

Chapter Nine: Analysis of Action Research Methodology and the Research Framework

9.1 Introduction

In this chapter we first briefly summarise the four cases, identifying key characteristics of the cases on a comparative basis in table format (see Table 9.1 below). We then analyse our use of action research in this thesis, focusing on the key components of the methodology as they have been applied in our research. Particular attention is paid to the way that we have operationalised our methodology, the design and value of the research instrument and the critical role that the researcher plays. These have been separately introduced in Chapter Three, where we explained how we intended to conduct the cases. In practice, our intentions have been modified as we conducted the research. These modifications have enabled us to realise significant insights regarding the value of action research as a methodology for meeting support.

Following this analysis, we return to the research framework, as developed in Chapter Four, in order to discuss how it has been used through the four cases. This discussion will enable us to elicit the strengths and weaknesses of the framework, and, in particular, draw up a revised framework that is informed by our research. This revised framework includes: the incorporation of new components that our research has shown to be important; the repositioning and renaming of some components within the framework; the removal of a few components judged to be redundant.

9.2 Case Summaries

9.2.1 Case One - Strategic Planning at the City University of Hong Kong

In this case, a small task group of five people was set up to assess how financial resource utilisation in the University could be made more effective. The senior administrator who led the group requested a demonstration of the GSS software, this demonstration turning into a planning session for the subsequent use of the technology. The group only made significant use of the GSS on one occasion, but a large number of ideas believed by the group leader to be valuable were generated. Thereafter, it was used primarily as a form of team process memory, with the group

leader having a de facto write privilege while the other members only read information from the GSS. The researcher assisted the group leader with meeting planning and initial information entering. Thereafter, his key role was to act as a technical trouble-shooter and adviser for software functionality issues. The group leader decided that while public use of the GSS was suitable for the early, intensive, brainstorming stage of the case, in the later stages a more focused, verbal discussion was necessary. Overall, the group leader was very satisfied with the use made of the GSS in the case.

9.2.2 Case Two - Faculty Retreat Planning Sessions at the City University of Hong Kong

In this case, academic staff from the five departments of the Faculty of Business volunteered or were nominated to join a team formed to discuss and decide upon topics for the annual faculty retreat. As in the first case, the group had a tightly circumscribed deadline to work to, and so only two meetings could be held. Where general participation issues are concerned, the team members recognised the increased productivity enabled by the parallel idea generation with the GSS. The provision of anonymity was also considerably appreciated since many different status levels of personnel were represented - one senior academic member of the team observed that she would normally never contribute to a meeting. Her willingness to do so in the sessions described in this case was entirely due to the fact that her contributions were anonymous.

The convenor of the team decided that in order to improve the task focus of discussions, all comments generated by participants should be prefixed by an appropriate code. This codification scheme was largely followed, though some members found it too rigid, not all ideas readily falling within one of the pre-specified codes.

9.2.3 Case Three - Management Training Sessions with the RHKPF

The third case involved the training wing of the Royal Hong Kong Police Force. All police officers undergo various forms of training at regular intervals including management training. The case describes one element of this training that was designed to improve the officers' familiarity with computer based tools for decision making. Five meetings were held between November 1996 and May 1997. A unique

feature of this case is the impermanence of team membership, i.e. the officers involved were different for each meeting. The officers, working in groups of five to eight members, had to solve an unprepared task over the course of approximately 2½ hours. Three different tasks were used for the meetings, and although the officers would not normally have been involved in *decision making* in situations of the type we employed here, the issues were nonetheless familiar and relevant to their work. An issue associated with the task concerns the propensity of the first training officer to provide extra, complicating or clarifying information while the group discussion was in progress. This form of information provision gave each case a 'live' atmosphere, i.e. as if it was actually taking place and the officers were dealing with new information as it came in.

In this case, the researcher took on a much more involved role, planning all activities and actively guiding the progress of each meeting. The training officer, on the other hand, was generally much less involved - in the last two meetings he was not present at all.

9.2.4 Case Four - Business Process Re-engineering with Stable Loan

The fourth case was undertaken from January to July 1997 with a management accounting firm, referred to in Chapter Eight as Stable Loan. The case describes the use of GSS as a supporting tool for a Business Process Re-engineering (BPR) project. The aim of the project was to re-engineer the procedure used to bill clients of the firm. A secondary aim of the project was to trial GSS tools for future use in BPR projects, and thereby to develop a methodology that the organisation could use on subsequent occasions.

The team involved in the project comprised a project leader - the CIO of the firm - and five other departmental managers. Some twelve meetings were held in total, though not all of these used the GSS and considerable problems of participation were experienced throughout the course of the project. Furthermore, the stability of the hardware and network set-ups at the accounting firm (where all meetings were held) left a lot to be desired, with frequent software crashes. The researcher started off playing a technical support role, but this evolved half way through the project to include responsibility for other activities such as process and content planning. The changing nature of his role caused some friction with the

project leader initially, the latter being both sensitive to criticism and intolerant of others apparently infringing his prerogative to lead the group.

9.3 Action Research Components

There are three key components of this discussion of the action research we have undertaken: its operationalisation, including the methods used, the environmental context and culture; its data collection methods, specifically the research instrument and its derivations, but also other techniques; and finally, and most importantly, its proponent - the researcher - and his role through the course of the research.

9.3.1 Operationalisation

In action research, a fundamental cycle of activities are specified as taking place on a longitudinal basis, viz.: planning, execution, observation and reflection. They are fundamental, since they form the very basis on which action research is proposed to operate. Each of the activities can and should contribute to the learning and understanding that the researcher gleans from the action research, and so also should inform the later activities in the cycle. We have described this cycle in action in Chapters Five to Eight through the various cases.

Table 9.1 Key Characteristics of the Four Cases

Case Characteristics	Case One	Case Two	Case Three	Case Four
Task type (see Figure 2.1) and culture	Creativity and planning task, with some mixed-motive aspects due to conflict of interest. Semi-structured task management.	Creativity and planning task, with little conflict resolution attempted. Structured task management.	Creativity, planning and preference decision making. Task was subject to continuous change. Initially ad hoc task management, later more structured.	Creativity, planning and preference decision making with conflicts of viewpoint and interest present. BPR used as a guiding methodology. Strict task culture imposed by CIO.
Task complexity (TC), analysability (A) (Rice, 1992) and vested interest (VI)	TC - medium A - easy - medium VI - high	TC - low-medium A - easy VI - medium	TC - medium - high A - medium - high VI - high	TC - high A - medium - high VI - low - high
Group Composition (GC), Duration (D), and Development (H)	GC - selected D - Short (3 mtgs, 4 hours) H - too short to assess.	GC - Voluntary D - Short (2 mtgs, 2 hours) H - too short to assess.	GC - Mandatory D - Individually, short (1 mtgs, 2-3 hours); as a group, long (9 mtgs, 20 hours); overall, long (1 month). H too short to assess .	GC - Selected D - Long (11 meetings, 20+ hours) H - basically life cycle model (Mills, 1967), but moderated by punctuated equilibrium theory (Gersick, 1991).
Facilitation Style	Chauffeur	Chauffeur and minimal process facilitation.	Initially chauffeur, later process, then process and content facilitation.	Initially chauffeur, later process, then process and content facilitation.
Leadership style	Hands-on but tolerant and encouraging.	Hands-off, reliant on pre-conceived task culture structure.	Initially hands-off, later absent.	Initially very dominating, hands-on. Later less dominating, but still hands-on.
GSS Tools Employed	Categoriser	Categoriser, vote	Categoriser, vote, survey	Categoriser, vote

All four stages of the cycle are equally important to action research and it is necessary that each of them should take place if improvements are to be achieved. Hence, it is impractical to plan a meeting without reflecting on previous meetings, discussions, conversations, and so forth.

We originally expected that each case would go through several cycles, but as it happened only the last two cases did so. In these two cases, five and twelve meetings were held respectively, though the GSS was not used in all meetings, nor was the instrument always used to collect data. However, the basic cycle was always maintained, even though there were, at times, long intervals between meetings.

When we reconsider the operational plans that we drew up in Chapter Three to guide us in the action research, they seem both simplistic and inflexible. We planned that some activities should be undertaken and some perceptions of processes measured. We also pre-determined how we would like to measure those perceptions, i.e. when and using what techniques. However, Jay Nunamaker, one of the most renowned GSS researchers, has commented that no meeting he has ever undertaken with GSS has gone according to plan (Nunamaker, 1996). Claude Lévi-Strauss, the renowned anthropologist, has commented that when working in the field, one should "follow the lie of the land" rather than expecting to stick to pre-determined techniques and styles of enquiry (cited in Descola, 1996, p.40). Checkland (1981, p.153), commenting specifically on action research, notes that it "cannot be wholly planned and directed down particular paths".

Plans, therefore, cannot be rigid and inflexible if they are to work. In Case Two, the perfect example of this occurred when the convenor changed the plan of the second meeting three minutes before the scheduled starting time, requesting that the entire focus of the discussion be realigned. In Case Three, on the other hand, initial meetings were intentionally planned to be unplanned - to be *ad hoc* - with additional task information being added from time to time according to the whim of the training officer. The researcher could plan approximately what might happen, but could not hold the training officer to a plan. Such a rigid approach would have been, in the eyes of the training officer, defeating the object of his use of the GSS, which was to inject some crisis management information into the task. In Case Four, we were required to replan meetings on several occasions when, for example, the GSS failed to operate or the participants failed to contribute as expected.

None of these experiences cause us to dispute the value of planning as a key element of the action research cycle, but do lead us to caution that such plans should incorporate flexibility, an attribute of facilitation identified as being important by Niederman et al. (1996). It is perhaps in the nature of action research that plans themselves must improve, as a meeting progresses, so as to correspond more appropriately to the prevailing circumstances. In a similar manner, and this also relates to meeting planning, the way in which GSS technology is used must also be carefully matched to the individual circumstances of both the task and the people tackling the task. As we recounted in Chapter Eight on a number of occasions, the GSS appeared to work most effectively when it was employed in support of a task where participants needed to generate, discuss or evaluate ideas. In other situations, such as the development of fine points of consensus, the GSS seemed much less appropriate to the task. This appropriate use did not, furthermore, depend on the familiarity of the team members with the GSS since after several weeks of use they still made poor use of the tool for these other purposes.

Another operational issue that relates to the GSS software, and also to the operational side of action research, is anonymity. Anonymity is often seen as a vital, even taken-for-granted aspect of GSS research and practice, the usual rationale being that anonymity promotes free, unbiased and task focused discussions, while diminishing the negative effects caused by such status effects as domination and intimidation (see 2.3.3.1). However, anonymity has the potential to influence the way that participants in a meeting behave and as a result its use should not be indiscriminate.

The process owners in all four cases of this research decided that they wanted participant contributions to be anonymous for precisely the reasons we have outlined above. In Case Two, the value was felt to be especially high as there were many levels of the organisational hierarchy represented in the meeting. One senior academic noted that normally she would be extremely unwilling to contribute in meetings simply because she did not want her comments to be identified. In an anonymous meeting, however, she was very willing to contribute. In Case Three, the training officer felt that anonymity was valuable because he knew that some officers were naturally dominant. He wanted to minimise these officers' opportunities to dominate and thereby to draw the other officers out into the discussion more. In Case Four, the participants themselves insisted initially that the communications

should be anonymous as a condition of their participation, not because they themselves worried about who said what, but because they did not want people from outside the group (potentially including their superiors) to get wind, albeit accidentally, of who had said what.

While the protection of identity and the promotion of participation are noble and realistic objectives that can be accomplished through anonymous communications, there is a downside to anonymity that we discovered in Case Four. The unwillingness of the team members to participate has been extensively discussed in Chapter Eight. However, it is notable that the anonymity of communications facilitated their non-communicativeness in distributed meetings since it was impossible to ascribe authorship of an idea or comment to any individual. For this reason, it was also impossible to know who had contributed and who had not. A similar process was exercised in reverse by the CIO who revealed to the researcher that he had contributed many of the comments and ideas, yet they too were disguised behind a quasi-team authorship for the same reasons. Thus, the CIO was able to exercise a certain covert dominance over the meeting content simply through the sheer number of his own contributions to the discussion. Although the other team members claimed to be able to recognise the CIO's contributions by his style of writing (Benbasat and Lim (1993) note that anonymity is hard to implement in well established groups), they did not seem bothered by this dominance. Data collected through the meeting instrument shows that while they did feel influenced and intimidated at times, this did not inhibit their reported willingness to participate.

In this fourth case, the continued use of anonymity depended on the original preference of the team members (to protect their identity from non-team members), and also on the CIO who did not want to risk reduced participation through identified communications. However, from an Action Research perspective, it would have been fruitful to have explored identified communications, partly so as to counter the CIO's covert dominance. Although this was impossible within the culture that had been established for the meeting, the researcher was able to realign the communications by becoming more involved in process and content support of the meetings and thereby moving the CIO out of his dominating position, i.e. directly encouraging participation from the other team members. The effects of this strategy are described

in Chapter Eight, but were essentially positive. We discuss this further in 9.3.3 where we consider the role of the researcher.

We have referred to the culture of the meeting here, yet there are other cultures that are important to the operational management of the cases. Key amongst these are organisational culture and to a lesser extent national culture. Case Four showed us the values attached to deadlines by the team members, and to chargeable time by the firm as a whole. These two factors were powerful components of the organisational culture as they controlled not only how and when work was undertaken but even which work was undertaken. Work that was not deadlineed was given a low priority - as the CIO experienced when his non-deadlined work was inadequately completed. Work that could not be charged for (i.e. non-client work) also received a low priority - as the CIO belatedly realised. The researcher was surprised that the CIO had such poor knowledge of issues evidently critical to the success of the entire project, especially given the critical nature of these issues within the organisational culture. The organisational culture could not be ignored and was certainly more commanding than any pleas or requests issued by the CIO. However, we also note that the organisational culture itself was rigid and inflexible. Conducting action research, or indeed any work that requires people to give up their time, under such a culture is fraught with difficulty in that it appears to be in nobody's best interest to co-operate. A more flexible line in the culture is essential, and would have to be sought in advance in case of future projects in this organisation or any other with a similar culture, if such work is to have a reasonable chance of success.

The national culture of the CIO also came into perspective in Case Four as the interactive style favoured by him was quite different to that preferred by most other team members. He employed a very vigorous and aggressive style of debate that might be quite acceptable in an Anglo-American culture, but that was entirely out of kilter with the milder form of discussion favoured by the other team members. He admitted quite openly that others might have difficulties adjusting to his style, yet he did not attempt to modify it by taking into consideration the views of others. This uncompromising attitude can very easily be characterised as arrogance or intolerance.

Managing the culture of the meeting environment, the organisation and the group members is a difficult task, yet one that should not be shirked in action research. It is primarily the job of the researcher to address the issues, to mediate

the differences and to try to ensure that a common language is established between the various parties, while also striving towards solutions. We discuss the role of the researcher further in 9.3.3 below.

9.3.2 Data Collection Methods

The collection of data and other information is essential to action research as it is the prime output of observation, and the prime input to reflection, as well as to planning for future meetings. We have employed various methods of data collection in this research, the research instrument being the one that was used most consistently. The development and validation of the instrument has constituted a major element of this research (see Chapter Four) and has in addition been published elsewhere (Davison, 1997). Other information gathering techniques have included: direct observation by the researcher during meetings; interviews; informal face-to-face and electronic discussions with team members and group leaders before and after sessions; conversations with individuals who have not been members or leaders of teams, but who have known members or leaders; and documentation produced during the course of a case by the leader or team members. This wide range of information has helped us to triangulate our findings, so that an observation measured by one means can often be confirmed or qualified by another observation elsewhere. However, it has not always been easy to gather the information that we needed. In Case Three, the RHKPF refused to give us sample copies of training materials that are used on the course citing first the fact that they would be unintelligible as they made extensive use of police jargon, and secondly the fact that they were restricted and could not be released to unauthorised persons.

The instrument has been particularly valuable for measuring longitudinal trends in meeting processes, notably in the last two cases. These trends show remarkable stability for some processes, for example communication and discussion quality, while others fluctuate considerably, consensus and satisfaction with a meeting's outcomes being cases in point (see Tables 7.6, 8.6 and 8.7). Despite the instrument's importance as a measure of key meeting characteristics, it has, however, been shown to have some minor weaknesses. These did not become apparent in Cases One and Two due to the very short duration of those cases, nor in Case Three as the group membership was continually changing and therefore no one person completed a questionnaire more than once. In Case Four, however, after

two meetings had been undertaken, the CIO perceived that the instrument was not collecting what he felt to be useful data and as a result some refinements to the instrument were introduced by the researcher. Most of the scales used to measure the meeting process items were modified to indicate whether or not processes had improved, deteriorated or stayed the same when compared with previous meetings. The refinements introduced were critical to the action research, and illustrate how the client and the researcher worked together to reach a mutually satisfying solution.

One of the most critical points about the revised instrument is its facility for identifying meeting processes that are perceived to deteriorate - obviously these are targets for improvement. Where such a process can be identified, all team members can be questioned on this item and a better understanding developed. It may even be necessary to devise a whole series of questions about this one item (a form of mini-instrument) so as to focus more clearly and accurately on the problem and collect data that can help in its resolution. This approach was used in Case Four in week ten to examine the whole issue of participation. The researcher prepared a number of questions to ask the team members to establish why, despite their apparent willingness to participate in the project, they were having such difficulty in committing the time to do so. These questions were asked verbally, with the pressure being for immediate feedback since this could provide direct input into planning. Despite the usefulness of this intensive questioning, it would be impractical to conduct such a detailed analysis of many issues or at frequent intervals, since the amount of time involved would be prohibitive for the team members who would very likely refuse to co-operate at all.

Indeed, a fundamental problem with Case Four data collection was the unwillingness of team members to complete questionnaires immediately after a meeting, preferring to do so later and to return the questionnaires the following week. This had the unfortunate effect of delaying the value of the feedback by a week. However, the team members were unco-operative on this score and generally were unwilling to spend any length of time on activities they perceived to be of little value to them.

As well as introducing refinements to the research instrument, we observed that two of the criterion variables used - consensus and satisfaction - were insufficiently precise or accurate to measure the complex issues involved in meetings. The scores measured for these two variables fluctuated considerably,

suggesting that a more detailed measurement of the constructs is necessary. This inadequacy of item precision was recognised when these items were included in the instrument, yet the hazard of introducing a range of questions for each of satisfaction and consensus was that the instrument would grow progressively longer and less convenient to complete. Work conducted by Zigurs and Dickson (1990), shows that there are at least thirty possible components of a satisfaction construct. In recognition of these problems, the researcher is working with colleagues in the Netherlands and the USA on a separate research project that examines satisfaction with GSS meetings. The instrument that emerges from this research will lend itself to validation in action research contexts in the future. Similar work needs to be done for consensus. However, this brief discussion of these two issues clearly illustrates the difficulties involved in developing a comprehensive instrument. An instrument can be a useful tool to elicit key process related issues, but it will never elicit them all, nor will it tell the researcher all he or she needs to know about the meeting. The requirement for other sources of information is considerable.

9.3.3 The Role of the Researcher

When we first planned how the researcher should function in the cases, we believed that he should play "the role of the facilitator, but not the process owner, adjusting the use of the technology so as to fit the process needs of the group most effectively" (see 3.6.3). He would also need to observe and collect data, as well as reflect upon and plan future meetings. However, we felt it advisable that the researcher try to stay out of the actual content of meetings, and their processes, believing that these were more properly the prerogative of the group leader. The role of the researcher was thus to involve technical facilitation, but little more. This role was largely adhered to in Cases One and Two, as the leaders of those cases took control of the meetings confining the researcher to meeting planning and technical support activities. His ability to collect data was rather limited as a result, but the short, sharp nature of these cases prevented deep reflections about their progress.

In Cases Three and Four, however, the role of the researcher changed, with considerably more opportunities for him to become involved with the meetings. These opportunities primarily arose due to the different personalities of the project leaders. In Case Three, the researcher found that his role became more important over time as the involvement of the training officer diminished. At the outset, the

training officer adopted an *ad hoc* leadership style, while also directly encouraging the researcher to become involved. He believed that the researcher was more familiar with the tasks being discussed and the possible techniques for tackling them with the GSS software. This unexpected development of the researcher's role opened up new perspectives of meeting dynamics, with the researcher alone responsible in the last two meetings for all activities as the training officer was not present at all. This necessitated much more planning and reflecting on processes, and resulted in the researcher introducing changes in the way that meetings were organised and executed, such as his informal use of an agenda to plan activities. He also became responsible for assisting the police officers with content issues when their discussions became confused. These changes, it is argued, provided substantial benefits to the police officers, who were able to accomplish significantly more work in the later groups than the earlier ones.

The trust that the training officer evidently had in the competence of the researcher is encouraging, yet it also demands a reappraisal of the role of a researcher - deeper involvement enables greater learning to take place, with more significant understanding and hence real improvements can be effected in meeting processes. However, the responsibility of the researcher is also increased proportionately. Such a development of role may not be predictable at the outset of a case, yet it clearly cannot be ruled out either. Equally, the researcher should attempt to clarify his role at the outset of a project as far as is possible. In general, the action researcher must be prepared for all eventualities and be prepared to take on all responsibilities that the dynamic process of the meeting causes to occur.

Case Four exemplifies this 'unpredictable role development', since the researcher once again took on an increasing load of responsibility as the case developed, though in very different circumstances. The role of the researcher evolved from the purely technical facilitator to one that included responsibility for meeting process and, to some extent, meeting content. This evolution came about partly as a result of the request of team members and partly as a result of the researcher identifying valuable activities he could perform within that new role. The CIO was happy to see the researcher take on these additional responsibilities given his own lack of success in persuading team members to participate, and also acknowledging that he had too many of his own vested interests to be an effective leader.

Many of the problems that plagued Case Four, however, were attributable in some measure to the personality of the project leader - the CIO - and his management of the case or his knowledge of circumstances that concerned its progress. In this case, the researcher had the sensitive responsibility of assisting the group in its task while also reducing the sometimes overbearing influence of the project leader. The interacting roles of the researcher and the project leader were the cause of a certain amount of friction as the researcher's involvement increased, before a new status quo was achieved with the researcher playing a more prominent role.

These changes in role were welcome developments for the researcher who found it increasingly difficult to divorce technical facilitation from process and content facilitation. His new responsibility meant that he no longer felt that he was *interfering* in meetings but positively *intervening*. This intervention was on his own terms, informed by the needs of the group as measured through the various data gathering exercises. The positive trends in data collected from Case Three (see Table 7.6) demonstrate the success of this action. The researcher had no vested interests in a particular solution being achieved by the group members, though clearly it was to their benefit that a solution should be reached. Furthermore, as a neutral figure he could, if necessary, reduce the dominance of a group leader, while still ensuring that the task discussion was kept focused.

Through his involvement in the process, content and technology of meetings, the researcher was able to conduct a more detailed examination of meeting processes, and hence gain an understanding of the real issues that permeated and underlay meetings. This experience could not be gained solely from technical facilitation and so illustrated to the researcher the importance of his role in action research. This perspective is supported by Checkland (1981, p.152), who notes: "the researcher does not remain an observer outside the subject of investigation but becomes a participant in the relevant human group ... [and] in the action". Furthermore, in action research, the researcher needs to ensure that his own hands are not tied by circumstances or people to a 'preferred' action or solution that may not be in the best interests of the group being supported. In order to secure and support those best interests, it is important that the role of the researcher be established from the outset of his involvement with a group. Detailed pre-planning of the techniques and methods available for use by all stakeholders - team members,

group leader, external stakeholders and the researcher - in the tackling of a task, should clarify the responsibilities of the various parties, with the emphasis being on proper and effective use of the various talents and skills available.

A weakness of our operationalisation has been the failure to involve the meeting participants or leaders in significant collaborative and analytical roles, i.e. as co-investigators or co-researchers (Argyris et al., 1985; Ledford and Mohrman, 1993; Elden and Chisholm, 1993). Such collaborative involvement is important, as it enables the participants, as well as the researcher, to share ideas and learn from the research, thereby reinforcing their own meeting processes and content. In this sense, Case Three may have achieved this objective if the learning gleaned was employed later in the management skills training programme that the police officers were attending. However, it was impossible to ascertain whether this did occur or not. In Case Four, the poor motivation of the participants clearly signified their unwillingness to get involved in any more task-related activities than absolutely necessary. The CIO did participate in such analysis, through his discussions with the researcher.

Where the researcher himself is concerned, a number of qualities are desirable since these will make the meeting facilitation process more effective. A researcher should expect to be faced with, and hence have to adapt to, unpredictable circumstances, widening responsibilities and other eventualities. Cases Three and Four illustrate these conditions with their own unique characteristics. Furthermore, a researcher must also possess both persistence to keep going with a task and its team, and sensitivity to the cultural and personal vagaries of the people and organisation with whom he is working, if he is to effect an optimal intervention in a case and gain approval from all stakeholders.

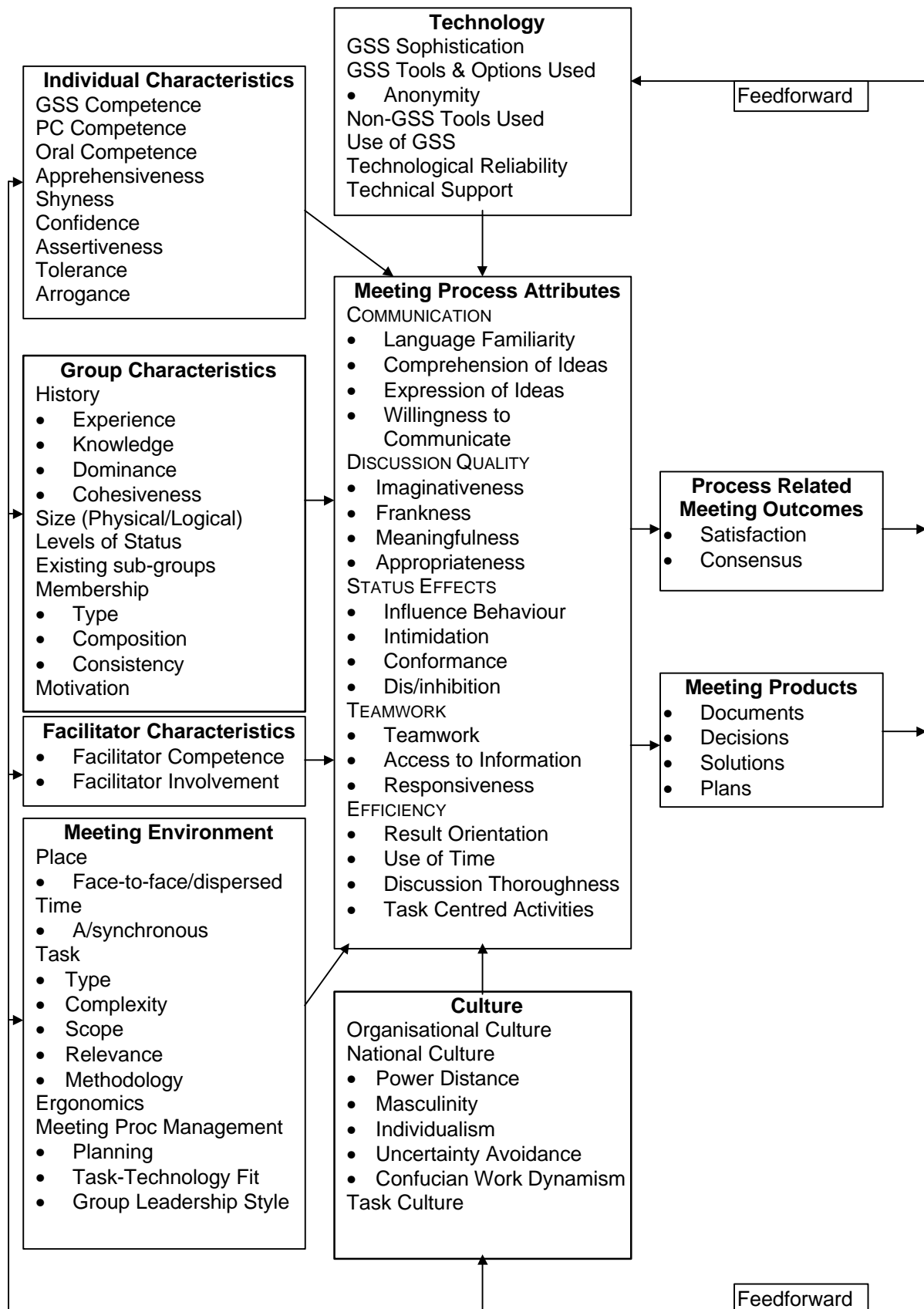
9.4 Research Framework Review and Redesign

Following our review of the key components of action research as we experienced and perceived them in our cases, it is appropriate to consider how our research can reinforce, critique and, if necessary, expand upon existing theory (Kemmis, 1980; Checkland, 1981, 1991; Argyris and Schön, 1989; Galliers, 1991; Dick, 1993; Vreede, 1995; Eden and Huxham, 1996).

In Figure 4.2 above, we presented a view of meetings that was informed by the research literature we reviewed before undertaking the case studies in this thesis. This research framework was instrumental in the planning of the research and the development of the research instrument. However, through the conduct of the four cases, many new findings have been realised that cause us to rethink the way that our research framework is presented. While the general pattern of the framework still holds true, we need to include new inputs, processes and outputs that our research has identified as being important to the conduct of meetings where GSS is used for meeting support and where action research is used as a methodology to guide the meetings. As we have observed above, the cyclic pattern of activities, with information feeding through the cycle is critical. Research models sometimes refer to feedback, and this is a term that we used in our original framework (see Figure 4.2). However, in the context of action research, where there are a number of cycles, a more appropriate term is 'feedforward', since the information, lessons and experiences do feed forward to the next cycle of action. The framework is thus ever changing as the cycle moves forwards, not so much in terms of the components as in terms of the content or experience of each of the components.

In the following sections, we consider each 'stage' of the framework in turn, examining the components as we experienced them during our research, and adding new components where necessary. Where new classes of components need to be added, this will be clearly explained. The revised framework is presented in Figure 9.1 below. We propose this new framework as a guide to research that makes use of group support technology with the intention of improving meeting processes and outcomes. The framework does not, for reasons of space, include the myriad of all possible components, sub-components and attributes of components that may be supposed to exist. Furthermore, this framework requires further validation though much of it has been informed by the research we have undertaken here.

Figure 9.1 Action Research Framework for GSS-Supported Meetings



9.4.1 Meeting Inputs

In the Input stage of the framework, we originally identified five classes of inputs, viz.: Technology, Individual Characteristics, Group Characteristics, Meeting Environment, and Culture. These are described in turn below. A new class - Facilitator Characteristics, is also introduced.

9.4.1.1 Technology

GSS Support and GSS Facilitation were originally included in the framework simply so as to distinguish between meetings that did or did not employ GSS support, and also to indicate what kind of facilitation was available to the groups supported. All the cases in this research have made use of GSS support (even though the GSS has not been used in all situations) and facilitation has always been available. However, the former of these two items can be subsumed under GSS Tools used - if GSS Tools are used, then evidently GSS support must be employed. GSS Tools we discuss below. GSS Facilitation relates very much to the facilitator and this research has exposed many important details about the role and functionality of the facilitator. As a consequence, we will be proposing an entirely new category - Facilitator Characteristics - which will be discussed in detail in 9.4.1.4 below. As a result of this reorganisation, 'GSS Support Provided' and 'GSS Facilitation Provided' are both removed from the framework.

Where GSS Sophistication is concerned, we originally conceived of the level of sophistication being fixed for any one GSS, choosing to apply the standards developed by DeSanctis and Gallupe (1987) to determine this level. In practice, this definition of sophistication is too narrow as other important factors also relate to sophistication, including the flexibility or customisability of the software, and the general ease of use of the interface as perceived by the users. An example of a weakness in the GSS we have used (GroupSystems), was the impossibility of permitting participants to edit only their own ideas/comments, yet not those of others. While a general framework need not explore the individual components of sophistication to this level of detail, it is important that the concept of sophistication be expanded beyond its previous narrow definition.

In earlier chapters we have described the various tools that are available in a GSS and there is no need to reiterate the description here. In this research, we have

primarily used the Categoriser, Group Outliner and Vote tools, while the Survey tool was used in Case Three. We wish to observe that the options within each of the tools (and the way that these options are set by the meeting facilitator) are also important, viz. the types of voting mechanism employed, the ability of meeting participants to edit their inputs, the ability of participants to bypass items when voting, and so on.

Anonymity is the one 'option' that we have chosen to make explicit in the framework. In 9.3.1 above, we have described the various effects caused by the use of anonymity and it is certainly an important component of the GSS toolbox. While the GSS literature typically focuses on the promotion of process gains and minimising of process losses that anonymity can induce, Lyytinen et al. (1993) observe how its use may be inappropriate. They cite the case of diplomatic negotiations, where country representatives insist that their public positions not be anonymous. All groups in this research communicated anonymously so far as the technology was concerned, though the researcher had reservations at times about the advisability of this practice, believing that its use should be justified in each instance. Given the slightly expanded explanation of this component, it is modified in the framework to 'GSS Tools and Options Used'.

Where non-GSS Tools are concerned, only a relatively small number were used during the course of this research, viz. whiteboards, over head projectors and hard copies of reports. Email was used as a communication device predominantly in Case Four, but also in Case Two.

As a result of the research, we propose three new items to include in the Technology category. These are: the way in which a GSS is used (Use of GSS); the reliability of the technology (Technology Reliability); and the availability of technical support to solve problems that are encountered while the technology is being used (Technical Support). These are discussed below.

The way in which a GSS is used need not mean a simple use of the tools by all participants in a meeting. In Case One, we encountered a situation where the group leader focused discussion by only permitting himself to enter ideas into the GSS. All other members were required to use verbal communication. The leader thus acted as a secretary, while the GSS functioned as a form of group memory for the rest of the group - they were free to scroll through the screens of data that had been entered previously in order to find points to assist them in their verbal

discussion, but all data entry was undertaken by the leader. The use of the GSS as a form of group memory occurred in all groups we supported, where, for instance, the on-line repository of information was a valuable resource to support GSS and non-GSS interactions. In Case Two, the convenor insisted that all interaction between the team members should be via the GSS. Thus, the use was mandated. In other groups, for example in Case Three, a less rigid approach was adopted, the training officer not minding whether the GSS was used or not, so long as the police officers were able to make progress towards a solution to their task. This combined use and non-use was often effective, the officers able to bring out their key points in electronic brainstorming, then discussing them face-to-face in order to clarify details. The officers themselves noted that the GSS had the effect of depersonalising interaction on occasion and therefore they were able to overcome this by combining use and non-use of the technology.

We experienced a wide range of problems with the GSS technology across the four cases. These problems have been described at length in the cases, but can be summarised as involving software, hardware and network reliability and stability. Future research or practice with GSS (or other) technology(ies) will certainly have to take into account the vagaries of technological reliability. A closely associated issue is the availability of technical support for software, hardware and network. Cases One, Two and Three all took place in the same location where a good level of technical support was available ensuring a stable network and hardware environment. That same stable environment did not exist in Case Four, which we shall discuss further below under ergonomics in 9.4.1.5. Where the software was concerned, the technical support available in Hong Kong was non-existent, the researcher relying entirely on his own modest ingenuity and an email 'hot-line'. The inadequacy of this situation has been described before. However, neither the reliability of software nor the provision of technical support are mentioned in the mainstream GSS research literature, suggesting that problems simply don't exist. The exception is Niederman et al.'s (1996) study of the facilitator's perspective of meetings, where it is noted that technical reliability and effectiveness are important. Evidently more attention will have to be paid to this critical area in future, hence its inclusion in the framework.

9.4.1.2 Individual Characteristics

Six characteristics of individuals were specified in the original research framework: GSS Competence, Oral competence, Apprehensiveness, Shyness, Confidence and Assertiveness. To this list we shall add a further two characteristics - Tolerance and Arrogance - and will discuss these below.

In Cases One, Three and Four, all meeting participants including group leaders were initially novice users of the GSS. This meant that their initial competence level was equally low, yet this did not present significant problems to their use of the tools. The ability of a small number of participants to make use of the GSS was hampered by their general unfamiliarity with PCs and, in consequence, their inability to type. In Case One there was one non-typist, while in Case Three there were a couple more. While these numbers were not substantial enough to cause significant disruption to the group interaction as a whole, those individuals suffered a reduced ability to participate in the discussions. Typing and PC competence are therefore more important initially than GSS competence, since most users start from the same low level of the latter. Over time, however, the GSS competence of users did increase as they underwent a learning process, though this was only noticeable in Case Four. This higher level of competence was particularly noticeable by its absence when new members joined the team, for example when deputising for an absent colleague.

All meetings were formally conducted in English, but participants were free to use any other language (primarily Cantonese) if they desired when speaking to their team members. This use of Cantonese was particularly prevalent in Case Three, where the police officers spent some time discussing issues face-to-face in the midst of their use of the GSS technology. In no case did oral competence appear to be a problem, though the membership of the team in Case Four was deliberately restrictive in that those potential team members who were expected to have poor English communication skills were excluded from the group.

The four personality characteristics of apprehensiveness, shyness, confidence and assertiveness were initially measured by the research instrument. However, the data collected did not suggest significant problems to watch for. The participation we observed, furthermore, did not indicate that some participants were too shy or apprehensive to get involved, while their levels of assertiveness and

confidence did not translate (with one exception) into a more overt dominance or aggression. The one exception was the leader of Case Four, about whom we shall refer below under 'arrogance' and 'tolerance'. Confidence building was an avowed aim of the training course in Case Three. However, it was impossible to measure significant increases in confidence as a result of tackling one task over a single afternoon. We suspect that in carefully constructed and well-balanced groups, these four characteristics will not prove to be important for facilitators. However, they serve a useful purpose in the framework in that they remind researchers that if there are wildly different levels of these characteristics (as well as those we shall discuss below) within a single group, then more serious effects may be caused in the general interaction process.

We are adding two extra characteristics to this category - tolerance and arrogance - primarily as a result of experiences gained in Case Four. We observed that the leader of this group (the exception referred to above) was intolerant of the different interaction styles of others. His own attitude towards many of the other members of his team suggested a covert arrogance, in that he insisted on his own manner of discussion management, leaving little to chance and essentially requiring others to emulate his style if they wanted to exert any appreciable impact on either him or his views. The team members themselves, familiar with both their group leader and the culture of the organisation as a whole (culture is discussed in 9.4.1.6 below), largely ignored his pleas for their participation since their own interests were not best served by doing as he wished. His inability to see this, coupled with his inability to perceive issues of organisational culture critical to the success of the task, illustrate his arrogance and intolerance. Our inclusion of these two items in the research framework does not suggest that we believe that they should be included in a research instrument. However, it does warn future researchers of the dangers of intolerance and arrogance and of the harmful effects that these two characteristics may exert on meeting processes.

9.4.1.3 Group Characteristics

Our original research framework lists three components and six sub-components of the group characteristics category. In our new framework we reorganise these components so as to ally the sub-components more closely with their respective

components, while merging composition with a new component called membership, and introducing a second new component - motivation.

Three of the cases that we supported during this research involved groups that had essentially zero histories. In Case One, the group met for one meeting before using the GSS, but in Cases Two and Four, the first meeting was also the first GSS meeting. When discussing group history it is important to distinguish the zero history (or ad hoc) groups from non-zero history (or traditional) groups (Mennecke et al., 1992). With the exception of Mennecke et al.'s (1992) work, there is little focus in the GSS literature on group history and development, though its importance was recognised long before (Bennis and Shephard, 1956; Lorge et al., 1958). In groups that have been formed for some time, group members will evidently know each other better, resulting in less implementable anonymity (cf. Benbasat and Lim, 1993), as we experienced in Case Four after several weeks. Furthermore, group members will also have had time to adjust to one another's idiosyncrasies. This adjustment only took place in Case Four in this research, but it was evident that the ability of the group leader to exert influence over the group members diminished with time as they became accustomed to his style of interaction, as discussed above in 9.4.1.2. Case Three was different to the other three cases in that the police officers undertook their task with GSS support mid-way through a three week long training course. As a result, the group members knew each other much better and were quite easy going in their interactions.

It is useful to refer to punctuated equilibrium theory (Gersick and Hackman, 1990; Gersick, 1991) to explain some of the effects of group history in Case Four. Gersick notes that groups can become entrenched in a form of behaviour that becomes habitual. When these habitual behaviours become dysfunctional, the group needs motivators to change its behavioural style. Motivators could include managing structural changes in the group or changes in the structure of authority in the group. The group in Case Four did experience such dysfunctional behaviour, which was 'corrected' when the researcher redefined his own role and took over process and content control issues.

Where the history of a group on a particular task is concerned, the experience and knowledge gained through the tackling of the task are also important insofar as new members to the group will not have that experience and knowledge, and may thus be disadvantaged as a consequence. Group history is thus complicated if the

group members have joined the group at different times. Punctuated equilibrium theory is also helpful in understanding the circumstances of group membership changes, since when Francis joined the team in week ten, he immediately noticed problems with the lack of deadlines (see 8.12.2) - problems which had impeded group productivity up to that point in time.

Two other factors that are related to group history are dominance and cohesiveness. Well-established groups are more likely to have established a pecking order of members, where a dominant member may emerge. In Case Four, the group leader was evidently dominant and a content expert (cf. Mennecke et al. (1992)), but in Case Three, the training officer reported that some of the groups had also experienced domination by one or two of the officers. Case Two did not see this kind of domination at all, whereas in Case One the dominance of the leader was evident through his control of the meeting process, content and technology (cf. Mennecke et al. (1992)), the researcher being sidelined to the role of software chauffeur. We note, however, that the dominance of the leader in Case One did not incorporate arrogance or intolerance of the views of others, unlike the situation in Case Four. Strong group cohesiveness was only seen in Case Three, where the police officers made attempts to involve all group members in their discussions, though these were relatively short lived. In Case Four, the group members never really developed a sense of group cohesiveness as they did not work together outside the meeting environment, and their involvement inside the meeting was complicated by the behaviour of the group leader who did not foster a cohesive atmosphere. The fact that the group used the GSS through the development process did not seem to improve group cohesiveness (cf. Mennecke et al. (1992)).

The size of the groups we supported varied from a low of five in Cases One and Three to a high of thirteen in Case Two. In the GSS literature, groups of this size are generally considered small to medium in size (cf. 2.3.1). An additional element of group size is the logical group size (Dennis et al., 1991). This refers to the amount of different knowledge held by group members. In a group with a high logical group size, one would expect all group members to have significantly different areas of expertise and therefore each of them should be able to make their own individual contributions to discussions. All groups supported here were perceived to have this high logical group size.

Levels of status was only a significant issue in Case Two, where the anonymity of communications became essential to guarantee participation by some members. In this case, the two distinct levels were of academics and management (i.e. organisational position) and the importance lay in the discussion of topics that involved the criticism of one group (management) by the other (cf. Sigall and Michaela, 1976; Kirchler and Davis, 1986; Dubrovsky et al., 1991). Notwithstanding this relative unimportance of status levels in our research (and we shall refer in more detail to status effects in 9.4.2 below), there is clearly great potential for different levels of status of group members to generate considerable anxieties among some group members resulting in low or poor performance associated with the process losses that we discussed in 2.3.3.1. Case Four potentially did have a problem of status levels in that the group leader contemplated the possibility of involving an executive sponsor in the group's discussions. The advantage of doing so might have been to ensure management support for decisions made (Pfeffer and Salancik, 1978), but in the event it was judged that this involvement would be counter productive and thus was not effected. The CIO's own supposedly higher level of status was ineffective as group members chose to ignore it (cf. 2.3.2).

Group membership involves a number of factors, including consistency, composition and the nature of membership. Consistency refers to the degree to which group membership varies during a sequence of meetings. In Case Four, we have observed that on some occasions members were replaced by their colleagues if they were unavailable, causing problems that we have already described. These problems should be seen in the light of such theories as Mills' (1967) life cycle model of group development, where it is suggested that a group develops the capacity to maintain and extend patterns and norms to new members. In Case Three, a more serious instance of inconsistency occurred, with the group membership changing on a meeting to meeting basis, no one member participating in more than a single meeting. Where group membership is consistent, the group members can be expected to undergo more efficient learning, maturation and socialisation processes, becoming acquainted with one another and learning together how, for example, the technology operates or the task is being tackled. Disruptions to this consistency introduce problems of learning, communication, maturity and task familiarisation (cf. Bennis and Shephard, 1956; Tuckman, 1965). Disruptions may also have beneficial effects when seen from the perspective of punctuated equilibrium theory (Gersick,

1991) since they can induce changes to stability, resulting in increased levels of productivity.

Where the precise nature of the group membership is concerned, in Cases One and Four, the members were either selected by the leader or nominated by another manager as representatives. In Case Two, all membership was voluntary, while in Case Three it was mandatory - as part of the training course. The mandatory nature of membership in Case Four was not appreciated by some group members, nor by the group leader who had requested each department manager to find a *volunteer* to join the group. However, this mandatory membership did not pose problems in Cases One or Three. In Case Four, some potential members were intentionally excluded, including junior staff, an executive sponsor and customers. In Cases One, Two and Four, the group members were ostensibly representatives for wider groups of stakeholders who would be affected by decisions reached during the discussions. In Case Two, these outcome stakeholders had the opportunity to be group members - by volunteering to participate. In Case One, this was not the case as the discussions involved sensitive and restricted issues such as financial planning and resource allocation. In Case Three, the educational nature of the tasks meant that there were no external stakeholders, except in a purely theoretical sense, as the decisions reached would not be implemented.

The last component of this category is motivation. Motivation was only perceived as being a problem in Case Four, where the group members communicated a willingness to participate but failed to do so. The source of this poor motivation remained a mystery until the very end of the case when two issues connected with the organisational culture emerged. This will be discussed again in 9.4.1.6. Although the GSS literature pays little attention to the issue of participant motivation, the facilitation literature is more forthcoming with the suggestion that the motivation of the group to accomplish its task and the need to keep a group focused on its outcomes are important (Clawson et al., 1993; Niederman et al., 1996). In Cases One, Two and Three, this same motivation was not problematic, with all members observed to participate willingly and actively. As our experience in Case Four shows, however, motivation cannot be taken for granted and there may be circumstances beyond the control of the facilitator that significantly impair motivation to participate.

9.4.1.4 Facilitator Characteristics

Through the conduct of the four cases, we have come to realise that the facilitator of meetings and the GSS technology (the researcher himself in these cases), and his/her characteristics are of considerable importance to an understanding of how a project may progress. We tentatively identify two components of this category as follows: the extent to which the facilitator is competent to handle the GSS software (Facilitator Competence); the extent to which the facilitator is involved in meeting process and content management (Facilitator Involvement).

The facilitator of a meeting needs to have a high level of awareness of, and consequently experience in, the particular software he or she is using to support a group (Clawson et al., 1993; Niederman et al., 1996). This includes not only knowing when to use different tools and how to make them work effectively, but also knowing what the software cannot do, what is going to take a long time to undertake, which tools are likely to be more suitable for different groups of users - with their differing levels of experience - and, perhaps most importantly, how to solve the unexpected problems that always occur. Where the role of the facilitator in terms of involvement in meeting processes and content is concerned, we observed that the facilitator needs to be deeply involved in all aspects of a task and its tackling if he/she is to understand all the processes that are involved. This view is supported by Eden (1990), though Phillips and Phillips (1993) see such involvement as prejudicial to group outcomes. Such an understanding of processes and content is vital, we believe, if the researcher is to collect data that will help him/her create the environment most conducive for the group members to find a solution to a task. In Cases One and Two, the researcher was involved to a very limited extent in meeting process and content, being largely restricted to technical facilitation while the process owners (group leaders) handled the process and content. This provided very few learning opportunities. In Cases Three and Four, the involvement of the researcher was considerably broader and deeper as his role evolved to include extra responsibilities. Further research into the characteristics and role of a facilitator in action research will show whether these two components of this category should be extended. Kelly and Bostrom (1997) suggest, for example, that socio-emotional issue management is also a valid area of concern for facilitators.

9.4.1.5 Meeting Environment

Our original conception of meeting environment, as seen in Figure 4.2, was rather simple with consideration paid only to the place and time of the meeting, the task type and its complexity, and the ergonomics of the meeting environment. The work we have undertaken in this research permits us to expand this category of the framework very substantially. We add new attributes to the concept of 'time', and to 'task', while introducing a new component - Meeting Process Management - that has many sub-components including 'planning' and 'task-technology fit'.

The meetings we have supported have involved same time same place communications in all four cases, while Case Four has also involved different time and different place communications. A third aspect of time is its availability. In all four cases, time restrictions were imposed by the group leaders and group members as they all had other work to do. The time available had to be used carefully in order to ensure that it was used in as efficient and effective a manner as possible. This is also discussed in 9.4.2 below where we consider efficiency as an outcome of the meeting process.

Where task is concerned, reference is usually made to McGrath's circumplex of task types (McGrath, 1984). However, we have uncovered many other aspects of tasks including: the objectives, complexity and scope of the task; the extent to which group members are aware of and familiar with task issues; group member attitude towards the task and their prioritisation of it within their usual working schedule (particularly for distributed groups); the way in which the task is defined and redefined over time; the psychological preparation that group members have for the task (and its environment) that they will be tackling; the relevance of the task to the work they normally undertake; the conflicts that tackling a task cause with their own role in their organisation or in society; and the purpose of undertaking the task. Many of these issues are self-explanatory, though that does not diminish their importance.

The psychological preparation that group members have for a task is an interesting aspect of task that was raised by many police officers in Case Three. As we have described, they were on a training course where they were required to use the GSS to solve a task. However, they were not informed in advance about the details of the task or that they would have to use computer software to devise an appropriate solution. They only knew that they had to arrive at a computer laboratory

at a certain time. Many of the officers, who did not typically use PCs, were surprised when they found out the true nature of the task and its software support and some suggested that if they had been given a copy of the task in advance and informed that they would be using a computer software that supported group work to assist them to find a solution, then they would have felt psychologically better prepared.

Also in Case Three, the training officer redefined the task as it was in progress, injecting elements of crisis management. This made the task highly relevant to the police officers who would be expected to be able to handle incoming information and deal with it immediately. The tasks they tackled were, furthermore, directly relevant to their own work. The issue of task analysability and complexity (cf. Rice, 1992; Bui and Sivasankaran, 1990) is an interesting one, since in Case Three some police officers experienced difficulties with one of the tasks we set. The selection of an appropriate task, in an educational context, was thus a matter for careful deliberation.

Although crisis management has been explored in the GSS for decision making literature (e.g. Briggs et al., 1998), and it is generally recognised that more complex tasks are more suitable for GSS support (Mason and Mitroff, 1981; Vogel et al., 1987; Dennis et al., 1989; Bui and Sivasankaran, 1990), the issue of task complexity has not been previously addressed in GSS supported educational settings.

In Case Four, the attitude of the group members towards the task was that it was not really their job to do it at all - it should be their group leader's. This was one contributory factor to their low prioritisation of the task, though there were other, more serious factors involving the organisational culture.

In Case Two, the convenor created his own protocols to be used within the task so as to improve its focus. These protocols had to be prefixed to each comment generated by participants. Protocols were also developed in Case Four, when it was agreed in week nine that only the lowest level of sub-topic in the Group Outliner session should have a comment attached. At all other levels, only sub-topics would be permitted.

A final aspect of task relates to the methodology employed to solve the task. In Cases One, Two and Three, the methodology was rather loose and ad hoc, typically involving brainstorming of ideas, categorising of those ideas and then voting on them. In Case Three, some groups also attempted to group-author a plan of

action using the vote items that received the highest scores. In Case Four, however, the group leader decided to apply a Business Process Re-engineering approach to the solution of the task. This provided an overarching philosophy that guided the various brainstorming, categorisation, voting and writing activities that were undertaken. While many research studies employ a 'brainstorming and voting' mode of operation, BPR is less frequently seen as a guiding methodology. Two examples of its use in a GSS context, however, are Vreede (1995) and Kock (1997).

Where ergonomics are concerned, the physical layout of the technology and its availability are important. In Cases One, Two and Three, the ergonomic issues were carefully controlled as the meeting location was identical for each - a general purpose computer laboratory at the City University of Hong Kong. In Case Four, however, the Training Room where meetings were held was not always available (for the last two meetings it was being demolished and meetings were held in a board room with no PCs available). Furthermore, the equipment in the Training Room was often rearranged or reconfigured by other users, thus necessitating a fresh set up before a meeting could take place. In none of the cases was a purpose-built decision room (Dennis et al., 1988; Davison and Briggs, 1997; Mittleman, 1996) available for use.

Our final component in the Meeting Environment is meeting process management. This component covers the role of the group leader, the importance of planning, and critically the degree to which the technology fits the tasks it is being used to support (Clawson et al., 1993; Niederman et al., 1996). In Cases One and Two, the group leader played a prominent role, actively controlling or directing the meeting processes. This strong leadership style served to hold the focus of the discussions, permitting much work to be completed within the tight time frames available. In Case Three, a different approach was used with the training officer adopting a very hands-off, ad hoc approach to the meeting, preferring the discussion to go where it went and not interfering except to provide more task information or to talk to groups that appeared to be experiencing problems. When the training officer was not present, the researcher adopted a similarly informal line, though he introduced more structure to the meeting so as to ensure that the officers completed their tasks. In Case Four, the CIO adopted a dominant style of leadership from the outset, but unlike Cases One and Two where a collegial atmosphere reigned, he used a harsher and more functional style that pushed group members continually to

contribute. He then became frustrated when they failed to do so. In Case Four, the power of the CIO over the group members to enforce his decisions was negligible, thus enhancing his frustrations.

Planning for meetings was recognised as being important in view of the limited time generally available. The only occasion when planning was kept at a minimum was for the first two meetings of Case Three, where the training officer wanted an *ad hoc* interaction, not a planned one. In Case Four, many plans were made but these were usually modified as a meeting progressed in order to fit the then current circumstances. As we have remarked earlier in this chapter, this flexibility was essential. An important aspect of planning concerns the degree of fit between the technology and the task. We observed in Case Four that the technology was used much more effectively for tasks that required intensive idea generation and categorisation. It worked much less well when detailed negotiations about fine points of consensus were undertaken. In Case One, the group leader employed the GSS in a similar manner, permitting wide-ranging discussion in the first meeting on a number of approved topics, but restricting the discussion in later sessions so as to focus on particular objectives and targets. In Case Three, the researcher managed the last two meetings, attempting to ensure that the officers used the GSS technology in different ways so as to accomplish different aspects of their task. Previous research in GSS again seldom mentions the importance of matching a GSS tool with a particular task, though evidence from meeting facilitators indicates its importance (Niederman et al., 1996; Davison and Jordan, 1998). All too often only a single tool is used, particularly in experimental research, with little justification provided or attempt made to investigate other tools.

9.4.1.6 Culture

Our sixth and final category on the input side of the research framework is culture. In the original framework (see Figure 4.2), we identified Organisational Culture and National Culture, listing five dimensions of the latter according to the work of Hofstede and Bond (see 2.4). To these types of culture, we tentatively add a third - Task Culture - which we explain and describe below.

Organisational culture has shown itself to be of great importance in Case Four, where, unbeknownst to the researcher, it impeded the progress of the task by diminishing the motivation of the group members. In Case Four, the CIO knew from

the outset of the project that the organisational culture was conservative, but his apparent obliviousness to certain key elements of the organisational culture and therefore failure to combat or otherwise manage those elements, resulted in the task taking substantially longer to be completed than needed to be the case.

Where national culture is concerned, again it was in Case Four that problems arose. The national cultures represented in Case Four by the different group members were polarised into two groups - a local, Hong Kong group and an expatriate, Western group. Although we have not undertaken a formal analysis of the cultural values of the members of the group, we speculate that the attitudes displayed by members would correspond to markedly different scores for the Power Distance and Individualism dimensions of culture. The different preferences for interaction style consequently resulted in friction between the two groups (cf. Davison and Jordan, 1998).

Finally, we introduce the notion of task culture (Ferdinand, 1988). In Case Two, the convenor, through his application of mandatory protocols to the idea generation process, attempted to create a special form of interaction environment for the group that we characterise as a task culture. He required, furthermore, that all contributions to the solution of the task be textual - if group members wished to talk about issues, then they should record the content of their discussions in the GSS after doing so in order to preserve the ideas for the benefit of the group as a whole. The task atmosphere was not a natural one in that external controls were imposed on members, determining quite precisely how they could participate. For this reason, we introduce the notion of a task culture where the interaction is governed by rules that only apply within the task context. In Case Three, concerns about the possible existence of a rigid task culture were surfaced by officers who questioned "Are we allowed to talk?". They had not been explicitly informed that they could talk as well as use the GSS, and had assumed that talking might not be permitted. While the GSS literature does not explicitly mention task cultures, Niederman et al. (1996) refer to task objectives, task boundaries and management support for task, all of which are clearly related to the task culture concept.

In reality any task may have its own cultural environment, the question is only one of how rigid it is and how its imposition affects the interaction of the group members. In Case Two, the imposed culture broke down at times when group members ignored the rules, created new protocols and failed to record their verbal

discussions. However, the intention to create what we characterise as a task culture was nonetheless present. Indeed, we may argue that the task culture was in a continuous state of revision by the members of the group to which it was applied.

9.4.2 Meeting Processes

The Meeting Process Attributes section of the original research framework (see Figure 4.2) included four main constructs - Communication, Discussion Quality, Status Effects and Teamwork - each with its own components. These four constructs (together with Efficiency) have constituted the core of the research instrument, as previously validated (see Chapter Four), and have been useful in the research in terms of identifying process-related problems in meetings. We discuss these components below, and shall replace one component in the discussion quality construct. We also perform a revalidation of the constructs using data collected during the four cases in a confirmatory factor analysis. We shall move the Efficiency construct from the Process Related Meeting Outcomes section of the framework to this Meeting Process Attributes section. The reasons for this will be described below.

9.4.2.1 Communication

When we examine the data collected across all four teams, the communication construct is the one that has received the most consistent data, with all groups indicating that communication related difficulties did not occur. This finding was not altogether unexpected, as although team members spoke a variety of languages as their mother tongues (but primarily Cantonese or English), English was nevertheless used as a medium of communication for all cases. Furthermore, all team members were generally well educated and could be expected to use English on a regular basis as part of their work. Although the groups we supported did not experience communication difficulties (as we have measured them), the value of the construct to the framework is that the ability and willingness to communicate is fundamental to meetings. A paradox did occur in Case Four, where willingness to communicate appeared to be high, but the actual amount of communication was often low. This was attributed to motivational factors, which we have discussed in 9.4.1.3 above. In the other cases the willingness to communicate matched the actual communication.

Confirmatory factor analysis of the Communication construct (see Table 9.2 below) indicates that the construct items load together even more strongly than we

found in our initial analysis (see 4.7.2.1 and Table 4.4), and the alpha score is significantly stronger as well.

Table 9.2 Communication (Revalidation)

Abbrev.	Item Name	Factor Loading
C1	The language of the meeting prevented participation	.93
C2	It was hard to understand other participants when they talked	.87
C3	You experienced difficulty expressing yourself	.88
C4	You felt reluctant to put forward your own ideas	.89
	Eigenvalue / % of variance explained	3.17 / 79.2%
	Cronbach's Alpha	.91

9.4.2.2 Discussion Quality

Where the discussion quality construct is concerned, the perceived levels of quality have generally been high, or seen as improving, in the cases we have supported. The group members have not questioned the construct components, but have suggested that an additional facet of anonymous group discussion is its honesty or sincerity. Specifically, it was suggested that when group discussion is anonymous, the pressure to conform to an approved viewpoint, or the influence perceived, is significantly reduced, resulting in more sincere and honest discussion. This viewpoint is also considered by Dennis (1996) who notes that the credibility of statements may be reduced when they are contributed anonymously. The openness component of the construct was designed to include this concept of sincerity, but we suggest that it be changed to sincerity as the meaning is clearer and more explicit.

In 4.7.2.3 and 4.9 above, we described how item D3 was thrown out of the original validated instrument and D4 was reworded. Both items have been employed throughout the four cases described here, however, and data collected. Confirmatory factor analysis conducted on the Discussion Quality factor (items D1 - D4) employing data from all four cases now provides evidence to show that all four factors can be safely included in the construct - see Table 9.3 below - since factor loadings and the alpha score are very high. However, further revalidation will be necessary in future if item D3 is to change from measuring openness to sincerity. This matter must be taken up in future research.

Table 9.3 Discussion Quality (Revalidation)

Abbrev.	Item Name	Factor Loading
D1	Discussions in the meeting were: meaningful - meaningless	.92
D2	Discussions in the meeting were: appropriate - inappropriate	.91
D3	Discussions in the meeting were: open - closed	.90
D4	Discussions in the meeting were: imaginative - unimaginative	.81
	Eigenvalue / % of variance explained	3.13 / 78.4%
	Cronbach's Alpha	.90

9.4.2.3 Status Effects

The third meeting process construct is 'status effects' - the effects that can be exerted by persons of higher status on those of lower status. These were perceived to be important components of the framework, since the effects of process losses caused by status effects are well known in the literature. The groups we have supported in this research have generally been free of status related problems, since anonymous communications have been used and only in Cases Two and Four were clear status differences between group members evident. These were ignored in Case Two, while in Case Four, although status effects were perceived, they did not cause an impact on the reported willingness of group members to participate. In Case Four, however, the inclusion of an executive sponsor in meetings was considered. It was believed that this would very likely have increased the perception of negative status effects - intimidation, influence and conformance pressure - with consequent impacts on the willingness to participate. Although anonymity of communications may be seen as an antidote to negative, status related impacts, the importance of status should not be underestimated, and its inclusion in the framework is therefore essential.

Revalidation of the status effects data reconfirms the cohesiveness of the construct, all four items binding tightly together with a very high alpha score - see Table 9.4 below.

Table 9.4 Status Effects (Revalidation)

Abbrev.	Item Name	Factor Loading
S1	Some participants tried to intimidate others verbally, or with threatening gestures	.96
S2	Some participants tried to use status or power to force issues on others	.93
S3	You felt inhibited from participating because of the behaviour of others	.93
S4	You experienced pressure to conform to a particular viewpoint	.79
	Eigenvalue / % of variance explained	3.27 / 81.8%
	Cronbach's Alpha	.93

9.4.2.4 Teamwork

The fourth meeting process construct is teamwork. The three components of this construct - the extent to which members: worked as a team, had access to information and responded to others' questions - have been the subject of mixed perceptions from group members in this research. In Case Two, the non-responsiveness of group members to others' questions was criticised, indicating that it is an important component to be aware of. Where access to information is concerned, a number of different types of information are covered including hard copy handouts, email messages from the group leader, hard and soft copy task information, and information residing in other repositories and databases. A facilitator must be aware of these in order to gain a full understanding of the way in which the team is able to access the information that it needs to undertake its task. In Case Three, the training officer provided an unusual channel for information access, answering questions about procedures and providing new 'government policy' information while the task was in progress. All of this was conducted on line, with the training officer distinguishing his contributions from those of the officers by his use of upper case script.

The mixed perceptions we describe above contribute to a less perfect construct validity than we saw for Communication, Discussion Quality and Status Effects above. As exhibited in Table 9.5 below, factor analysis indicates that the three items do still hold together well, but the alpha score has dropped when compared to our earlier analysis (see 4.7.2.2 and Table 4.5).

Table 9.5 Teamwork (Revalidation)

Abbrev.	Item Name	Factor Loading
T1	Participants appeared willing to answer questions	.77
T2	Participants worked together as a team	.71
T3	Participants had sufficient access to information to be involved in the meeting	.80
	Eigenvalue / % of variance explained	1.73 / 57.6%
	Cronbach's Alpha	.63

9.4.2.5 Efficiency

Efficiency was originally placed in the Outcomes section of the framework since it was perceived that efficiency was tied to the overall impressions a meeting participant might have of the meeting, and was thus similar in this respect to satisfaction and consensus. We now believe, however, that it is more appropriate to include it in the Process section of the framework, since the components of the Efficiency construct relate very much to the progress of the meeting - the way time is used, the way that the activities are focused on the task and the thoroughness of the discussion.

Meeting efficiency was of vital importance in this research, as time was often severely circumscribed. The thoroughness of idea discussion appeared to be directly dependent on the amount of time available to a meeting, with some group members in Case Two complaining that the inadequate length of the meeting prevented such thorough discussion. The percentage of time devoted to serious discussion fluctuated from group to group, and we suspect that the question is misleading as time can be usefully spent on activities other than serious discussion - voting or just thinking, for example. It may be more useful to rephrase this item and ask group members how much time was spent on activities central to the task they were tackling. In groups with a good task focus, we would expect high percentages of time so spent, indicating a high level of efficiency being achieved. The result orientation of the meeting was not always considered to be very high and this is an alternative indicator of task focus.

Confirmatory factor analysis of the Efficiency construct reflects the problems described above, notably the result orientation of the meeting and the amount of time spent on serious discussion. This analysis supports our contention that the components of the construct should be reconsidered. It is notable, for example, that

the two items with poorer factor scores are both phrased as questions. The other two items, as well as all items in the other four constructs are phrased as statements. While the four items of the construct do appear to hold together, the alpha score is rather low. For these various reasons, the meeting efficiency construct clearly requires substantial future research.

Table 9.6 Efficiency (Revalidation)

Abbrev.	Item Name	Factor Loading
E1	To what extent was this meeting result oriented?	.55
E2	The time in the meeting was efficiently used	.75
E3	Issues raised in the meeting were discussed thoroughly	.81
E4	What percentage of meeting time was spent on serious discussion?	.53
	Eigenvalue / % of variance explained	1.80 / 44.9%
	Cronbach's Alpha	.55

9.4.3 Meeting Outputs

Three process related meeting outputs were identified in the original research framework - efficiency, satisfaction and consensus. As we have explained in 9.4.2 above, efficiency has been moved to the Meeting Process section of the framework. Consensus was measured by a single item in the research instrument, while satisfaction was measured by two separate items. As a result of this research, we believe single item measures to be inadequate, and we shall be proposing more complete analysis of these complex constructs. In addition, we shall propose a new type of output - product related meeting outputs.

Where satisfaction is concerned, we have already discussed in 9.3.2 the need for a more detailed satisfaction construct. The satisfaction that group members have with the various aspects of a meeting, and their participation in that meeting (measured by asking them whether they felt they played a useful role or not), are taken to be good measures of the overall 'quality' of a meeting. The consensus that is perceived with a meeting is not so simple as to be measured by a single item. Group members can rate their perceived consensus with the way the meeting processes were managed, the manner in which discussion about the task proceeded, and with any solution that was produced. It would be very useful for a

meeting facilitator to be familiar with these different components of a consensus construct, as they can inform the facilitation process and thus contribute to the learning and improvements inherent to action research. Despite the importance of satisfaction and consensus, it is impractical to list all their various components in the framework at the current time as they have not been fully investigated.

In addition to process related outcomes, there are also product related outcomes. These can be documents, decisions, solutions, plans or other items that are produced as a result of discussion in a meeting. They may either return to the group in a subsequent meeting, or may leave the case if they are provided to external stakeholders or if the task is completed. If these plans require implementation or adoption by other stakeholders, then their usefulness may be measured by their acceptance by others, the degree to which they change during that implementation or adoption, or the fact that they return to the task group for further refinement. In Case Four, the Ideal Billing Process was a product of several meetings. It was sent to the Strategy Review Group for consideration and adoption, but was returned to the task group for further consideration and refinement, before being issued as a document once again.

9.4.4 Feedback and Feedforward

In our original research framework, we indicated the presence of feedback from the outputs of a meeting to the meeting processes and some of the meeting inputs. Feedback is a term that is conventionally used to refer to information that informs a previous process in a static model, but in the context of action research where cycles of activities take place in an essentially forward-looking fashion, we believe it to be more accurate to coin the term 'feedforward' to refer to this flow of information. The information does flow forwards in time, and the inputs and processes that it affects should change as a result, as well as the meeting outputs.

9.5 Summary

In this chapter we have undertaken a critical review of the principle components of action research as a methodology for intervention in meetings, discussing the dynamic complexities involved in meeting support from the perspective of the researcher. Following this, we have also critically reviewed and substantially revised

our research framework. The revisions stem from a deeper understanding of meetings and their support, in the context of action research, and will inform future research that needs to be conducted.

In the last chapter, we discuss the future research and practice that is called for as a result of this research, and also provide an answer to our original research question - "How should we apply GSS so as to improve meeting processes in business and professional environments?".