a predetermined track.*'

The authors assert that strategic thinking requires involvement of all participants in organizational life. However, in some organizations, an unequal balance of power among stakeholders leads to a one-way communication paradigm. This manifests itself through senior managers dictating a company's mission and goals to staff. In these circumstances, consultation around the issue of strategy, if it takes place, is likely to follow a two-way asymmetrical model, i.e. strategic thinking will take place outside the scope of the consultation and, following an explanation of the goals to be adopted, staff are invited to contribute comments and ask questions. The role of communication is largely persuasive and the contribution of the individual is marginal. If feedback is suggestive of opposition, managers may be likely to engage in further attempts to persuade or require compliance, rather than to engage with issues disruptive of the status quo. Thus, the organization is committed to a path, which ignores contextual enquiry.

When there is a genuine attempt to engage with the socially constructed world of the individual user, at the level of implementation, the persuasive paradigm may give way to facilitation of a genuine dialogue. However, if implementation is given its narrowest interpretation, feedback is welcomed in a context only of promoting 'acceptance' rather than a wish for empowerment. Any action resulting from the dialogue will be postponed in time to a point where it can be only remedial, rather than the constructive. As Checkland and Holwell point out (1998), organizational change is only likely to result in success if the individual actors are engaged with that change. It is thus likely that any change imposed from above is likely to result in failure. If "... IS are *deeply entwined* with working procedures within organisations" and "*... implementation* (has) heavy consequences ... among actors in organisation", it follows that a dialogue in which management can explore the values, goals and preferences of individuals during the process of policy-making must be desired.

From the discussion above, the authors' conclude that communication is at the core of success in developing useful organizational information systems. What seems to undermine efforts to understand the uniqueness of each specific problem space could be an inadvertent adoption of a logical empiricist tradition by analysts and researchers. Within a logical empiricist tradition (LE), the focus of attention rests on increasing the precision and clarity with which a problem situation may be expressed (Radnitzky 1970) This can lead to an artificial separation of theory from praxis, of observation from observer and observed. However, 'knowing' about organizational context, formed by on-going construction of meanings through synthesis of new data with past experience, may be deeply embedded and inaccessible to individuals concerned. If individuals are to be empowered to express their knowing in order to inform a process of development, there are substantial barriers to be overcome.

The expression of knowing in the context of organisational change takes place in a context of ambiguity and uncertainty (Weick, 1995), and therefore of risk (Argyris, 1990). Furthermore, IS related change will not only be influenced by organizational context but is likely to influence that context in turn in an iterative cycle (Walsham op cit). Hermeneutic-dialectics (HD) goes towards

emancipation and transparence rather than clarity and precision, emphasising the self-awareness of human individuals (Radnitzky op cit) From an HD perspective there will be recognition of the ambiguities inherent in socially-constructed world views. Vehicles need to be found to promote expression and enable individual reflection and evaluation, in order to complement the clarity of LE-based approaches. We propose that the framework for strategic systemic thinking, which is discussed below could be such a vehicle.

7 THE STRATEGIC SYSTEMIC THINKING FRAMEWORK

A full discussion of the SST (Strategic Systemic Thinking) framework is beyond the scope of this paper (for a more developed discussion see Bednar 2000). An overview of some of the relevant key features follows. The SST recognizes that ownership of the on-going enquiry rests with the actors themselves (Bednar 2000). Its purpose is to assist in an organizational sense-making process and provide an enhanced space for 'knowing' from which choice and decision-making may take place.

A team of analysts, comprising both external IS professionals and participant actors, guide and support an enquiry which may be seen as an intervention - directly influenced by the presence and activities of the team. It is important that all stakeholders should be represented in the enquiry, and a range of methods may be offered to the actors in order to help them express their individual views, e.g. rich pictures, learning exercises, drama transfers. The purpose is to explore the basis for change in the organization by bringing about a constructive dialogue.

The authors' intention with the SST framework is to support a systematic attempt to explore systemically the nature of a problem space, e.g. organizational life. The framework is not intended to generate a consensus about change but to bring about a systemic, creative and exploratory dynamic at both micro and macro levels of enquiry. Multiple levels of analysis may be associated with the different orders of learning discussed above in relation to the work of Bateson (1972 op cit) (Bednar & Adams 2003).

The framework incorporates three stages of analysis, which may be undertaken iteratively and in any sequence: Analyses A and B and Evaluation C. Analysis A encourages the expression of intra-individual perspectives of a particular problem space, creating a personal map of resources for knowing by exploring a number of thematic inquiries. The four main inquiries in analysis A are guided by the following themes: the 'situation' (Where am I?), 'target' (Where do I want to be?), 'vehicle' (What do I need?), and 'road' (How do I get there?).

In Analysis B, the inter-individual perspective is at the focus of enquiry. This 'macro' perspective explores grouping of worldviews derived in Analysis A, considering both the extent of overlap in expressed individual views and the range of different perspectives which emerge. Discussion of the problem space is encouraged, leading to a collective informing and knowing process (meeting of minds). Stakeholders can embark, both individually and together with a sense of 'us', on a collective journey of discovery into 'knowing' related to the problem space.

Evaluation C considers feasibility (within the organisational cultural and political arena) by bringing about an additional critical reflective process. As discussed above, analysis of the unknown, followed by reflection and evaluation on that which is discovered and how, are associated with a wish to move from single to multiple orders of learning. This desire is to break out of a learning circle, based on narrow assumptions. Instead, use of multiple levels of enquiry, engaging in analysis and reflection, pursue a transformation into a learning spiral in relation to a problem space (such as organizational life). The mechanism for evaluation here considers 'what if?' scenarios, positive and negative criticisms and competence.

Through the use of the SST framework, *each individual within the organizational context is recognized as an open, autonomous system whose goals, values and beliefs are expressed in an on-going construction and reconstruction of their reality*. The idea is to help each individual (as an

analyst) to initially close a learning circle regarding personal reality and then to pursue a transformation of ‘knowing in organisation’ into a reflective learning spiral.

8 SUMMARY AND CONCLUSION

In this paper, the authors have attempted to explore critically some of the issues relating to IS, process and organizational change. It has been argued that, unlike data systems, information systems cannot be regarded simply as business tools. Through the discussion the authors suggest that IS are related to organizational learning and that, in turn, organizational learning and organizational development are fundamentally linked. The need to break out of a cycle of first order learning and create a learning spiral through reflection and evaluation has been suggested.

The concept of an organization as a vehicle for the pursuit of shared goals, and the related idea of strategic planning to establish such goals, have been examined. The political nature of relationships between stakeholders in an organization, and the extent to which different groups are empowered to participate in strategic thinking, have been considered in relation to differing communication paradigms.

Implementation as a developmental activity has been explored in relation to contextual dependencies and the iterative nature of IS related change. The Strategic Systemic Thinking Framework has been offered as a possible vehicle for enquiry, which recognizes the ambiguities and uncertainties surrounding organizational change. Through this framework, the stakeholders themselves are empowered and supported to engage in a constructive dialogue about their individual and collective sense-making, in order to promote an on-going process of requirements shaping.

The authors conclude that it is essential to pursue HD proactively in research and analysis practice. An HD perspective helps to avoid entrapment, which would otherwise make it impossible to understand the context within which a particular problem resides. Critically informed use of the SST framework provides one possible opportunity to go beyond the limits of any LE paradigm.

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