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Group Support Systems through the Lens of Action Research:

Experiences in Organisations

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Group Support Systems through the Lens of Action Research: Experiences in Organisations

Abstract

In recent years, Group Support Systems (GSS) have been increasingly employed in organisational settings and a variety of task environments. In this paper we demonstrate how GSS can be embedded within an action research intervention, with research informing practice and vice-versa. This form of direct intervention in an organisational problem context stimulates participation in group interaction, with all stakeholders contributing, learning and benefiting. Five cases from different geosocial environments on three continents are used to illustrate the challenges and opportunities that arise. Benefits for organisational researchers and practitioners are identified and recommendations made for future work.

Keywords: Group Support Systems, Action Research, Organisational Experiences, Multi-Cultural Context

INTRODUCTION

The increasing occurrence of networked computers has enabled the emergence of new groupware technologies. One class of groupware - Group Support Systems (GSS) - aims to make group meetings and group decision making more productive. We conceive of GSS as a suite of software tools for focusing and structuring group deliberation, while reducing the cognitive costs of communication and information access among teams making a joint cognitive effort towards a goal (Nunamaker et al., 1997). Participants type their contributions into networked computers, the GSS immediately sending the contributions to all other participants. Ideas can be submitted anonymously if the group believes that this is appropriate, for example if the issues being discussed are controversial.

In this article, we aim to demonstrate how GSS can be effectively applied in organisational contexts when informed by action research - a method of inquiry that mandates researcher intervention into problem situations. Drawing upon our own experiences in five separate organisational settings in the USA, Malawi & Zimbabwe, and Hong Kong, we show how the combination of GSS and action research generates not only significant synergy, but also useful and implementable results that are valuable for researchers and practitioners of global IT.

In the following two sections, we introduce GSS and action research in greater detail, before describing the potential synergy that may be created. We then introduce the five sets of experiences. These are analysed with a view to understanding how they contribute to knowledge - both in GSS and action research - and how they relate to previous work in this area. Finally we conclude with some recommendations for future research and practice in this domain.

GROUP SUPPORT SYSTEMS

In the last 15 years, considerable research effort has been expended in describing how the application of GSS may lead to significant benefits to organisations. A detailed review of this literature is beyond the scope of this paper, but Nunamaker et al. (1997) present a careful review of the work, while Briggs et al. (1998) describe the cornucopia of research opportunities remaining in GSS. Field studies in organisations have traditionally made up only a small portion of this work, yet it is often these that generate results most applicable to organisational contexts (cf. Dennis et al., 1990; Grohowski et al., 1990; Lyytinen et al., 1993; Vreede, 1995; Kock, 1997; Briggs et al., 1999; Davison and Vogel, 2000). When solutions to problems have been identified, the organisations may choose to implement measures or take further diagnostic steps with or without the assistance of the researchers. Results of these field studies generally confirm that GSS have the potential to add value to group interactions, suggesting that use of a GSS is warranted in those settings where there is a need to involve participants in discussion and decision making processes.

ACTION RESEARCH

The nomenclature of action research is confusing, and hence merits a short explanation at the outset. As Baskerville (1999, p.6) explains, "the term 'action research' is itself used, on the one hand, to refer both to a general class of methods in social enquiry, and on the other hand, to a specific sub-class of those methods, as distinguished from 'action science', 'action learning', 'participatory action research', etc.". A further confusion lies in the fact, that as Avison et al. (1999) observe, numerous research articles might be classified somewhat loosely as "of an action research type, even though the term 'action research' is never used in the articles". Nevertheless, in this article we use the term action research to refer specifically

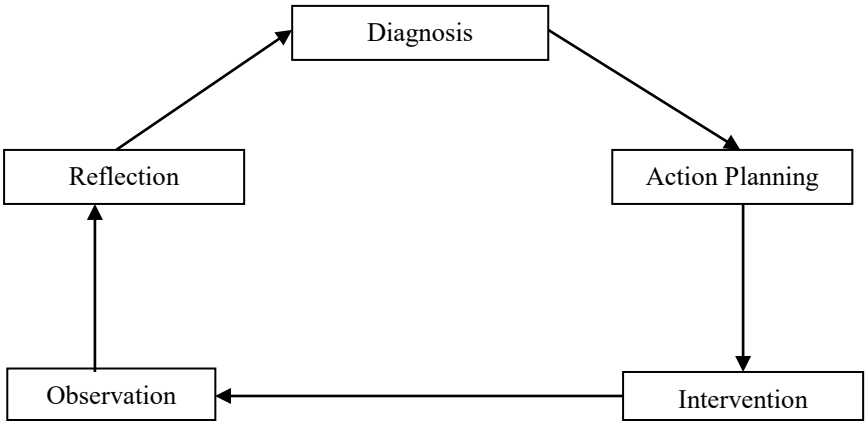
to the sub-class version of action research, sometimes also referred to as 'canonical action research' (Baskerville and Wood-Harper, 1998).

According to Elden and Chisholm (1993), action research is a change oriented research methodology that seeks to introduce changes with positive social values, the key focus being on a problem and its solution. Baskerville and Wood-Harper (1996, p.239) observe that "the ideal domain of the action research method" is one where: "the researcher is actively involved, with expected benefit for both researcher and organisation; the knowledge obtained can be immediately applied…; the research is a cyclical process linking theory and practice". Indeed, those problem situations where previous research has provided a validated theory are seen as being especially appropriate for the application of action research, since the researcher can firstly intervene in the problem situation, before applying and then evaluating the value and usefulness of the previously-developed theory. In this way, the researcher can not only validate and/or improve upon existing theories, but can also introduce practical improvements in the problem situation (Checkland, 1981; Heller, 1993). Such an intervention may not always take place quite so smoothly as it may cause changes in the organisational structure and so disturb the status quo (Eden and Huxham, 1996). Nevertheless, the application of action research clearly introduces a mandate for going beyond action alone: good action research should also incorporate discussion about theories in relation to other problem contexts.

The cyclical practice of action research involves five stages (see Fig. 1). A researcher starts by **diagnosing** the problems that exist in the organisation. This initial diagnosis is followed by **planning** what action to take, continues to **intervention** with the action, then involves **observation** of the effects of that intervention and finally **reflection** upon the observations in order to learn how better to plan and execute the next cycle. The reflections

also inform the assessment of theory that must take place. Cycles of activities continue until an acceptable end state is reached - normally, the solution of the problem.

Figure 1: Canonical Action Research Process Model (after Susman, 1983)



For action research to be successful, it is essential that the organisation under investigation be supportive of, and the processes being investigated be conducive to, information sharing and learning. The action researcher ideally acts in partnership with the client in data gathering. The sharing of data feeds into a learning process in which the researcher modifies her/his theories and the other participants modify their perceptions and ways of working.

In an organisational context, the above cycle of activities needs to fit inside a broader strategy as follows: 1. Gaining entry to the client system; 2. Joint diagnosis of the client's problem(s); 3. Planning and design of an action research strategy; 4. Data gathering; 5. Reflection and analysis of data; 6. Design of an intervention strategy; 7. Implementation of intervention strategy; 8. Review and evaluation of strategy; 9. Revision of intervention strategy as necessary; 10. Problem resolution; and 11. Exit strategy. Stages 3-6 may need to iterate until the desired system design and intervention strategy is achieved.

The strength of action research is that it provides the researcher with an inside and working view of a problem situation, especially where an explicit change process becomes the

subject of the research. Ideally, action research will ensure that there is synergy between research and practice where people work together to improve complex situations. However, problems with action research arise from the fact that it cannot, indeed should not, be wholly planned and directed down particular paths (Checkland, 1981; Descola, 1996). Where a particular situation does not present a problem situation that is perceived to require change, action research should not be seen as appropriate.

A weakness of action research is that it potentially lacks objectivity stemming from the researcher's stake in effecting a successful outcome for the client organisation. This subjectivity is often identified as a disadvantage of all qualitative research methods. Generalisations of outcomes to other situations where the intervention technique is applied by people less knowledgeable than the researcher may be difficult (Benbasat et al., 1987). However, this is the eternal challenge for all research methods, not only those that adopt an interpretive perspective. Other weaknesses include:

- Studies that employ action research may take a long time. Before a researcher can establish a relationship with stakeholders, plan the interventions, carry them out, see the effects, and reflect, a long time may have passed. In competitive academic environments, publish or perish imperatives may act against action research as a preferred research method.
- Often, the researcher does not have complete control over the timing and exact content of the interventions. Political activities involving actors at the research site may dictate what the researcher can and cannot do and hence may interfere with the academic objectives of the researcher. This may considerably complicate the planning phase of the action research cycle.
- In order to complete (and publish) an action research project, organisational support is vital. If the organisational situation changes, research in progress

may be detrimentally affected to the extent that a project has to be terminated or a dramatic change in course is required.

SYNERGY BETWEEN GSS AND ACTION RESEARCH

In order that an organisation can reap the benefits that GSS may offer, the application of the GSS needs to be embedded into a methodology of research and practice that openly espouses participation. Action research is precisely such a methodology, since it requires researchers to become deeply involved with organisational processes. Their involvement should, in turn, enable them to gain insights into the nature of the added value that GSS can engender and so to advise organisations how they can make optimal use of GSS.

The synergy between GSS and action research can work in a number of ways. These can conveniently be grouped according to 'research' or 'action'. From the 'research perspective', GSS may help researchers collect, process and interpret research data, thereby contributing to knowledge more generally. From the 'action perspective', GSS may be instrumental in realising the planned action in the problem situation, supporting communication between the various actors. These two perspectives neatly illustrate the dual responsibility of the action researcher and his obligations towards both the research and the practitioner communities.

Considering the research side first, GSS provide the structure and platform for systematic data collection, as well as a mechanism by which organisations can explore alternative forms of group interaction and problem solving. If we examine how GSS may work through the action research cycle, we see GSS support for various activities, viz.:

Diagnosis - researchers can help organisation members to brainstorm issues that are perceived to be related to the key problem area;

Planning - researchers discuss how an intervention will take place. Using a GSS requires the structured pre-planning of meetings, with the consequence that a more structured approach to the intervention itself is realised;

Intervention - a GSS may support the collection of data during the execution of the intervention. Anonymous participation of group members may permit greater objectivity, with participants expressing their genuine views.

Observation - a GSS may be used as a tool to solicit feedback from relevant stakeholders on intervention content, process and outcomes.

Reflection - a GSS may support creative meetings of groups of researchers to make sense of observations and insights. This can have the effect of reducing researcher bias and allowing for further generalisations of the intervention technique to other situations.

From an 'action' perspective, action research:

- enables the evaluation of GSS in a natural environment. It allows for a contextual analysis of the added value and effects of applying GSS in organisations;
- projects are likely to inform the design of GSS;
- projects are likely to inform methods and techniques with which GSS are applied (e.g. facilitation techniques);
- studies provide an environment in which insights from experimental studies can be tested in a more representative or realistic way;
- studies may point out phenomena in the context of GSS applications that can be investigated in more detail in a constructed environment. In other words, these studies may trigger GSS lab experiments where the research question is informed by real experiences.

Furthermore, it is often the case that a researcher decides to apply a GSS to a problem situation where historically there has been no GSS use, yet where GSS use nonetheless appears to be warranted. The researcher may believe that making a GSS available to the stakeholders and other participants in the project will enable them to contribute in a more effective or efficient manner, or perhaps enable the elicitation of more genuine contributions than would normally be possible, for example if controversial issues are at stake.

The synergy that we describe is illustrated in the following section where we consider five situations where GSS has been embedded in action research. The first two situations come from the USA and conform to what Avison et al. (1999) described as studies "of an action research type". The third situation involves an action research application by the World Bank in Malawi and Zimbabwe. In the last two situations, the use of action research is explicitly identified, the former involving an educational context in Hong Kong's police force, the latter involving a BPR project in a Hong Kong accounting firm. Given limitations of space, the five situations are concisely described. Further details can be found in the respective references.

ACTION RESEARCH EXPERIENCES

IBM (USA)

GSS was introduced at IBM in 1987 with the assistance of university researchers. A series of field studies ensued, demonstrating that GSS technology could be effectively introduced in organisational environments for a variety of problem solving tasks (Grohowski et al., 1990). Based on success at the first facility, IBM initially extended the technology's availability to six more sites over the following year, while expanding their internal facilitation support capabilities. IBM continued expanding internally to 24 sites with the same format of use, i.e. pre-planned session agendas with facilitation support throughout the meeting process. The

facilitation role was institutionalised with several generations of facilitators emerging from a wide variety of backgrounds and levels of experience with group and organisational dynamics.

In these studies, University of Arizona researchers worked with IBM to make the GSS technology operational, in addition training IBM facilitators. Advice was continuously given to IBM over a period of several years during which time a number of empirical studies took place (Martz et al., 1992). University of Arizona researchers additionally conducted advanced facilitation training sessions as organisational use spread internally. When the studies were initiated, researchers had few preconceptions and no experience at all with respect to the operational use of GSS in a corporate environment. The researchers were in an exploratory mode as they examined human actors within their social settings to understand the effects of GSS on organisational collaboration in order to inform further development of GSS tools and facilitation techniques.

Ventana Corporation (USA)

Ventana Corporation was created by the University of Arizona to transfer GSS technology to the private and public sectors. Needless to say, the technology is used widely within the organisation of approximately 50 employees for a host of problem solving and ongoing project activities. In the project reported here, a PhD candidate from the university was working with Ventana Corp. to examine the application of GSS coupled with process modelling and animation tools for generating insights for business process re-engineering (Walsh and Vreede, 1997). A task environment was chosen around the cycle of order handling and product shipping. The goal was to arrive at a more cost effective approach to deal with expanding company sales. The approach taken was to use the GSS to develop a validated activity model reflecting broad-based stakeholder input and a shared understanding

of the "as-is" situation. The process model was then interfaced with a commercially available simulation package to gain insights into aspects of the broader process that particularly warranted re-engineering.

During model development, it became clear that numerous opportunities existed to improve business processes. Processes that had evolved over a number of years were clearly inefficient and in need of re-engineering. Stakeholders, using the GSS as part of the model development, began to document improvement ideas. The simulation of the finished model also amply demonstrated opportunities for improvement that became immediately visible. A re-engineering team was formed to design a radically improved process. However, disagreements began to arise with respect to 'incremental improvements through automation', versus 'a more "big bang" approach based on communicated vision' and 'major departmental reorganisation focused on a new concept of customer support'. At that time, the then president of the organisation intervened, shelving continuation of the re-engineering process. The researchers wrote up their results without having seen a radically new system implemented.

The World Bank in Africa (Malawi and Zimbabwe)

At World Bank headquarters in Washington, DC, a dedicated GSS facility was opened in 1993 as a joint venture between two support units, the information technologies department and the department charged with organisational design, planning and related services. The technology has been used successfully in the intervening years for a variety of tasks for intact management groups, country teams drawn from across organisational boundaries with ongoing accountability in a particular country, and special project teams. The action research reported here focuses on World Bank use of GSS in Malawi and Zimbabwe as a part of the bank's efforts to take the GSS out into the field. GSS use was targeted at country assistance strategies and related stakeholder consultation as well as preparation of an environmental

strategy. Jones and Miller (1997) report on results from over 120 stakeholders including government ministry representatives, donor sector groups, private sector participants, religious groups, academicians, journalists, parliamentarians, regional officials, and project directors.

World Bank staff who were the leaders of GSS at the Bank had to overcome considerable scepticism in their attempts to use GSS to get the depth of coverage and range of stakeholder insights that they felt was appropriate. Department management teams at the bank headquarters were particularly sceptical about taking computer based technology to Africa and using it with a wide range of stakeholders with widely varying keyboarding skills and a historical preference for face-to-face dialogue with World Bank staff. As it turned out, the stakeholder groups were fascinated by the technology and, without exception, requested that the World Bank leave it behind when staff returned to headquarters. Almost all participants welcomed the opportunity to share their ideas with the World Bank via GSS. Quality and quantity went hand in hand as participants generated a wealth of information that went far beyond World Bank needs. The World Bank was able to learn effectively and efficiently what stakeholders felt was important.

Hong Kong Police

During 1996-1997, the Junior Command Course of the Hong Kong Police Force used a GSS as part of its management training programme for junior police inspectors (Davison, forthcoming). A total of nine groups of officers tackled management case problems that examined real issues confronting the police in Hong Kong, viz.: CD ROM piracy and the repatriation of illegal immigrants to Vietnam. The researcher consciously adopted an action research framework to enable the sharing of data among the various parties involved, and to improve the practice of providing a valuable learning experience for the officers.

Five action research cycles were conducted, with both the researcher and the police force as an organisation becoming progressively more aware of the importance of both the GSS and the need to regulate the manner in which the officers undertook their cases. An easily identifiable end-state did not exist in the project, and so potentially the meetings could run *ad infinitum*. However, major improvements were made to the facilitation style over the duration of the case, with the result that the officers were able to work more effectively and efficiently in the later groups.

It was not always possible to stick to a rigid action research path as full co-operation was not forthcoming from the senior officer who "owned" the training course. For example, he provided very little in the way of feedback on the activities undertaken by the officers, nor did he attend any meetings in the last two months of the case, relying on the researcher to run all aspects of the meetings. In initial meetings, the senior officer insisted that the meeting management style be entirely *ad hoc,* with facilitation adjusted to meet the ongoing needs of the meeting. The *ad hoc* nature was enhanced by his propensity to provide crisis management information on the fly to the officers, e.g. informing them that the death penalty would be imposed for CD ROM pirates in future, or that the Vietnamese government proposed to employ its soldiers to escort returning migrants. In later meetings, the *ad hoc* style was moderated, with a more structured agenda being employed in response to junior officer suggestions that the meeting was too unstructured. Although the amount of time used by the later groups for the different activities was generally shorter, more work was accomplished with the improved meeting efficiency.

Zeta (Hong Kong)

In the Spring of 1997, Zeta[1], an international accounting firm employing some 120 people in its Hong Kong offices, undertook the re-engineering of its customer billing process (Davison and Vogel, 2000). The project leader, acting as an internal consultant, was Zeta's Chief Information Officer (CIO). He formed a team with members from the various functional competencies of the firm (taxation, business services, secretarial services, and so forth). As an expatriate from the UK, his style of interaction was forthright and assertive - he openly championed the empowerment of the team members, encouraging them to evaluate the shortcomings of the existing billing process and make recommendations for a simplified process. His enthusiasm was not shared by the Hong Kong team members, who not only felt that it was not their job to assist in this re-engineering process (indeed, they were not rewarded by the firm for time so spent), but also preferred a less assertive style of engagement.

The researcher gained access to Zeta by offering the use of GSS - a tool that would help the team members participate in a less antagonistic context, with anonymous contributions. At the same time, the researcher would be available to facilitate the technology and so help lead the team towards a solution. Over a five month period, some eleven face-to-face meetings (corresponding to eleven action research cycles) of the team were held. In the initial meetings, the researcher was required by the CIO to function primarily as a technology assistant, helping the group to brainstorm ideas as well as attempt to reach consensus. The CIO meanwhile took charge of the content management of meetings, sometimes engaging in heated debate with the other team members. During one such debate, the researcher offered an opinion, but was reprimanded afterwards for over-stepping his authority.

At this juncture, the researcher suggested that the CIO was wearing too many hats, not only taking responsibility for the project's outcomes, but also dominating discussions and

[1] Zeta is a pseudonym at the request of the firm.

imposing his preferred interaction style on the other members. The CIO magnanimously agreed and from this point onwards (about 60% of the way through the project), the researcher not only provided GSS facilitation, but also content facilitation, consciously attempting to involve team members in activities, giving them personal activities to accomplish, and adjusting GSS tool usage to their skills and interests. This met with some moderate success, and the project was completed with two sets of useful results. A pilot version of the new billing process was implemented within six months.

REFLECTIONS AND DISCUSSION

Considering the IBM projects, it is doubtful that the researchers would have been granted access to groups had they not been seen as providing immediate value. The promise of a research report at some future date would have not provided sufficient motivation to gain entry. IBM was looking for assistance in fitting group support technology to the needs of the organisation. Researchers were not allowed to use the name 'IBM' in publications until a sense of trust had been established based on researchers having helped the organisation implement the technology. Thus, there would have been no data had the action research style of interaction not been applied. As action research suggests, both researchers and IBM personnel were involved in data collection, thus sharing responsibility in a collaborative working arrangement. A particular focus of the research was to enable IBM to attain self-sufficiency in facilitating sessions and sustaining GSS innovation diffusion such that the organisation would be increasingly less dependent on the university researchers.

In Ventana Corp., the researchers' original focus involved applying and evaluating tool use rather than actually implementing broad-based organisational change. Thus, the extensive challenges that occur when new automated systems are implemented were not the primary focus of the researchers. However, as the research unfolded, challenges to the way in which

the organisation was structured emerged. Unfortunately, the company was not prepared for changing the status quo, nor indeed was there the broad-based support necessary to implement the dramatic changes suggested. This lack of support was underlined by the failure of the company president either to participate directly in the re-engineering activity or to endorse and promote suggested changes. These failures were key contributors to the project's demise.

Nevertheless, as Olesen and Myers (1999) maintain, the fact that the operational side of an action research project fails does not in itself mean that the effort invested is wasted. Lessons can be learned equally well from failures as from successes. Indeed, the project demonstrated the potential of exploring two relatively new technologies - animated simulation and GSS - that are not normally used simultaneously to support organisational redesign. Had this project explicitly acknowledged the role of action research from the outset, and had action researchers more familiar with the behavioural issues associated with systems implementation been involved, the outcomes might have been entirely different - or the project might not have got off the ground at all! However, both organisation and researchers would have been better prepared for challenges to the status quo that might subsequently occur. Establishing protocols that will govern how the researchers behave, what their domain of responsibility is, how they report their findings, and how the organisation undertakes to support their work - all of these are vital components of the action research process, forming part of what Susman (1983) refers to as the "client-system infrastructure".

In the World Bank, initial scepticism by management turned out to be unfounded, with suspicions of computer illiteracy proving to be untrue. Without the ingenuity and flexibility of the staff, as well as their previous action research experience, the project might not have been approved to proceed, since the technology would not have been effectively adapted to fit the circumstances of the African environment. The use of GSS in World Bank

headquarters had not prepared researchers to deal with situations such as vagaries in power supply and language translation reflecting local terminology and conditions. Without a flexible approach, which is essential for good action research (cf. Checkland, 1981), that enabled researchers to adapt quickly to local circumstances, the project, in all likelihood, would not have succeeded. Group dynamics were also noted to be different as a function of local culture which resulted in the need to modify session design attributes. The *in situ* sessions provided not only a wealth of content feedback but also process knowledge relative to the effective application of GSS in African contexts. It is doubtful that more traditionally controlled research approaches would have resulted in the amount of researcher and participant satisfaction and learning actually attained.

In the Hong Kong Police, the researcher became a value-added component of the team filling a void in the absence of the senior officer that otherwise would not have been covered: the teams simply did not have sufficient skills to facilitate the meeting by themselves, while the senior officer was unable to allocate a sufficiently high priority to the project. Although this lapse on the part of the senior officer constituted a serious protocol violation, the innate flexibility of action research meant that the project did not automatically collapse, each successive group of officers participating successfully in the project. Furthermore, as a result of the researcher's close involvement in the case, useful lessons can be drawn that inform researchers and practitioners alike. The value of GSS and action research for educational environments involving the study of management cases, notably those that involve real life problems with participants who have vested interests in the problem solution, was demonstrated. As researchers often work in educational environments, ample opportunities for research of this type should be readily available. Organisations outside the education sector still make considerable internal use of learning techniques, the police being but one example.

In Zeta, initial protocols suggested that the researcher would be responsible primarily for technology management. However, due to the unique circumstances of the project, this became an untenable role to hold, and in consequence the researcher took on responsibility for content facilitation as well, effectively changing the protocols. It was noticeable that after this change in project power structure, not only was more progress made, but the team members (some of whom had previously expressed the hope that this change would take place) themselves developed a more positive attitude to the project. The GSS played an important role in the project, enabling the shyer team members to participate anonymously, without fear of evaluation. At the same time, the flexible adoption of action research meant that the researcher was not required to follow a predetermined path (cf. Checkland, 1981), but could vary it according to the circumstances encountered.

These experiences permit us to examine how GSS can fit in an organisational context and suggest lessons that we can learn for future applications. A consistent characteristic of each of these cases is the establishment of trust and confidence between researcher and organisation - features that action research tends to engender and that the synergy between GSS and action research further promotes. As an organisation sees a researcher work actively and productively, it then becomes more willing to co-operate and share information that might otherwise not be revealed. At the very least, researchers would have been unable to carry out the more data intensive field research reported in the literature without initially intervening and gaining organisations' trust. Furthermore, action research was employed to assist the organisation in adapting the technology to fit existing needs.

Earlier, we noted the dual set of responsibilities that an action researcher must bear - towards action as well as towards research. Action research has been the target of much destructive criticism, including the accusation that action researchers themselves tend to produce research with little action, or action with little research (Foster, 1972). While weak

examples of any methodology can be found in the published literature, we believe that there is great potential for the action and research components of action research to combine catalytically, each reinforcing, and reinforming, the other. It is not a question of 'either-or', but of both. McKay and Marshall (1999) usefully draw attention to these two components in a revision of Susman's (1983) classic five-stage model of action research, proposing that the model should incorporate two cycles, not one. The first is an action cycle - the actions that the researchers undertake for their clients. Superimposed on this is a research cycle, reflecting the research activities that researchers must simultaneously undertake, so as to be able to address theoretical issues, and hence reinform the research community. The cycles proceed in tandem, each informing the other.

In order to exemplify how action research can contribute to theoretical knowledge, let us briefly consider one management theory (albeit one that is derived from evolutionary biology): punctuated equilibrium theory (Gersick, 1988, 1989, 1991; Gersick and Hackman, 1990).

Gersick (1988, 1991) proposes that groups develop in a discontinuous manner characterised by plateaux of stability interspersed by radical changes of transition. In such transition phases, a group would drop old ways of accomplishing tasks, adopt new perspectives on its work and make dramatic progress. Gersick's (1989) own explanation for the model refers to the Einstellung effect, namely the tendency of people to use the same habitual, problem solving techniques irrespective of their appropriateness or any success achieved. When these habitual behaviours become dysfunctional, the group needs some form of motivation to change. Such motivation may involve the sudden realisation that time is running out, but more practically could involve a change in task, a restructuring of group membership or authority, etc. An action research intervention can also be seen as a form of change, as it involves the intervention of an outside researcher who diagnoses, plans and

takes some action, generally introducing changes, some of which may indeed challenge the status quo - and so shifts the group out of its dysfunctional behaviour into a more productive mode.

Considering the problem situations described briefly above, the last one most closely exhibits the kind of dysfunctional circumstances that Gersick's model describes. Here, the CIO had led the team into a hole of non-cooperation from which he could not extract them. Researcher intervention disrupted the dysfunctionality, with changes to the way the task was handled, the power structure of the group, and the way in which team members were involved in the project itself.

Certainly, neither action research nor GSS are appropriate in every situation nor should they be applied (singly or jointly) without careful consideration. In the words of the ancient Chinese military strategist, Sun Tzu, "Do not repeat the tactics that won you a victory, but vary them according to the circumstances" (Wee et al., 1991). Baskerville, cited in Lee et al. (1995), identifies several criteria for action research, including: a real need for change; theory driven iterative problem solving; genuine collaboration with participants; and honesty when reflecting on theories. Even when action research is deemed appropriate, researchers need to ensure that, in their enthusiasm, they do not lose their objectivity and become swallowed up by the circumstances. In the presence of 'groupthink' (Janis, 1972), the researcher has both the opportunity and the responsibility to introduce alternative perspectives, methods and techniques. The researcher also needs to work diligently to maintain sufficient distance from the situation to study it effectively whilst maintaining organisational trust and confidence and the perception of adding value. The balancing act that this entails can be very difficult and challenging. Action researchers need to reflect periodically on their degree of involvement and its impact on data integrity while seeking to

be both vigilant and cognisant of the potential for bias that would adversely affect data analysis and interpretation of results.

Considering our findings from a wider perspective, it is valuable to reflect on their implications for global IT researchers and practitioners. We caution that there is unlikely to be a universal (and global) recipe for success in the application of GSS, though clearly action research assists researchers and practitioners to obtain valuable insights and enact appropriate solutions. Comparing the first and third experiences in this paper, GSS worked well because it helped the company/stakeholders do what they wanted, whether in the USA, Malawi or Zimbabwe. Nevertheless, in experiences two and five, GSS worked rather less well (in the USA and Hong Kong), due to fundamental cultural and motivational differences between those who instigated the GSS process, and those whose cooperation was required in participating in the GSS process, or in implementing its results. Thus, Ventana's management did not accept the broader implications of the changes required, while Zeta's team members were reluctant to accept that their involvement was necessary in the first place, a lack of interest compounded by the fact that they were not rewarded for the time they spent on the project. These diverse results illustrate the need to avoid assuming that a universal solution will apply, irrespective of the local situation. A global solution is a chimæra. It is always essential to consider cultural, motivational and intentional issues when applying a tool such as GSS, even when applying it in the same environment as informed its development.

CONCLUSIONS

Action research puts academics on the front line with organisations, exploring new concepts and removing uncertainties. If properly consummated, action research can add to knowledge while proactively assisting the organisation address its problems. Reasonable rigor can be sustained in the presence of high degrees of relevance. It is argued here that this form of

research fits especially well with rapidly changing situations in complex environments. The studies discussed above illustrate the potential of the action research approach to harmonise the technology with national and organisational cultures. It is also argued that this form of research is particularly conducive to gaining the respect and confidence of organisations without sacrificing academic objectivity.

Specific benefits identifiable through this research include:

- Action research enables researchers to gain access to an organisation, providing evidence of immediate value;
- The action researcher becomes a value-added component of the intervention, providing advice and assistance at the same time as undertaking process and content analysis;
- Action research promotes learning with respect to the change processes that occur, with all stakeholders benefiting.

At the same time, action research is likely to run into difficulties if protocols are poorly established, management support is lacking, the status quo in an organisation is inviolate, and key stakeholders are not consulted on impending process changes. Action research is a highly flexible and adaptive method that can be applied to the infinite variety of circumstances found in the organisational world (Weick, 1994). It does, however, require an actively involved project champion if it is to be successful, particularly where the status quo is both deeply rooted and threatened. Overall, action research can enable the realisation of a synergistic solution to link organisational needs and academic research desires, though we caution that each application needs to consider local circumstances. This makes it a viable and desirable method because of its merits in a multitude of contemporary organisational situations.

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