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Abstract

This paper outlines a case study in which a management development learning process was tightly coupled to organisational change and development objectives. The case discusses how a research and consulting team came together to develop highly reflexive pedagogy to support the work of internal managers who were organized into teams (learning sets) to undertake 'organisational problem solving'. These learning sets had as their objective, to become catalysts of organisational change and 'performance improvement' within a large organisation. In order to structure the discourse amongst learning set members, a range of principles and constructs were used. Central to these was a form of process modelling, (termed 'models of teleological human process'), derived from Systems Theory. These were carefully introduced to learning set members, and were used to provide a 'basis for a discourse' amongst set members about 'problematic' organisational processes and how to change them. Each learning set was considered a social process in which the principles and constructs had an intrinsic power role, in a process which was purposely designed to integrate the subjective understandings of complex organisational situations of the set members. The learning sets were operationalised in a 2-day workshop followed by a three month period which was supported by an e-learning technology infrastructure. During each phase, the learning sets were facilitated by

learning set advisers. The pedagogy, methods and learning outcomes are outlined in this paper.

Keywords: Pedagogy, Teleology, Processes, Organisational Change, ERP, e-Learning.

Introduction

The research work that is articulated in this paper concerns the challenges, problems and vagaries of developing unstructured problem-based learning processes for organisation development. The project was called the 'OPS project' (i.e. the 'Organisational Problem Solving' project). This project was an addendum to the research activities undertaken in a European research project called MEDFORIST (see MEDFORIST, 2006). The MEDFORIST project involved developing problem-based learning processes in which members of the MEDFORIST community could share experience, resources, techniques, learning etc., in a way that would help them to undertake their roles, and improve their practice, within their own specific situations. The MEDFORIST community were geographically dispersed across the Mediterranean region, and thus there were considerable challenges in integrating the problem-based learning given the diversity in members' social, economic and political contexts: a central tenet of the research was to evaluate the use of e-learning technologies in mediating the problem-based pedagogy. The OPS project was an implementation of the same principles. However, unlike the MEDFORIST project, this follow-on project was undertaken in a commercial context, in which the research was to be applied with the intention that it provided commercial benefits, by providing organisational performance improvements. Internal managers of a large utility company in the US were to undergo management development in 'organisational problem-solving' and simultaneously, they were expected to *apply* their learning in order to undertake 'change actions' aimed at controlled organisational development via on-gong reflective practice. Since organisational development occurs over time, the managers (or 'agents of change') were expected to be working in geographically dispersed locations; they were also expected to integrate their 'change actions' within their everyday working situations. It was therefore considered essential to support their work with an e-learning environment, and to integrate suitable longitudinal problem based pedagogic processes.

A new research team was formed. One of the core members of MEDFORIST was joined by another who had been interested (but not centrally involved) in that initiative. These two were joined by two new members from a US based University, to form a new research team. The common interest of the research team in the OPS project stemmed from the pedagogic challenges at the practical, everyday level, which was demanded by the commercial partner. As in MEDFORIST, the learning and action was to be 'driven' by organising managers into learning sets, which were to be given an 'internal consultant' role. In the OPS project, the sets were to be given the challenge of instigating rapid but controlled change. As will be seen, by using a set of principles and constructs, and integrating their latent knowledge of organisation, the learning sets made some dramatic changes to the organisation, including change to an Enterprise Resource Planning (ERP) computer application. There were innumerable learning points that arose from this, both for learning set members, and the research and consulting team who were involved in the organisational change initiative.

The project was based in a large private sector organisation called GW Power Utilities (for the purposes of confidentiality, a *nom de plume* is used). Although the core purpose was stated as '… *to provide a range of training and development programmes to meet the strategic objectives of GW Power Utilities'* (GW Power Utilities, 2003, p.2), the implicit objective was simply to instigate organisational 'improvement' through management development. In considering the design of the project, the tendering phase became focused on how to build management teams so that they became "…*organisational problem solvers rather than fire-fighters*…" (p.3). During the initial discussions, the research team argued that the problem-based learning approach of MEDFORIST had high potential for helping to satisfy the perceived strategic need for organisation improvement. The subsequent design discussions were largely centred upon a number of inter-related questions:

- what was the constitution of skills in 'organisational problem-solving';
- how to go about designing a learning process for managers to develop such skills;
- how to organise various activities in order to achieve 'effective' application of the learning process;
- how to evaluate the effectiveness of the learning process.

The research questions centred upon developing the underpinning methodological principles, and in turn, to answer some of these through the application of the principles into practice, and the evaluation of them, from the experience of practice. These tended to focus on the pragmatics of the project, but the researchers also had some other, and rather more fundamental, interests. For instance, since the researchers were charged with the responsibility of becoming actively involved in the operationalisation of various aspects of the project, it had the essential hallmarks of a typical 'mode 2' study. This is the thesis that has appeared regularly in the Management journals in response to anxieties that have been expressed by senior academics about the lack of relevancy in much academic research activity (see for example, Abrahamson & Eisenman, 2001; Benbasat & Zmud, 1999; Bolton & Stolcis, 2003; Davenport & Markus, 1999; Gopinath & Hoffman, 1995; Hambrick, 1994; Hodgkinson, 2001; Hodgkinson, Herriot, & Anderson, 2001; Huff, 2000; Huff & Huff, 2001; Lyytinen, 1999; Mclean & MacIntosh, 2002; Watson, Taylor, Higgins, Kadlec, & Meeks, 1999). Broadly speaking, the mode 2 thesis argues that researchers can simultaneously increase the relevance of their research, and provide much needed rigour in practical domains if they were to become integrated to form a 'collaborative partnership' (see Etzkowitz & Leydesdorff, 2000; Fujigaki & Leydesdorff, 2000; Gibbons, 2000; Gibbons et al., 1994; Grant, 2002; Harvey, Pettigrew, & Ferlie, 2002; MacLean, MacIntosh, & Van Aken, 2001; Starkey & Madan, 2001; Tranfield & Starkey, 1998; Wasser 1990). This is not without some significant challenges from a research perspective. For example, such research sits uncomfortably with the rigours of commonly perceived assumptions about the 'scientific process': on the one hand, generally speaking, university researchers wish to benefit from collaborative partnerships, but rightly tend to be very wary of relinquishing their grip on the perceived 'science' of their research. Collaborative partnership often implies solving client problems (e.g. as in consultancy), which are dynamic and ephemeral. Thus, it is commonly perceived that it is difficult to maintain the dual role of solving problems and at the same time, applying the rigours of certain types of academic research. For the research team it was considered an opportunity to engage with the 'mode 2' debate, and to explore some of the methodological issues that arise from the operationalisation of 'mode 2' type of research. It was perceived to be an opportunity to question how the 'science' of Management is perceived by researchers.

In addition, the involvement in the case gave an opportunity for the research team to explore the pedagogy and to contrast it with the knowledge generated with 'dominant pedagogy' in the Management field. For example, generally speaking, pedagogy in Management (e.g. in universities) commonly introduces 'theory' but often does little more than engage with rather passive case studies in order to relate that theory to practice. Such cases are often highly 'sanitised' in the sense that the ambiguities, complexities, contradictions, unexpected outcomes, ambivalences, etc., are ignored. In a way, this might be considered to be a highly passive pedagogy, in the sense that it does not actively encourage the engagement in the everyday ambiguities, contradictions, anxieties, frustrations etc. inherent in practice, and might be considered to be problematic in highly applied fields (e.g. Management). This can result in pedagogy which maintains a separation between 'theory' and 'practice'. However, there are scientific schools, which do not strictly separate theory and practice (for an example of such schools, see Radnitzky, 1970, Vol. II, pp. 1-3). These schools go towards increasing *emancipation and transparency*: the self awareness of human agents that helps them to emancipate themselves from the hypostatised forces of society and history. Recent concerns have been skirting around the consequences, issues and challenges of such a separation in 'theory' and 'practice' (see for example Geisler, 1995; Guport & Sporn, 1999; Serow, 2000; Ylijoki 2003a, 2003b,). In particular, some of the recent concerns have expressed concern about management development programmes: it is often said that MBA programmes are 'good in theory', but remain '…irrelevant to practice'! This of course is worrying in a pedagogic sense; it is also financially worrying to universities and business schools in declining MBA markets.

Pedagogy Design: Underpinning Principles

Early in the project there were two core objectives considered and 'agreed', which were (i) '*…to help identify and facilitate middle and senior ranking managers to become 'change agents'*…' (a management development objective), and (ii) '*…to instigate controlled change in the organisation*…', (an organisation development objective). These two were integrated by certain underpinning principles. Firstly, it was considered reasonable to assume that (i) any organisational situation is rather messy, muddled and complex (see Ackoff, 1962, 1978; Ashby, 1973; Flood & Carson, 1993), and (ii) human accounts of the 'situation', its 'problems' and 'solutions' can be subjected to critical analysis, in a process of learning. For

example, managerial work often involves dealing with situations that are characterised by a multiplicity of perspectives and interwoven issues and interpretations associated with people, tasks, processes, technologies, power groupings, global market changes, which cross functional boundaries ('marketing' 'finance', 'human resources' etc). If organisations were not messy, complex or muddled, then it is probable that organisational change work could be automated, with fairly rigid or algorithmic activities, ('*if x condition, then do y*' etc). Therefore, 'making sense of' such situations is as problematic as the situation itself (see Bateson's 1948/1972 formidable articulation about 'making sense of muddles'). 'Making sense of' a given organisational situation is complex because it involves at least a number of inter-related tasks. For example, it typically involves:

- analysis of the interconnectivity of issues in a given problematic organisational situation (e.g. human behaviour, tasks, processes, attitudes, power dimensions, social structure, communications, control, assumed goals etc);
- observation and interpretation of humans' viewpoints, behaviours etc;
- abstracting and clarifying during the process of analysis, observation and interpretation of a given situation, and thus seeking suitable recognisable 'patterns' in a situation, which are sufficient to help gain insights, without over-simplification;
- evaluating how other cases, experiences, methods, methodologies, concepts, techniques, frameworks etc. might help in developing insight into either a 'current' or 'desired' situation, without losing sight of the unique characteristics of a specific situation;
- consideration of what is or what is not possible in terms of intervention of one kind or another to bring about changes in one or more areas whilst acknowledging the particular contextual complexities.

Therefore, it is the process of 'making sense of' that is required to be subjected to critique, because it is this that defines the perceptions of the 'problem situation'. In other words, anyone describing a given 'problematic situation' in an organisation, is at the same time expressing

their process of 'making sense of' it, regardless of the irrationalities in the process (see also Weick, 2001). Further, if it was assumed that the process of 'making sense of' is teleological (i.e. it is purposeful), then it is incumbent on managers, consultants, researchers etc, to be willing to subject to critique their purposefulness inherent in its undertaking. This is very challenging in practice, because in the process of 'making sense of' there is diversity in purpose, related to wider social dimensions, e.g. power, ego, vested interests, experience, role relationships etc., (see also Argyris, 1990).

Furthermore, and following from this, it was taken 'as given' that change in an organisational situation will only be possible if there is change in the way managers and stakeholders 'make sense of' them. This simple idea can help to integrate the process of change and learning conceptually because, in undertaking a particular type of learning, it is possible to challenge the accounts on given organisational situations, and how to change those situations. This acknowledges the subjectivity and interpretive process that is involved in analysing a human situation, e.g. in an organisation (see Gadamer, 1988). It was therefore recognised that there was great potential in a process of the subjective exploration and accounts of the human action in (i) analysing organisational situations, (ii) the interpretation of the organisational situations themselves, and (iii) changing those organisational situations. The problems and challenges in doing this, concerns the subjective accounts of people in organisations (e.g. managers), 'making sense of' their own lived experience (see Schutz, 1972, p. 45-96).

On embarking on this, the research team considered that dealing with these aspects was to be an essential component of a pedagogy for 'organisational problem-solving' within GW Power Utilities. On the one hand there had to be room for exploring the subjective accounts of both the issues of concern, and on the other, to consider how certain organisational changes might 'help' in some way to 'resolve' some of these issues. But the accounts would be required to be subjected to critique in terms of the teleology inherent in those accounts, and the basis and assumptions inherent in those subjective accounts. Thus 'organisational problem-solving' was considered a learning process; it was a considered to be the provision of a social process by which groups of managers could explore their own and each others' subjective accounts. Therefore the research team considered 'problem-solving' not to be an assumed outcome, but was considered a goal, albeit an unachievable

goal, but one which gave purpose and focus to a social process. In order to control a social process, the key managers of GW Power Utilities were organized into small teams ('learning sets'). The learning set was considered a way to aid communication, underpinned by the hermeneutic concern for inquiry into levels of *co-understanding* and/or negotiated *agreement* of members (see Radnitzky, 1970, Vol. II, p. 20).

In doing this, it was also considered that it was essential to provide a language of sorts, to help communicate and critique learning set members' accounts (i.e. each of their 'making sense of'). This is consistent with the hermeneutic notion that a development in knowledge cannot exist without 'foreknowledge': that there must be a set of assumptions, embodied in language (see Radnitzky, 1970, Vol. II, p. 24). In order to establish a language of sorts that could mediate between set member, the research team had to invent a particular view of managerial work; in practice this involved considering that 'organisational problem-solvers' were 'designers' of some sort (see also Van Aken, 2005). For example, it was considered that the role of a manager involves (in part) 'planning', 'optimising' and 'organising', and that these types of managerial activities are *designed* to meet some desired outcome. Thus a manager can be considered to be involved in *designing* the construction of organised action (or 'processes') in order to undertake a current or future task; or *designing* intervention in order to try to change (and 'improve') one or more humanly organised processes. Ideally perhaps, the nature of the design of organisation or of intervention will be derived from a stream of thinking about the effectiveness (and possibilities) of the design (or more accurately, 'that being designed') in meeting a desired outcome. In that sense the undertaking of managerial work was considered to exhibit characteristics which might be considered to be teleological, i.e. they are 'goal seeking'. Their 'designs' (to meet a variety of goals) are, in practice, often hidden from the view of others, but can be made more explicit by being communicated to others in some way, via language and discourse. The language and discourse however, is reliant on a level of shared meaning, and as such can be facilitated by conceptual constructs that can help in both co-understanding, and expressing issues concerning organisational processes, their designs and outcomes. The language was to help facilitate the explicit articulation of 'problems' and potential 'actions'. This explicit articulation was a 'simplified representation' of an individual member's implicit curiosity about the nature of organisational 'problems' and 'actions', and the result of the social process of the learning set. As such, the language, and the social proc-

ess, could be seen as simultaneously hiding issues and concerns, as well as enabling the articulation of them. It was considered the role of the learning set, assisted by a learning set adviser, to provide a legitimate forum for the exploration of the 'problems' and 'actions'.

It was recognised however that there are some significant differences in the design work involved in the design of physical things and the design work involved in organisations. Unlike designers of physical things (cars, bridges, buildings, robots, computers), managerial work was considered to involve the design of 'organisation' which is only ever a *concept*. That is to say, an organisation has both physical and non-physical elements, i.e. it involves physical things like people, technologies, machines and also non-physical elements such as activities, tasks, attitudes, data, motives, knowledge, power, control. In engineering physical things, (cars, bridges, buildings, robots, computers), the physical artefact that is designed is an outcome of the conceptualisation of it. However, in the equivalent task in organisations, the outcome is not a physical artefact. It is only ever a concept. Thus in the OPS project, 'design' was considered to involve the design of concepts(!) and this has some very important implications for the way that the communication between learning set members was to be enabled. For example, it was perceived that communication could only be achieved using 'models' of sorts which could be conceptualised in the mind, and drawn on paper. It was assumed that their purpose would be to convey ideas about organisational processes. Thus, it was perceived that the learning set members would be required to communicate with each other using *models* of human organisation, which were sufficient to simplify and/or summarise in some way, the features of their perceived 'design type' ideas. The challenge for the research team was to find appropriate models of organisational process, in order to facilitate communication between learning set members, without constraining the exploration of their subjective accounts.

During the OPS project, the researchers introduced 'process models', or more formally, 'teleological process models' as conceptual constructs. These were taken from classical systems theory, and their function was to help with the communication between learning set members. In design disciplines based on 'physical sciences' (e.g. Construction, Engineering) there are very clear principles, methods and techniques which can guide the designer, which is a situation that is significantly different to that in Management, where there are relatively poor

'design guidelines'. Humans have built physical things and are proven to be very effective at it. Management is immature in that the 'design principles' applied to human organisations is much less developed, and often naively applied. Further, in physical design disciplines, it is possible to be much clearer about how to evaluate the designed artefact (e.g. if a house is built badly it will fall down); a conceptual model of an organisational process which includes both physical and non-physical elements requires extremely precise thinking and communication. It was considered an idealistic goal, but a goal nonetheless, that appropriate modelling could simultaneously 'improve' the precision in thinking and the clarity and of communication of that thinking. The models were to be applied to current and future organisational processes, and were considered part of a process of 'making sense of' rather than a design in an absolute sense.

The research team assumed that the process of explicitly expressing a given *organisational* model, and iteratively considering alternative models, might enable 'continuous refinement' in the learning sets. Further, by selecting from a set of alternative organisational models, it was considered that it may be possible for the members of the learning sets, to consider the desirability of a given model, in order to meet a set of perceptions about 'desired outcomes', in a given situation. However, it was also considered that a given 'explicit expression', can only partially reflect what is in the mind of the human (i.e. the *process* of 'explicitly expressing' using a model, will involve attenuation); further, the process of organisational model construction, refinement and selection is a human thought process which is itself teleological in nature (i.e. it is purposeful). The ideas about the models were located in a particular genre of management literature (e.g. Beer, 1985; Checkland, 1981; Checkland & Scholes, 1990; Churchman, 1971, 1982; Singer, 1959; Wilson, 1990, 2001). The modelling was to be used was to provide a 'basis for discourse', and as such the models, and the 'systems' constructs upon which they were based, was essentially an *inquiring process*. Thus the (systems) models of organisational process are an explicit expression which:

- in some way describes the characteristics of an organisational activity, or set of activities, and describes the elements (people, tasks, technologies etc.) which when they are organised in a particular manner, are considered to produce outcomes;

- attempts to distinguish (at a conceptual level) the difference between various alternative models;
- assesses the various potential outcomes of each alternative model for a specific situation, in order to achieve a specific purposeful objective;
- will have sufficient clarity in order that communication is sufficient so that others can understand it;
- includes an evaluative analysis of how the modelling has informed the action of a manager in a given situation;
- will attempt to develop general rules, abstractions or methodology, so to avoid the necessity of repeating the same thought processes when faced with similar goal seeking activities (see also Churchman 1971).

It was Churchman (1968, 1971, 1979, 1982), whose work in this area, brought teleology and modelling into management, and which established Systems Theory as a mainstream contributor to management ideas in theory and in practice. Broadly, and paraphrasing some key principles of his 1971 work, any human or organisational process:

- is purposeful, although its purpose can be 'hidden', and more or less substantiated by observations about behaviour and action;
- has criteria upon which it is judged, although these criteria can be explicitly stated or hidden from view;
- will serve sets of clients although the 'real clients' are sometimes hidden from view;
- will have decision makers whose everyday actions and decisions serve to help the process evolve, underpinned by a set of social values, which may or may not be shared with others (e.g. 'designers', 'clients' etc);
- contains integrated elements and components which can be considered teleological sub-processes, or elements which serve in some way to operationalise the whole, (e.g. tasks, activities, power groupings, communications and control mechanisms etc).

It was these principles that informed the design of a pedagogy for the OPS project. The modelling was considered to be primarily concerned to help communicate perceptions about certain organisational processes to other learning set members, and to help managers to express their *implicit* knowledge of areas of operations. The function of the modelling was to be as *rhetorical construct*, in a process of considering the members' accounts of current and future operational organisational processes and the intervention actions, to change organisation.

In order to develop a dynamic questioning and learning process, managers were to work in small teams ('learning sets'), to generate critiques of each others, and their own inquiring activities. These sets were designed to be mutually supportive 'safe havens' of sorts, to experiment with particular ideas and models, couched in the language of 'teleological process models'. The sets were to critique each others' use of the constructs, accounts and conclusions drawn. These small teams were to be facilitated using a university based learning set adviser. The use of learning set advisers was an acknowledgement that the use of concepts in practice will reflect the social processes in which they are used (i.e. within the social process of the sets, reflecting the power dimensions, frustrations and anxieties of the wider organisation). It was recognised that the constructs have intrinsic or potential power, and that they can be used purposely in various ways, in a given social process. That is to say, such constructs are not 'objective' nor value free, when used in social process in practice. The role of the learning set adviser was therefore, in part, to help the group unpick the social dimensions in which the constructs were to be used. Further, any depiction of a given organisational process, proposal for altering an organisational process, or the design of a new organisational process was (i) to be communicated via a set of models, (ii) acknowledged as being a product of the process of thinking and acting which constructed it (i.e. it was never to be considered 'objective' or 'correct' in an absolute sense). The learning programme therefore was to include:

- the *nature* of teleological models as they apply to organisational processes: this was to include aspects such as the nature of organisational processes as 'transformational entities', and some teleological issues in such processes;
- the *application* of the teleological models: this was to include models of processes for control, measurement and moni-

toring and models of organised processes (or sets of actions) for intervention and change.

These two aspects of the pedagogy were built into separate components of the designed activities, see Figure 1.

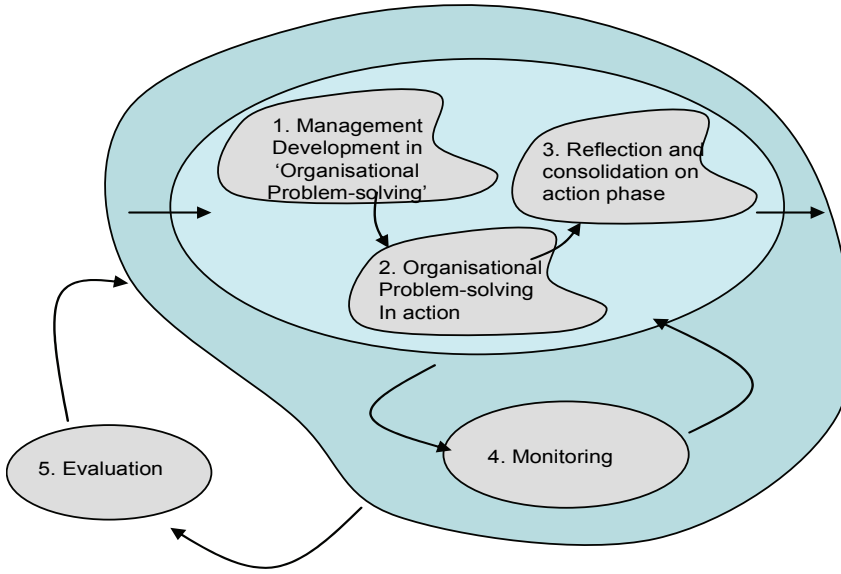

Figure 1: A sketch of the project as a set of inter-related processes

Operationalisation

The first stage of the operationalisation (Process 1 in Figure 1), was realised as a two-day workshop in order to outline and establish certain foundational inquiring principles, and 'foreknowledge', upon which future inquiry could be based. It involved the application of some simple concepts, which were to assist small groups of managers, organised into learning sets, for the purpose of inquiring into current and future organisational processes. As detailed in the previous section, these were derived from systems ideas, and were presented as a set of constructs in an attempt to make them easy to access and to use, (e.g. 'transformation', 'input-output', 'purpose', 'measures of performance', 'clients', 'designers', 'efficiency', 'effectiveness', 'control' etc). During this phase, the managers were also encouraged to consider certain more generic inquiring activities and principles, (e.g. examining the relationship between their perceptions of 'problems' and 'symptoms', the application

of critical reflections on assertions being made, inquiring into the basis of observations made…etc). Simultaneously, the learning sets were encouraged to analyse their own group process, the strengths and weaknesses of individuals in the group, actions, roles etc. Each learning set represented a social process of sorts, in which the explicit objective was to consider and justify their perceptions of: (i) 'problematic issues' and processes within the organisation, (ii) the designs of processes which might 'help' in some way, (iii) their own thinking and justifiying it to other members of a given learning set, (iv) other members' thinking with a view that it might be critiqued in a 'constructive manner'. The learning was intended to inspire new ideas, by providing a 'new' language of sorts, to encourage dialogue and communication about an individual manager's own 'lived experience' of organisational processes. This centred on learning set members' personal perceptions of organisational processes, their frustrations, anxieties, stories, 'problems' etc of operational issues. As such, one of the most important goals was perceived to be to 'tap into' the latent knowledge of the managers about the functionality and dis-functionality of organisational processes. The learning sets were to be the generators of an inquiring activity. As the learning sets matured, it was considered possible to introduce new concepts in order to deepen the inquiring activities. However, the constructs had to be carefully introduced so that they were used in order to clarify emergent issues and ideas within the sets; it was a consciously designed goal that the learning sets 'pulled' the application of a variety of constructs. The constructs themselves, were not considered the central goal of the discussions. Rather it was the organisational issues and processes that were of central concern, and the constructs were used as an enabler of sorts. The constructs only helped in the inquiring activities by providing a language and a legitimacy to discuss issues that were previously hidden or suppressed.

In order to achieve this, the learning sets were given 'advisers' whose role it was to assist the set to access various constructs. Three of the four research team members were given learning set adviser roles. The fourth member was given responsibility for evaluation, and thus purposely *not* given a set adviser role. The learning set advisers were concerned with the how the constructs were being used and the related social process in which they were used (i.e. they can be used as a power weapon in a social process, or to purposely obscure the issues in hand etc). Learning set advisers were to 'monitor' the learning, stimulate discussions, help to identify flawed arguments and assertions, help groups

to evaluate each others contributions, to help overcome some of the power or ego issues which were perceived to have the potential to inhibit a genuine discourse…etc. The learning set advisers had subject specialisms, but were specifically given responsibility to ensure that the human process of the set was fulfilling its objectives, which was centred on (i) 'organisational problem-solving' and (ii) learning about 'organisational problem-solving'. It was not about imparting subject knowledge to the learning sets.

Towards the end of a two-day workshop, the teams were organised into 'on-line learning sets' with the view that Process 2 (in Figure 1) would be undertaken (partially) on-line. This was because participants were geographically dispersed. A technology platform was set up which could guarantee confidentiality amongst small teams, and could store documents and had synchronous and asynchronous discussion areas, and could integrate video's and sketches (e.g. set members drawings of models of organisational processes etc). The research team considered that confidentiality was essential because it was assumed that there could be some sensitive issues that could arise from the critical reflections and the explorations of 'lived experience'. The technology platform also proved to be a very useful research tool, because it stored the learning set discussions. In the operation of the different sets, many themes, issues and actions emerged and, to provide an example of how they were operationalised, the activities of one learning set is outlined.

It was serendipitous and co-incidental that the organisation had been undergoing substantial change as a result of investing heavily into a well known Enterprise Resource Planning (ERP) software platform (SAP r/3). It had not been planned that the OPS project, and the ERP project, would 'come together'. By the time the OPS project was starting, the ERP implementation was considered to be coming to an end. Indeed, the focus in the OPS project, on organisational processes might tend to suggest that it could have been done much earlier in order to maximise the changes that were already taking place as a result of the ERP project! This was because the OPS project re-opened many of the assumptions of the ERP implementation team. During the 2-day workshop, the research team had become aware of many anxieties expressed by the managers about the ERP implementation, and specifically recorded some of the expressions. For example, these are direct quotations, "…*its very sophisticated, but I'm keeping well away*…", "…*its pie in the sky stuff*…", "…*bloody great white elephant if you ask me*…", "…*it's a sledge-*

hammer and nut situation…", and "…*we spent millions on it, but as for business benefit, who knows?...*". These are not 'representative' in a formal sense, but the managers who were involved in the two-day workshop were consistently skeptical if not critical of the ERP, and this was a common theme in the discussions about problematic issues within the organisation. It came up so often, that one learning set took it upon themselves to consider the nature of processes, as teleological process models, and how the ERP was being used within each of these processes. This learning set gives a good example of some of the issues that emerged from the operationalisation of the learning sets in general, and indeed the operationalisation of the pedagogic principles.

In the iterative modelling episodes that characterised the two day workshop, one of the objectives had been to model a process which had transformational characteristics articulated as "inputs" and "outputs". One learning set had discussed how to model a process that transformed "bad information" to "good information". This of course necessitated the learning set to explore a definition of both of these, and fortunately the learning set had such knowledge within its ranks! ... 'Good information' must be "timely", "relevant", "accurate", "complete", "cost effective" etc. One of the most enlightening moments occurred in discussion where the learning set adviser questioned the assumptions of the learning set. How easy would it be to transform 'bad information' to 'good information'? The group recognised the flaw in their assumptions: these characteristics of 'good information' were indeed reasonable, but the learning set discussion was attempting to model the transformation in information, not the transformations involved in a grouping of work activities (i.e. an organisational process). The learning set recognised that its discussions were at the wrong starting point! It was not the information that needed to be transformed. It was the organisational *process* in which the information is used which is the correct starting point. It was a moment of real enlightenment for the learning set, because *they had discovered it themselves*, and resulted in significant inspiration. This set went much further, e.g. exploring the purposefulness of the ERP in terms of serving processes: (i) to coordinate or control actions in fulfilling the purpose of a given model of an organisational process, or (ii) to monitor a given process, in order to 'know' whether a given process is working or not.

The learning set had recognised that the clarity of the models of organisational processes and the monitoring processes determined the function of the ERP. Aspects such as the dynamics, changeability, the degree of repetition or the level of mechanisation of a given process, determined, how the ERP was to be used. The original assumptions of the ERP implementation team were being challenged, within a constructive learning process in this learning set. Models of organisational processes, were drawn, and redrawn, and models of how it was to be monitored and controlled were also drawn and redrawn. In this way, the on-going discussions both in the two day workshop, and on-line, provided results that were startling. This was because the learning process had enabled a discourse by which internal managers could (i) evaluate the way the ERP was being applied currently, (ii) how it could be 'optimised', 'improved' or 'changed' in some way, or indeed ditched... as it related to the operation of given organisational processes, expressed as a given set of teleological process models. The OPS project had, without realising it, provided a forum for an engaged discourse, about organisational processes and the role that the ERP was playing in them. The learning set concluded that the methods applied by the ERP consultants had also '...*started in the wrong place*...'; i.e. it had started with technology and with information, but not on the vagaries of the organisational processes. The conclusions were that the ERP could not be applied effectively except in the most obvious or simple areas of work (i.e. where there was little ambiguity in the organisational process, its purpose, how it achieved its objectives etc). It certainly could not achieve an adequate organisational change process, i.e. in the OPS project, the learning sets had the responsibility for change, and thus the managers themselves were in some ways in control of the ERP application, rather than feeling that they were victims of it. The problem with the methods used for implementation was that they lacked an adequate learning process, and a focus on 'organisational problem-solving'.

There were continued discussions during the operationalisation of the on-line learning set activities, all of which were recorded by the e-learning platform. This gave an excellent data source for further analysis by the research team who could simultaneously consider the pedagogic and social processes of a given learning set, as well as developing their own insights into the current and future operational processes in the host organisation. Many proposals and actual changes to processes emerged, including the way the ERP was to be used within given organisational processes. For example, it had appeared that there had been

serious delays in certain field operations, due to a combination of problematic issues concerning materials purchases, maintenance contracts and the hiring of temporary local labour. Some of the decision-making had been centralised in order to maintain financial control. One of the process changes that were recommended by a learning set was to decentralise such decisions. Control over financial expenditure was proposed in a different way, i.e. to be maintained by additional data to be added to the ERP databases, in order that information about maintenance contracts would be monitored centrally, but decisions taken locally. The learning set were charged with estimating efficiency and effectiveness gains, demonstrating that the changes were workable in practice, and outlining the processes and activities to make the change happen, including a half day workshop for those staff charged with increased decision making responsibilities. Central to this was the change to the ERP application: the ERP became an *enabler*, not the 'white elephant' as it was perceived of as being at the outset.

Another emergent outcome of this was that the set realised that the effectiveness of the ERP can only be judged using models of organisational processes. An ERP cannot be evaluated without having clarity of the process models, and the inquiry into the ambiguities and complexities inherent in the processes in practice. Furthermore, the learning set discussed the limitations of the ERP implementation team, i.e. they had been too focused on a simplistic view of the organisational processes (and the 'rationality' in them), and had assumed that their key purpose was to attempt to optimise a given (rather ill-defined) process, by attempting to 'mechanise' it, which was only sometimes appropriate. The e-learning platform, recorded some of these discussions, "…*they took their experience of another organisation, and imposed it on us*…", "…*we don't work as machines in this company*…", "…*they never really tried to understand how we do things 'round here*….", "…*lots of things changed… but nothing changed*…".

During the period of the learning set, the research team concluded that (i) the implementation of the ERP had not been done in a manner which integrated a substantial learning process into it; (ii) there had been little critical reflexivity or learning actions in the discussion that had taken place with 'users', and that (iii) the underlying assumption of the ERP implementation was to 'make things more systematic' – i.e. more mechanical, and more rationalised, but there remained lots of questions about how effective some of these changes had been. It was

concluded by the research team, that in considering processes, the ERP team had not harnessed the latent knowledge of managers in a way that the OPS project was doing, and thus had a relatively naïve view of the realities of operating processes in practice, and had made a number of assumptions:

- they had started in the wrong place, as the learning set had done, and were primarily focused on issues concerning 'improving' information, not on articulating how information serves a given organisational process or the monitoring of a given process;
- they had assumed that a given process had clear purposeful objectives, rather than the contradictory and ambivalent human objectives that characterise human organisations in practice; and
- they had assumed that their role was to make a process 'more rational' or 'more mechanistic'.

Whilst these may be familiar to specialists in the field, these were conclusions drawn directly from the learning set's activities, and were considered to be very significant by the research team because it provided a way in which future ERP applications could be applied into other organisations… i.e. by using similar pedagogy in learning sets, which attempted to critically appraise and change organisational processes. This was seen as significant by the research team because pedagogy of the OPS project had provided a structure of sorts for attempting the 'optimisation' of ERP applications.

Findings and Learning Outcomes

The operationalisation of the project gave innumerable learning outcomes. Firstly, it demonstrated the use of teleological models of process in a number of areas. For instance, it enabled a way of developing discourse in order to gain new insights by members of the learning sets. Indeed, the use of teleological process modelling in the design and operationalisation of projects, itself became an area which was considered to have high potential for future change initiatives (e.g. in ERP implementations).

One of the most important aspects of the project was in the way systems ideas were integrated into the pedagogy. The research team found

that these conceptually demanding constructs *could* be used and applied by the managers involved. Initially, it had been a cause of some anxiety amongst the research team, that these ideas, largely derived from Churchman (1971), might not easily be usable for practice based inquiring activities. Prior to the commencement of the project, there was substantial discussion about the usability of the ideas, and how they could be conveyed in an integrated and cohesive manner. It was feared that the managers might find these ideas to be not sufficiently pragmatic, or might not be able to apply them to help them to think about organisational processes in their own contexts (i.e. there were fear that the managers may not consider these ideas to be '*in the real world*'!).

Amongst those who formed the research team, there was an ex-teacher, who had been concerned to insert 'learning markers' and 'checks' of sorts, into the two-day workshop which helped with the clarity, retention and application of the systems concepts. During the evaluation work (Process 5 in Figure 1), this was considered an enormous help in enabling the managers to apply some of the principles effectively, and quickly, and thus enabling a very rapid discussion on both problems of current processes, and how they could or should be changed. Towards the end of Process 1, teams were so immersed and engrossed in the application of such models, that they continued to work beyond the allotted time given, and were eager to continue discussions. This is not to say that there was no 'dissent'. Indeed, some of the managers had brought with them particular political agenda's, or gripes and various motives. This was seen as inevitable prior to the commencement of the workshop. At first, this was unnerving, as it appeared at one stage that the workshops could degenerate into a 'whinging session'. However, the managers generally appeared responsive to the intellectual constructs being used, and were intrigued by the critical reflexive component, which encouraged them to reflect in small learning set groups on their own individual motives, informal roles etc. This proved to be a key aspect because the groups themselves were explicitly encouraged to 'untangle' such issues during the process. Indeed, the evaluation study suggested that the initial dissention proved to be "… *a positive, because it brought into the open issues that could have otherwise have been hidden…*" (GW Power Utilities, 2005, p.5). Another aspect of the pedagogy was that the individuals had been encouraged to avoid jumping to 'solution mode' without analysing the nature of the problems. This again was an important aspect because, many managers tended to bring with them ideas about what needed to change within GW Power Utilities, with what

appeared to be varied levels of justification. It was in the process of justification that these could be scrutinised by a given learning-set, and be subjected to critical appraisal, in a negotiated social process, facilitated by the constructs, pedagogy etc.

The research team perceived that a second significant outcome concerned the pedagogy during the e-learning phase. The research team had been most interested in this, partly because of the on-going research into knowledge management and e-learning. This project provided some very useful insights into the use of the e-learning approach. For instance, in this case, the pedagogy was characterised as being a 'problem-solving' process, in which groups were allocated specific goals (defined at the end of the face-to-face workshop). The learning was to be undertaken in small learning groups, with high levels of critical reflexivity, but with *highly targeted outcomes*. Each learning set was able to make proposals for changes to organisational operations, or to identify issues, concerns or constraints to any suggested changes. The teleological process models were to provide a language of sorts, in this process. The justification implied that the learning set members were involved in inquiry of sorts, into the specifics of current or future organisational situations, and integrating a range of different perspectives etc. This was a very target driven approach in inquiry and in 'problem solving', and had pedagogical implications. It was considered that this approach, within the context of e-learning, was one that gave focus and *purpose* to the learning sets. It was in fact, the clarity of the purpose that enabled the approach to be useful. Without such clarity of purpose, it was assumed that there would be no possibility for groups to work together effectively. This point came out clearly in the monitoring processes, and in the reflections of the learning set advisers (Process 5 in Figure1). It was considered that each learning set could be considered to be a teleological social process: modelling the process of a learning set in this way, provided insights into the behaviours and decisions of the individuals in each set. In practice, the learning set members each had different goals for participating. It was the alignment of such goals, with the highly targeted 'problem-solving' goals of the whole set, which largely defined the evolving role of the learning set adviser. In practice, it meant keeping a learning set focused on the problem-solving goals, structuring and clarifying a learning set's discussions, activities and actions, clarifying the agenda's of the set, targets, timescales, responsibilities etc., and ensuring that each member was both given the opportu-

nity for expressing their perspectives, as well as evaluating each others' perspectives and actions.

A further area that the research team considered important concerned 'mode 2' research. This was a project in which the researchers had been integrated into project teams. This itself was a social process and each member brought their own goals, experience, knowledge, motives, cultural traditions, expectations etc. As in the learning sets, the social processes were mediated through language and ultimately, it was the social processes which were to determine outcomes and how those outcomes would be judged. Thus research findings and knowledge generated, was ultimately mediated by the social traditions of a diverse and heterogeneous group (researchers, consultants, managers, executives etc). In doing this, there were obvious contradictions and ambiguities. For example, the researchers had to fulfil roles that were seemingly in conflict: (i) to play a role in the design, operations, monitoring and evaluation of the project, and (ii) to undertake a set of research objectives. They were themselves the subject of study as they themselves brought with them their own experiences, knowledge, assumptions, goals etc. At the outset, this was considered an inevitable characteristic of 'mode 2' research; on reflection it became obvious to the research team that this was an *essential* characteristic of 'mode 2' research. Negotiating the interpretations of the ambiguities, contradictions of such a social process is essential in 'mode 2' research.

Since the researchers were concerned with teleology and 'models of process', it seemed incumbent on the researchers to reflect on their own purpose and process within the social process. As such, the objectives of research, and the objectives of the project would need to be compatible in some way. Hence, in any research effort there is a desire to:

> (A) discover new knowledge about existing phenomena;
>
> (B) verify, validate or falsify known knowledge (via, for instance, the process of repeatability, refutation and validation); and/or
>
> (C) discover new knowledge, unknown phenomena and new concepts, models, theory, methods, techniques and methodology, by explorative studies.

These are the general aims of academic research (often explicit and stated) and thus they can provide a certain insight and guidance for the

development of any inquiring process, whether it involves explicit 'intervention' (e.g. action research, product development, prototype experiments), or attempts to avoid 'intervention' (e.g. surveys, interviews, observation) or simply discourses (critical debate, theoretical analysis). That is not to say that these are the purposeful goals of researchers in practice because there may be other, hidden purposeful goals within the process of research. Rather, these are the explicit and stated goals of a teleological process of research. However, the purpose in organisational problem-solving (or 'mode 2' research in Management) is very different. The *primary goal* might be considered to be to:

> (D) develop an inquiring process, in order to justify action to 'improve' an organisational situation.

The inquiry in (D) is not the same as the inquiry that would be generated in meeting the objectives of (A), (B) and (C). Rather, (A), (B) and (C) are concerned to evaluate the nature, operationalisation, effectiveness and outcomes of the inquiry undertaken in (D). If research was considered only the inquiry as in (D) then it would probably be accused of being nothing but consultancy. However, in the case of GW Power Utilities, the ideas and knowledge utilised some very high level generalisable constructs, adapted them for purpose, applied them, and derived findings, based on their application. The findings were focused on the use of teleological models in organisational problem-solving, pedagogy and e-learning. This is not pertinent only to a single case. These are generalisable abstractions. In the case of GW Power Utilities they were used to support managers to *emancipate* themselves from earlier ideas about how to handle problematic situations and to bring about organisational change. The same and similar constructs, however, could be used in other cases where the main research interest is to emancipate groups of people from taken for granted ideas. Furthermore, it is a research approach which has its own rigour, which explores the 'lived experience' involved in undertaking inquiry and research, in social groups, who bring social diversity with them. It is the ability of the researcher in negotiating the resultant ambiguities and complexities, and seeking to explain the research outcomes as they relate to this social process, which will provide *richness, rigour and relevance* to future research in 'mode 2'. As such, in operationalising 'mode 2' research, there is a need for clarity about the nature of the purpose to which inquiry is applied, and processes can be designed to meet the purpose. The research team concluded that the 'mode 2' debate could benefit from a deeper

understanding of the contributions of scientific schools based on hermeneutic and phenomenological traditions.

Conclusions

Researchers were integrated into this project to provide rigour and independence. Twelve of the original twenty managers who participated in the original workshop and the five on-line learning sets, completed the project. Three left the organisation, and four left the project for a variety of reasons, (e.g. change in role, lack of time, lack of buy-in). One left the project because of personal reasons. Whilst this appeared on the surface to be a little disappointing, it seemed on reflection that it was inevitable that there would be a certain level of drop out. Nonetheless, the remaining twelve have remained in the project, and continue to be enthusiastic 'organisational problem solvers'. These individuals have already made significant changes to the organisation's processes. They are now involved in the next stage. It involves the introduction of new additional constructs and learning activities, particularly involving implementing organisational processes in response to perceived strategic imperatives. Significantly, changes in GW Power Utilities have come about in a number of areas. There have been changes in certain operations, in the sales teams, repair of machines, the integration of routine repairs with key suppliers, including the application of IT to co-ordinate such activities, in some Human Resource policies, in the ERP. There have been changes to employee reward processes, and a range of proposals that are currently being considered, which involve greater levels of investment. Most importantly, the case enabled the simultaneous development of 'problem-solving' teams acting as a catalyst for future change initiatives.

With the benefits of hindsight, the following now seems obvious to the research team. Change in an organisation will only occur if it is brought about by genuine purposeful action, co-ordinated by cross-functional teams. These have to be given constructs which can provide a language of sorts, in order to explore the intellectual basis for change. Isolated attempts at changing aspects of organisation can easily be purposely undertaken for the wrong reasons. They also might respond to perceived 'problems' which have a weak intellectual grounding, or be based on negligible diagnostic inquiry. Similarly, strategies and projects which attempt to operationalise themselves, without a complimentary management development process, are equally vulnerable. This case has

outlined a very practical method of implementing change based on a relatively simple management development process, but one which was careful in its underpinning, philosophy, the social processes that were involved and its own purpose (i.e. its own teleology).

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Biography

Dr Kawalek's professional background is in IT and Management Consulting. He started his career in the manufacturing sector as a Programmer/Analyst, Systems Analyst, and then as a Senior Systems Analyst. He then worked as an IT Consultant, and on realising that '*many IT decisions are organisational change decisions…*', decided to study Management at doctoral level. He lectures in Systems Theory, Change Management and Management Consultancy at the University of Sheffield, UK., and is also an associate Professor of the Grenoble Graduate School of Business, France. He has co-founded the Global ThinkTank Institute based in the US (www.globaltti.com), to bring '*research into practice, and practice into research*'! One of Institute's key products is to use certain knowledge management principles to produce significant and rapid leaps in organisational performance…. '*...managers move from 'fire-fighting mode' to 'organisational problem-solving'; once they do that, then they can start driving change…*'.

Dr Kawalek holds three degrees in different disciplinary areas. His undergraduate degree is in History & Economics, his master's degree is in Computer Science and his PhD is in Management. He is a member of the British Computer Society, and is Chartered as an Information Technology Professional.