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Soft Methods for Systems Projects in SMEs

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Abstract

This paper presents research in progress on the development of a soft systems process for the analysis and definition of systems problems in small and medium enterprises (SMEs). The purpose of this process is to act as a guide for systems practitioners in their work with SMEs. The intention being to provide a process that considers the technical, organisational, personal and social dimensions of a systems development problem, while at the same time being 'manageable' given the limited resources of SMEs. The author draws evidence from the soft systems, multiple perspectives and systems development literature to explain the basis of the proposed process. The process outlined in this paper takes particular inspiration from Checkland's Soft Systems Methodology (SSM) (Checkland 1981, Checkland & Scholes 1999) and utilises a Multiple Perspective framework called T.O.P2 (Hillier 2002) for the structuring of 'questioning'. An example of a process that could be used in a SME project is given.

Keywords

Soft systems, case studies, multiple perspectives, human activity systems, systems analysis, small and medium enterprises, SME

Small and Medium Enterprises

SMEs constitute the majority of organisations in the world (Kharbanda 2000) yet have been given little systematic attention relative to larger organisations. It is misleading to think of SMEs as small versions of larger organisations. SMEs have distinctions that merit attention, especially in relation to systems development and implementation. By their nature, SMEs are heavily impacted by local, regional and global environmental changes (Smallbone & Venesaar 1998). The ability to rapidly adapt to change is often a critical success factor in their survival. SMEs are also typically based on entrepreneurship but often lack solid business experience. As such, many fundamental business processes and management structures found in larger organisations are less standardised and are often 'quirky' in SMEs (Smallbone & Venesaar 1998). This makes SMEs dynamic and at the same time quite fragile. Internal resources are also limited in SMEs (Smallbone & Venesaar 1998) and there can be an inability (or unwillingness) to hire personnel to fill roles that would be taken for

granted in larger organisations. Consultants are only part of the answer to helping SMEs given their varied nature.

SMEs are often slow on the uptake and use of information systems and in particular e-business and Internet technologies (Van Akkeren & Cavaye 1999). The reasons vary (Chau & Turner 2002) but also include social, technical, and structural factors. Among the social reasons are concerns about security, fears about loss of competitive advantage or unwanted changes in traditional interpersonal relationships, lack of technical knowledge, and absence of change champions or effective change management practices. Among the technical barriers are non-existent or inadequate systems, hard to use or ill-fitting commercial-off-the-shelf applications, little ability to develop applications in-house, an absence of supporting technologies and infrastructures, poor quality data resources and unintegrated legacy information systems (many of which have manual components). In addition, a variety of structural factors (e.g., the regulatory environment, banking practices, etc.) contribute to the slow take-up of information systems in SMEs. Work such as that by Levey, Powell and Galliers (1999) on the strategy of SMEs in adopting IT can provide some guidance.

Systems Development Activities

Because there are social, technical, and structural barriers to systems development, implementation and adoption, overcoming these barriers requires integrated social, technical, and structural solutions (Vogel 2002). Many of the origins of information systems design lie in socio-technical systems theory, which is itself an outgrowth of general systems theory (Trist and Murray, 1993). Socio-technical systems theory aims to produce better functioning business systems involving people and machines by jointly optimising human and technical processes. Unlike traditional social science approaches that focus on measuring and explaining the impacts of technology on society, socio-technical systems theory looks to develop applications of technology for desirable social and economic impacts (Markus, Majchrzak & Gasser 2002).

The socio-technical approach has seen use in both large and small organisations over the years. For example, Bostrom and Heinen (1977) report on application in a relatively large printing company undergoing a variety of changes. Mumford (1983) has a long history of socio-technical application in small organisations with a special focus on end-user involvement in the development process. Qureshi and Vogel (2000) reflect on the use of a socio-technical approach in the creation and use of group support systems in a variety of organisational contexts.

A socio-technical approach to information systems development seems especially appropriate for SMEs due to their highly contextual nature and the level of personal involvement by owners and operators. Amongst a range of systems development methods available, such as, Structured methods (Yourdon 1989, Wieringa 1998), Object Orientated methods (Iivari 1995), Information Engineering (Martin 1989), SSM seems to be most in tune with the multiple perspective and contextualised ideal of the methods we wish to develop for SMEs. So in order to operationalise these ideas into a process for undertaking projects in SMEs the authors have chosen to look to SSM. Indeed SSM is harmonious with the socio-technical approach as noted by Iivari, Hirschheim & Klein (2001). In addition, SSM provides the practitioner with an operational set of tools that can be applied to information systems problems, as they exist in the highly contextual environment of SMEs.

Systems Development Activities in SME Environments

The nature of systems work in SMEs is typified by limited resources in terms of time (too busy with no time to spare), finance, human capital and technical knowledge (Igbaria, Zinatelli, Cragg & Cavaye 1997, Lai 2002, Pollard & Hayne 1998). It therefore follows that work would have to proceed with smaller teams and less expensive information gathering techniques and will most likely rely on simpler models for evaluation (Hallikainen, Kivijärvi, Rossi, Sarpola & Talvinen 2002). The danger being that much of the richness of the problem situation will be lost, resulting in some level of system failure. Particularly important since a great many systems developments fail as the high number of project failures attest (Ulfelder 2001, Jiang, Klein & Discenza 2001) due to unforeseen factors (Checkland 2000). In general those systems that are developed as unintegrated solutions fail, whereas integrated solutions, tailored to local conditions, succeed.

Studies such as that by He, Khalifa, Kusy and Zhao (1998) have shown that SMEs are willing to take on new technologies, but despite this willingness, the constraints outlined above prevent them from taking on these types of projects.

Therefore in order for a process to be acceptable to an SME environment it should meet the criteria of being manageable in terms of financial and human resources, be relatively timely (this usually mans fast), it must be able to be flexible and adapt to highly specialised circumstances, yet still provide the support and guidance for owner operators with little expertise in undertaking such projects.

Messy Problems

Essentially information systems developments can be characterised as a messy problem (Checkland 1981). The nature of developing information systems in any organisation is characterised by multidimensional and often messy problems, involving technical, organisational, personal and political dimensions. The non-technical elements, such as politics play a significant role in the making of decisions and the direction that projects take (Markus 1983). If anything these 'messy' elements of the problem seem magnified when viewed thought the highly subjective and emotionally charged environment of an owner operator SME.

In cases of management process involving people and political considerations the ways in which processes are carried out are not well defined. It is most likely that there can be no single or 'correct' description of the process. Thus the process or problem situation is said to be il-defined (Checkland in Stowell 1995). Il-defined and messy problems are different from engineering type problems because 'what to do' as well as 'how to do it', is unclear. This contrasts with an engineering process such as conversion of a crude oil into petroleum products, where an agreed upon complete and objective description of the process can be achieved.

Treating a systems development involving people by merely looking at the technical component of the problem situation will leave the system isolated from its environment and increase the chances of its non-acceptance by its users (Pava 1986, Mitroff & Linstone 1993).

Checkland (in Stowell 1995) explains that in il-defined and messy problems, SSM is a way to build models of purposeful activity, from declared points of view. In doing so the models aim to stimulate debate about the problem situation, with the purpose of which is to allow the accommodation of ideas and motivation for improving the processes under consideration. It

should be noted that in building models, we are not seeking to represent the world as exactly, but to merely stimulate debate about the nature of that world, as people perceive it.

One of the advantages of utilising SSM is that it is contextual and is able to change to meet he needs of the problem situation, in fact each use of SSM will be different. The very philosophy behind SSM was to breakaway from fixed and rigid engineering processes as these have been found to be ill equipped to deal with the complexities of human activity systems (Checkland 1981, Checkland & Scholes 1990).

Various applications of SSM, as explored by Ormerod (in Stowell 1995), Checkland and Scholes (1999), Rose & Haynes (1999) and Rose (2000), have been found to be effective in contributing to an improvement in the situation of the highly contextual and unstructured problems, typical of information systems developments in organisations. But as we will see, many of these cases were carried out in large private and public organisations with the resources, time and skills to take on such studies.

SSM for SMEs

At this point dilemma arises. In the case of SME's, the process that is desirable and feasible to them, is often one that is characterised by small levels of resources and the need for predictability of processes and outcomes (Hallikainen, et. al. 2002). This would seemingly exclude a free hand to SSM like processes.

A way forward would be to have suite of pre-prepared outlines for the use of SSM in various industry sectors, particularly for SMEs. Given the resource constraints of SME's and in line with the philosophy of SSM, we believe that we can create a range of pre-prepared outlines and concrete examples of SSM use in SME's as to make the process accessible to a SME undertaking a project. It is expected that with experience, these prepared outlines could contain guidelines for use. What we propose is to present a specialised application of SSM that is pre-tailored to an industry sector and size of organisation (in this case the Tourism sector in Hong Kong). The idea being to utilise selected SSM like processes and techniques to allow the exploration of human activity systems. In effect this follows a 'Method Engineering' approach, as advocated by Hofstede and Verheof (1997), Brinkkemper, Saeki and Harmsen (1999) and Brinkkemper, Lyytinen and Welke (1996) where by components or tools from various methodologies may be selected and used according to circumstances.

Checkland & Scholes (1990) present a system for using SSM. It covers a range of iterative steps to be undertaken in the use of SSM. The steps include; decide issues for doing the study (origins of the study, timing, entry and exit points, modes of using SSM, to do the study or not), undertake analysis, build pictures of problem situation, select relevant systems, compare models with perceived reality and look for possible changes, decide desirable and feasible changes, take some action. This takes place within a range of constraints that impact upon what are considered to be 'desirable and feasible' change. Monitoring and control actions along with criteria for efficacy, efficiency and effectiveness are in place. The use of SSM is done so with the acknowledgement of the learning that has taken place with previous uses of SSM, thus the use of SSM itself is informed from previous uses. Learning from doing the current application of SSM will impact not only on future uses of SSM but also be fed back as the current application continues, especially due to its cyclical nature.

However, the process outlined for using SSM does not provide a practitioner with examples of activities that are likely to be done. In order to gain an understanding of what actually takes place during such exercises, we may take hints form various case studies Ormerod (in Stowell

1995), Checkland and Scholes (1999), Rose & Haynes (1999) and Rose (2000). These are case studies that were conducted using SSM as a basis or where SSM like techniques were utilised. Table 1 presents a sample of such cases.

Source	Organisation	Techniques used
Ormerod in Stowell 1995	Sainsbury's (1989) IS Strategy	Team of 16 line mangers, cognitive mapping, stepped SSM - rich picture, root definition, conceptual model
Ormerod in Stowell 1995	BP (1990) IS strategy, cultural change	Phased SSM, workshops
Ormerod in Stowell 1995	Palabora (1991) IS strategy for core tasks	PIMS (participative information management strategy) a more rigid process based on stepped SSM. Cross functional teams of line managers, rich pictures, structural diagrams, CATWOE, root definitions, unstructured investigation, conceptual models, critical analysis, multi-criteria evaluation.
Ormerod in Stowell 1995	Hamersley Iron (early 1990s)	SSM, rich pictures, transformations, conceptual models
Checkland & Scholes (1999) ch 4, Rose & Haynes (1999)	National Health Service, United Kingdom (various studies)	Mode 1 SSM. Reading documents, interviews, attend / observe meetings, structural pictures, root definition, CATWOE, system concept diagram, conceptual model. Project notes regarding the methodology itself
Checkland & Scholes (1999) ch 5	Central Computer and Telecommunication Agency, United Kingdom	Mode 1 SSM – one cycle, 6 months. Interviews (notes under headings; 'practices', 'perceptions', 'problems' and 'comments'), reading documents, formal meetings, team meetings, root definitions, CATWOE, conceptual and issue models. Report
Checkland & Scholes (1999) ch 6, 7, 8	ICL – various studies	Mode 2 SSM
Checkland & Scholes (1999) ch 9, 3, 7	Shell, ICI organics and Management SS	Mode 1 and mode 2 SSM
Rose (2000)	Regional Train Operating Company (1996)	'Covert' SSM. fifty interactions - interviews, telephone interviews, meetings, workshops, bord presentation, participant observation, document study and contribution, examination of existing computer systems, note-taking via diary method
Rose (2000)	University department Intranet (1997)	SSM based 2 step process. Interviewing, document study (system assessments), workshops, email debate. Notes by diary, interaction models, rich pictures and structurational analysis, written document, scenario building, choice / change planning, root definitions, interaction modelling, transformation modelling

Table 1 Case studies using SSM showing methods employed.

Case studies in particular are well suited to the soft systems paradigm; as to use soft systems effectively the practitioner should gain a depth of personal knowledge of its use, particularly as one moves from a prescriptive process to something that is 'internalised' (Checkland and Scholes 1999). In the earlier stages of applying soft systems a practitioner could draw upon the experience of others in order to guide their activities. It is thus one of the aims of this paper to gather a range of these cases and then draw lessons from them in order to formulate a suitable course of action for use within an SME. Particularly as the case study allows the examination of the process or issue to be examined in its natural setting, employing multiple methods to gather information on people, organizations and processes (Benbasat, Goldstein & Mead 1987). The following is a review of methods used to conduct various case studies using SSM.

Checkland (1981) explains that there are four ways in which comparisons are carried between the models that were developed and the perceptions held about the real world by participants. These are informal discussion, formal questioning, scenario writing (working through the models) and trying to model the real world in the same structure as the conceptual models. The idea behind the use of models is to promote discussion and debate about improvements, which could eventually lead to recommendations for change (Bustard He, & Wilkie 2000). Techniques employed include group discussion, individual interviews or dialogs carried out over time. Initiating the comparison maybe be done by way of filling in a matrix containing details of the various activities, their links to other activities, their state of existence in reality, how it is carried out, how is it judged and any comments relating to changes. The idea is to generate debate rather than to fill in the matrix itself.

In a soft systems study by Rose (2000) semi-structured interviews, participant and non-participant observation, document study and researcher-led workshops were utilised in interpretive action research process. Explicit note taking was minimised and tape-recording excluded in cases where sensitive issues were being discussed. In such cases the researcher may rely on the recording of observations using the diary method. Such techniques are appropriate for both action research and interpretive case studies.

Another technique commonly used in SSM cases is rich picturing (Checkland & Scholes 1990, Davies & Ledington 1991). This technique is the drawing of diagrams and pictures that contain objects, links, and small explanations as to what they are. The picture is used to assist in exploration of the processes, the nature of relationships and perceptions of the situation, rather than an attempt to represent the 'truth' of reality. The picture is a tool used to facilitate discussion and understanding of changes over time. The pictures generated by the participants in the process are also likely to reveal differences in their perceptions of reality. As people perceive things in different ways (Matumoto 1994), even to the extent that such things as visual perception is impacted by psychological matters (LeRoux 1994), they contribute to the greater understanding of the problem situation. In this sense, the more eyes that look, the more we see, and so the 'richer' the picture becomes. We may also utilise multiple perspectives on the problem by viewing the situation through different 'lenses'. To assist with this thinking process the T.O.P^2 framework (Hillier 2002) may be utilised. The T.O.P^2 framework traces its origins to the soft systems and multiple perspectives literature, in particular work by Checkland (1981), Linstone and Mitroff (1993). The T.O.P^2 framework provides a way for the user to identify various types of objects in the problem domain (objects/things, organizations and people), and provides three 'lenses' for looking at each object (technical / scientific, sociological and psychological / personal). It arranges them to

allow the user to separate the objects (the thing being looked at) from lenses (the way in which it is being looked at it). Please see Figure 1.

		Lenses (ways of looking)		
		Technical/scientific	**O**rganisational/ Sociological	**P**ersonal/ psychological
Object Types	**T**hings			
	Organisations			
	People			

Figure 1 The T.O.P^2 framework adapted from Hillier (2002).

The framework was originally developed to assist lateral thinking in systems analysis and design while still being able to be applied to same situations as Linstone's T.O.P (Mitroff & Linstone 1993), for example, stakeholder analysis (Metcalfe 2002) and strategic events (as in Allison 1971). The aim of the T.O.P^2 framework is to allow the user to identify things that they may have otherwise forgotten by prompting them as they think of each object in the problem domain from a 'different angle'. For example, the way an engineer may look at the problem versus the way a manger or marketer or human resources person my look at that same problem will raise different sets of considerations and issues.

What we have explored so far is a range of activities, tools and techniques that SSM and multiple perspectives can offer the practitioner. From this we shall draw the more easily understood elements in an attempt to develop a process suitable for use in an SME.

Proposed Process

The strategy in the proposed process, shown in Table 2 is in keeping with a soft systems (Checkland & Scholes 1999) and multiple perspective tradition (Linstone 1984, 1999, Mitroff & Linstone 1993), it also to utilises multiple methods. This serves to increase 'triangulation' through an eclectic methodological approach (Mingers & Brocklesby 1997). Although the primary methods employed in this process are qualitative in nature, it does not exclude 'hard' quantitative data being included in the process as all forms of information is useful in building a richer view of the problem situation.

It is desirable on the part of the SME to commit as little time as possible due to the limited resources available. Thus the context of the project means that the open ended and highly contingent nature of SSM runs counter to the expectations of the SME. In effect the SME is looking for a 'quick fix' with minimal input. It is thus the role of the consultant to gradually educate the client on the advantages of the SSM process, but at the same time begin the process in a way that doesn't scare off the client! Thus the process begins using an SSM mode 1 (Checkland & Scholes 1999) type process and gradually moves towards mode 2 (Checkland & Scholes 1999) as the client becomes confident that the process is producing results. In the pragmatic environment of an SME it is important to show some significant progress early on in the process. By using a stepped process that involves alternating cycles of investigation and consideration, it allows some deliverable to be achieved at an earlier time.

Cycle	Activities	On-site ~10 hours
Cycle 1 (onsite) Organisation and environment (Finding out about the problem nature and the initial perspectives of those involved)	Interview with CEO or Manager / development of initial rich picture / concern seeking, perspective seeking. Recording of conversations by notes or on tape.	1 hour
	Interview with significant line staff / development of initial rich picture / concern seeking, perspective seeking. Recording of conversations by notes or on tape.	½ hour each
	Observation and document gathering	2 hours
Cycle 1 (off-site)	Off-site analysis – initial population of $T.O.P^2$ framework, mapping participant's perspectives and rich pictures to $T.O.P^2$, comparing rich pictures from participants, listing differences and commonality. Summarising main issues, technical, organisational (including social and political) and personal matters are automatically included via $T.O.P^2$ and Developing initial problem definitions, statements and models of current and proposed actions.	-
Cycle 2 Framework introduction and application.	Interview with CEO/ Manager / $T.O.P^2$ used for questioning / development of secondary rich pictures/ feedback on initial models.	1 hour.
	Group discussion with line staff / rich picture development / $T.O.P^2$ used for questioning / development of secondary rich pictures. Compare and contrast the models produced in cycle one and further expand thinking by utilising the T.O.P framework. Developing models for the changed situation.	1 hour.
Cycle 2 (offsite)	Off-site analysis and approval of feasible change. Given the analysis completed thus far and the opportunity to clarify and expand upon perceptions, develop a proposal for change. Final presentation and approval meeting with the CEO/ Manager.	½ hour
Cycle 3 Implement feasible change	Action taken to bring about the change.	3 hours +
Cycle 4 Framework evaluation	Interview with CEO/ Manager.	1 hour.
	Interview with significant line staff.	½ hour

Table 2 Sample process activities and time commitments for SME project.

The aim being to suggest a process that is adequate to allow the analyst or analysis team to gather adequate information to produce insights into the problem situation, while at the same time not being a burden for an SME to undertake. The investigative process takes a 'reflective loop' learning approach where by the lessons learnt in each phase are re-injected into the process as it continues. In addition the way in which the process is conducted takes on a participant observer stance, as in action research (Galliers 1991, Wood-Harper 1985).

Reporting to the problem owners/sponsor is done at the end of each cycle, there by a mini-analysis or suggestions are produced with the aim of some 'quick hits'. These are fed back into the process for the next cycle.

Finding out

The first Cycle utilises interviews for an initial investigation of the problem nature and the perspectives of those involved. This allows for the exploration of both general and specific issues (Gubrium & Holstein 2001). The first cycle will loosely follow the SSM mode 1 stages 1 to 4 (Checkland & Scholes 1999) for 'finding out', 'expressing the problem situation', 'formulating root definitions' and 'building conceptual models'. Perspective seeking aims to highlight some of the social and political dimensions of those involved as well as the 'internal lens' (Hillier 2002) of the participants. The idea being to draw out peoples natural view and perspectives of the situation, without undue distraction of the T.O.P^2 framework. It is thought that introducing the T.O.P^2 framework too early in the process may close off avenues of thought, rather than open them up.

The analyst(s) will use the T.O.P^2 framework to help them map the thinking of the various participants onto the grid, thus attempting to see where they are coming from, in terms of their perspective (Hillier 2002). This could trigger exploration of 'blind spots' in the perspectives of the analysis team and participants, for example, where mostly a technical or financial perspective is taken on a problem situation, thus missing personal, social and political dimensions.

In analysing and summarising the issues, technical, organisational (including social and political) and personal matters are automatically included for consideration via T.O.P^2. The T.O.P^2 framework is further utilised to more fully explore the range of issues in cycle 2.

Deeper Thought

The second cycle of the process aims to compare and contrast the models produced in cycle one and further expand thinking by utilising the T.O.P^2 framework to highlight issues that may have been forgotten (Hillier 2002). This cycle over laps some of the activity undertaken in cycle one, because of the 'quick hit' nature of some of the analysis undertaken for the initial model development. The second cycle goes over some of the ground particularly steps 3 and 4 'formulating root definitions' and 'building conceptual models'. Steps 5 and 6 'comparison of models' and 'desirable and feasible changes' are the main focus of this cycle. The cycle will produce a recommended set of changes from the options identified with the project sponsors approval to proceed with cycle 3.

In using the T.O.P^2 framework, the user can be guided in their questioning by considering each of the technical, organisational and people objects in the problem domain and then looking at each of these objects via each of the three lenses (Hillier 2002). To assist with this process the user may ask a series of questions that look at factors such as the actual objects in the problem domain (things, organisations and people), space, time, relationships and dependencies, differentiation, functionality, reason and purpose. The seven type questions are based on the '6W' questions from Kipling's (1902) poem (further developed by Hookins (2002) based on Linguistic Pattering Techniques for the purposes of requirements definition). These types of questions are not new and appear in many sources, for example work by Galliers as in Stowell (1995), however their application along with a multiple perspectives

framework is new. The question types are presented here in a refined form that has been designed with the use of the T.O.P^2 framework in mind. The seven question types are:

- What - questions that deal with the identification of the object under consideration
- Who - questions that identify individuals and relationships
- Which - questions that deal with identification or differentiation
- How – questions that deal with functionality, process and movement
- When - questions that deal with the temporal dimensions
- Where - questions which deal with location
- Why – questions that deal with reason, purpose and purposiveness

The seven question types aim to develop sufficient guidance for a user of the framework, while remaining general enough to be flexible. Thus the question types combined with T.O.P^2 framework will provide actionable knowledge (Argyris 1993) for looking at a systems requirements problem. An example of the examination of a business process using this questioning framework can be found in Hillier (2003). The output of this process will be the filling in of the T.O.P^2 framework and the development of conceptual models of the problem situation, perhaps in the form of a rich picture or flow diagram. Participants are involved by way of interviews and group discussions. The dynamic of group discussions are expected to produce debate when examining the various models produced from participants in cycle 1 though the comparison and contracting of the models (Checkland & Scholes 1999). Newly added or highlighted issues from the use of the T.O.P^2 framework are added to the models, the expectation being to produce a richer model of the problem situation. Care should be taken not to overly associate a given model or expressed perspective with a given participant, as the political power imbalances and 'face' of individuals may become a barrier to free discussion, as the aim is to open up discussion rather than 'railroad' it.

In conducting the interviews the interviewer will be seeking rational justification of the statements made by the interviewee, rather than just taking statements at face value. Thus the interviewees will be 'asked' to 'justify' their perspective via the asking of probing questions.

The content of documents will be considered with aim of understanding it in context (Hermeneutics). This qualitative technique and should not to be confused with the quantitative technique of 'content analysis'. This qualitative process seeks to provide a deeper understanding of specific issues raised and to provide for more specific explanations (Ragin 1994), particularly when there is a need to explain things or events in context. These materials may include; resulting frameworks, materials from previous projects and materials from the study project, project documentation, company strategic documents, needs analyses, client requirements, specifications, meeting minutes and project diaries. Care should be taken to collect such documents with permission of their owners, where relevant, thus avoiding alienation of participants.

Feasible Change

The third cycle involves implementing the changes that have been identified as feasible (Checkland & Scholes 1999). What actually occurs in this cycle is so highly dependant upon the nature of the problem that it seems pointless to specify any activities. However some examples may include, changing the nature of organisational processes, strategies, job responsibilities, developing software, purchasing systems, becoming members of alliances or

organisations, developing new products or services, changing polices or simply doing nothing (in which case no feasible and desirable change is thought possible or useful).

Learning

The final cycle will involve learning about the process itself. Perspectives on the usefulness of the process, including the T.O.P^2 framework will also be sought. Although completed near the end of the study, the experience of the study as a whole is expected to be feedback onto itself as it progresses, so in effect this final cycle is an ongoing activity, but it does culminate with learning after the desirable changes have been implemented. Furthermore the learning based on previous episodes of using the methodology will be used in the next use of the methodology, so as in SSM (Checkland & Scholes 1999), the cycle of learning about doing also continues beyond any one project. As a primary method, this learning process seeks the perspectives of experienced managers and practitioners, who may also have been exposed to numerous techniques for systems and business analysis in the past. As such, it is assumed that they are intelligent and articulate individuals. In learning about the application of the process itself, enquires will be made into wether or not these participants regard the effectiveness of using this soft approach and frameworks such as T.O.P^2. In doing so, is this merely 'rasing the issues'? Does the process provide something above and beyond? If so, what do the participants feel are its strengths and weaknesses? This will be done by asking those involved to compare and contrast their experiences of other such techniques with their use / experience of the soft process outlined in this paper, as well as tools such as T.O.P^2 framework. The aim of this being to 'learn from action' and to detect if the 'placebo effect' is present as well as to gain an understanding of the value participants place on the process as it contributes to the quality of the outcomes.

Further research is needed via a practical application of the above suggested process in order to fully assess whether or not the proposed methodology above meets the desirable criteria (outlined earlier in this paper) for use with an SME (i.e manageable in terms of financial, human resources, timeliness in its execution, flexible and adaptable to highly specialised circumstances and provide adequate support and guidance for the process user). This will be done via observation/participant observation, interview and/or questionnaires of the project and its participants.

Conclusion

The purpose of this paper has been to show that the problems faced by SMEs are significantly different to that of larger organisations mainly due to resource constraints and the level of personal involvement in the business from owner operators. These differences are believed to be significant enough as to warrant separate attention. But at the same time the types of problems faced by SMEs doing systems work also require a SSM like process to deal with the social and political dimensions in addition to the technical. The paper has argued that SSM has much to offer if formulated into a manageable process that a typical SME could undertake. This conceptualisation for use in SMEs in fact this is inline with the philosophy of SSM, in that it is contextual and can be changed to suit the situation. This paper has provided a suggestion of the form that 'contextualisation' could take via the exploration of SSM like techniques.

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