

Group Support Systems – concepts to practice

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ABSTRACT

This chapter explores the use of Group Support Systems (GSSs) for assisting managers who must *negotiate* the resolution of messy, complex and/or strategic problems in order to achieve an agreed outcome. Specifically the chapter reports and reflects upon an intervention involving social and psychological negotiation. Building on existing research in the area of GSSs (see chapter ACKERMANN), alongside research into the nature of failed decisions and knowledge of the processes of social and psychological negotiation, this chapter discusses how GSSs can be used to support and enhance social and psychological negotiation. In particular this chapter focuses upon a study of the use of a specific GSS to illustrate and explore a number of salient elements and their implications.

INTRODUCTION

Group Support Systems (GSS) have been in existence for the past 30 plus years. They have been used for a wide range of reasons including: increasing group productivity (Jessup and Valacich 1993; Dennis and Gallupe 1993), providing anonymity (Jessup and Tansik 1991; Valacich et al. 1992), enabling collaborative working (Agres et al. 2005; Briggs et al. 2003), leveraging creativity (Nunamaker et al. 2015), knowledge management performance evaluation (Wanga et al. 2016), conflict resolution (Bose 2015), computer supported collaborative learning (Long et al. 2013) and visual interactive modeling (Ackermann and Eden 2001) - see **ACKERMANN chapter for more details** regarding applications. Alongside this burgeoning range of applications, there has been a focus towards using them to facilitate the negotiation of a direction for an organization. This work includes efforts in the collaboration engineering arena (Vreede et al. 2006; de Vreede and de Bruijn 1999; van den Herik and de Vreede 2000 and **KOLFSCHOTEN AND DE VREEDE chapter**) as well as the use of GSSs to support strategy making (Eden and Ackermann 2001). This chapter focuses on another purpose, that of negotiating and resolving complex problems.

One of the earliest definitions of a GSS is that it “is a set of software, hardware and language components and procedures that support a group of people in a decision related meeting” (Huber 1984: 195). Building on this definition, DeSanctis and Gallupe note that group support systems are designed to “improve the process of group decision making by removing common communication barriers, providing techniques for structuring decisions and systematically directing pattern, timing and content of the discussion” (DeSanctis and Gallupe 1987: p598). As such the raison d’être for GSSs appears to be supporting group work – paying attention to managing both process (for example personalities, power, and politics) and content (management of the contributions) (Eden 1990). **See also RICHARDSON and ANDERSEN**. In addition, there is the focus on supporting effective communication. All three of these elements (process, content and communication) are key considerations when facilitating group negotiation. Indeed, research on failed decisions specifically records failures with respect to insufficient attention of many of the above design features of a GSS (Nutt 2002).

This chapter focuses upon on how Group Support Systems are able to support group negotiation in resolving complex problems, in particular from the perspective of ‘soft’ negotiation. The chapter starts by discussing in more detail a number of concepts incorporated within, or which usefully extend, GSSs and that allow ‘soft’ negotiation to take place. Next, the chapter considers one particular GSS and how it attends to soft negotiation, before moving on to explore a number of soft negotiation implications through reference to a real case. Finally the chapter concludes with some observations and recommendations. Thus, the chapter uses analysis of a real GSS case where expectations of ‘soft’ successful negotiation were paramount, taking into account key assertions derived from i) GSS literature, ii) established negotiation recommendations, and iii) where appropriate, Nutt’s research into failed decisions.

#.2 GROUP SUPPORT SYSTEMS: CONCEPTS AND PRINCIPLES

2.1 Anonymity and higher group productivity from a GSS

One of the key features of a GSS is anonymity. By allowing participants to put their contributions into the system anonymously, participants are more able to be open and not so pressured by social conformity issues, for example Group Think (Janis 1972) and the “Abilene Paradox” (Harvey 1988), where everyone ends up agreeing to something nobody wanted. This feature allows contradictory views to be surfaced along with challenges to ways of working, established myths etc. In addition, by allowing participants to directly enter their views, into a developing group model representing all of those views, they are able to talk ‘simultaneously’ and ‘listen’ to the views of others in their own time (Valacich et al. 1992; **ACKERMANN**). The additional feature of direct entry results in higher productivity which in turn helps ensure that the

perspectives of different constituencies are heard, rather than a single view or perspective dominating, and that ideas are captured as they are considered rather than risking being lost.

One of the consequences of GSSs providing both these features – anonymity and ‘direct entry’ – is that the comprehensiveness of the views expressed increases, contributing to procedural rationality (Simon 1976). However, an increase in comprehensiveness means an increase in complexity, and so a process for managing this increased complexity is required. In some GSSs this is achieved through lists, categories (clustering) and voting. In other GSSs it is managed through development of causal networks. Both forms allow for participants to explore their and other’s thinking in a safer and more structured space and thus facilitates negotiation.

In addition most GSSs have some form of electronic ‘voting’ or means for expressing ‘preferences’ about importance, choice, and the relative leverage of options with respect to specific outcomes. A designed anonymous process within the GSS for expressing preferences can be used either as a way of creating a process end point, or more importantly, when considering negotiation, as a dialectic to determine participants’ views and positions and determining the degree of consensus within the group.

2.2 GSS as a means to create new options

GSSs can also capitalize upon a particular qualitative or ‘soft’ negotiation approach underpinned by propositions from the field of international conciliation (Fisher and Ury 1982). Most significantly this approach to conciliation draws upon the propositions within “Getting to Yes” (Fisher and Ury 1982) and “Building Agreement” (Fisher and Shapiro 2007) where the emphasis is on *reaching agreements* and *changing thinking*. A significant aspect of Fisher and colleague’s work is that of developing new options rather than fighting over ‘old’ options. The more groups are able to generate creative new options that emerge from seeing the views of all participants (rather than those originating from one single member of the group) the more they are able to build on, and integrate, the views into new contributions. In addition, these jointly created options garner greater ownership and thus increase the likelihood of implementation. As such, providing the ability to surface simultaneously and allowing anonymity facilitates new option generation. The GSS’s ability to make multiple changes to contributions also enables an option to have multiple owners as each contributes to its construction and refinement further assisting negotiation.

2.3 The GSS as a means to attend to procedural justice

Effective ‘soft’ negotiation additionally can be supported through attention to ‘procedural justice’ (Kim and Mauborgne 1995; Kim and Mauborgne 1997) and institutional justice (Tyler and Blader 2003). Procedural justice is about enabling group members to have their say and be listened to in full, rather than being left out of the decision making process (see PAUR AND CARRERAS).

Anonymity embedded within the GSS supports participant’s ability to ‘have a say’ and be listened to as the contributions are presented on the public screen, are woven into the overall body of argument and are given equal weighting. Thus, GSS provides not only the ability to contribute but also that the contributions will be viewed alongside one another and given attention.

2.4 The GSS as a ‘transitional and boundary object’

A further benefit of using a GSS when working with groups is that the publicly displayed model provides the

group with a 'transitional object' (de Geus 1988; Winnicott 1953) and 'boundary object' (Carlile 2004; Franco 2013) reflecting the continuous transition of the changing views of the group and members of the group. Typically a GSS supported meeting will commence with some form of data capture where the individual views are elicited and projected on the public display. A natural corollary of this process is that edits, additions, and deletions take place, shifting the initial disaggregated representation to one that over the course of time reflects the group's emergent understanding without putting pressure on individuals. The model is always in transition.

This shifting process from divergence to convergence typically results in many of the views and particularly options being revised (touching on the above consideration regarding new option generation). New options emerge as the captured material provides a powerful stepping stone to enabling creativity (Jelassi and Beauclair 1987). As such the GSS is able to facilitate the process of creating new options. Moreover, the GSS facilitates another 'soft' negotiation feature – that of encouraging members to change the way they see the situation from their idiosyncratic perspective to a view that encompasses aspects of the perspective of other members of the group.

Finally, by having the views anonymously displayed on a public screen that can be seen by all, it is possible to separate the proponent of a contribution from the contribution itself so that, when appropriate, the contributions can be judged on their merit alone. This is notwithstanding the fact that when appropriate, the author of a contribution is able to acknowledge ownership and intervene personally to persuade others of its merit.

Thus whilst each of these 4 concepts provides value to the development of GSS in their own right, they also build on one another. For example when considering anonymity, elements of procedural justice are possible, and the use of boundary objects enables new option generation.

3. *Group Explorer*: A Group Support System for soft negotiation

Group Explorer has been developed from a research interest in assisting decision makers working on complex and messy problems, problems that are messy, in part, because of differing perspectives. The GSS has its origins in the Strategic Options Development and Analysis (SODA) methodology (Eden and Ackermann 2001) which seeks to attend to social and political considerations and manage the complexity generated through the capture of different perspectives. Because of the focus on differences in cognition, complexity is mapped and managed through the use of a modeling technique based upon a form of cognitive mapping (Eden 1988) which has its theoretical underpinnings in Personal Construct Theory (Kelly 1955).

Personal Construct Theory asserts that each of us makes sense of our world by interpreting new phenomena against our own experience – assessing both their similarity and differences to past experiences. Thus, we make sense of a situation through a mental construct system comprising bipolar constructs that capture similarity and contrast and also reflecting the relationships between constructs. The particular part of a construct system that relates to a situation expresses an attempt to make sense of the situation and act within it - by proffering possible explanations and consequences of action. Thus, a cognitive map seeks to capture the constructs and relationships in the form of a directed graph, or network (an example of a small part of a cognitive map is shown in figure 1).

Figure 1 about here. An example of a small part of a cognitive map.

When a cognitive map is constructed by a group it becomes a 'group cause map' as it does not represent the thinking of any one person. The map as a model/object enables members of the group to begin to appreciate how others' think (through enhanced appreciation of both the content and the context) and therefore begin

to develop a shared understanding through the representation of socially constructed reality (Berger and Luckmann 1966). The different perspectives are structured using the mapping technique to reveal the chains of argument thus allowing for further reflection, extension and debate amongst group members. This move towards convergence is as a result of adopting the formalisms associated with the mapping technique which demand that not just the statements are captured but also their consequences and explanations – the context of assumed causality. Usually the term ‘cause’ map is used when the map comprises the views of a number of different individuals, whereas a ‘cognitive’ map is when the maps reflect individual thinking (cognition).

The GSS, *Group Explorer*, enables the group cause map to be constructed jointly, where statements and links in the map are created and amended by the members themselves (although assistance may be provided by a facilitator) and the map emerges on a computer display that can be seen by all (see figure 2). The contributions by members may be anonymous if required when conformity pressures are considered present.

Figure 2 about here. A photograph of a management team using the GSS

Figure 2 illustrates *Group Explorer* being used with the GSS enabling views of the participants to be displayed on a public screen as statements and causal links. These views can then be explored in more detail by the other members in the group, either through verbal discussion captured by a facilitator or the group members themselves contributing further comments. Thus, the material captured in the model, as transitional object, shifts gradually from being a collection of individual views (a state of divergence) towards the development of a shared representation (state of convergence) – whether the object is a map (in the case of *Group Explorer*) or a clustered combined list (in the case of *Group Systems* – see ACKERMANN) – allowing participants to converge on a common understanding.

The GSS captures the statements through language rather than tight mathematical judgments and so the model/object provides a degree of ‘fuzziness’ that more easily allows participants to change their mind incrementally and without the issues of ‘face saving’ (Eden et al. 2009). The meaning of statements grows and shifts as the context (statements associated with them) changes, and where new explanations and consequences added by others gradually shift the original meanings. Over the course of a meeting, the varying ‘underdeveloped’ and diverse understandings are subtly shifted to a view that is owned to a greater extent by the entire group. Because the model is displayed in front of the group, participants have the time to read the views of others at any time after they are contributed – they can ‘listen’ in their own time and have time to reflect on the content rather than having to immediately respond with the associated dangers of inappropriate emotion. Participants, therefore, are more able to appreciate the different points of view – particularly as the process encourages views to be elaborated upon and their meaning clarified. As a result, less stark positions are taken and procedural justice is achieved. The mapping technique therefore provides a type of ‘scaffolding’ (Vygotsky 1978) providing not only the means for gaining a better understanding of what is meant by the contribution being made but also assists in the process of integrating the different views together.

4 GROUP SUPPORT SYSTEMS: IN PRACTICE

4.1 Using a GSS to Facilitate ‘Soft’ Negotiation: negotiating a way of working between a nuclear power station owner and the regulator

The case used to illustrate GSS concepts and principles focuses upon work undertaken over a three year period with a regulator and the owner of nuclear power stations (the ‘licensee’). Testing the use of a GSS in real negotiations is both problematic and important: experiments with students cannot replicate real issues of

management (Eden 1995; Finlay 1998), and gaining access to senior managers negotiating on sensitive problems is rarely possible unless they see potentially positive outcomes in advance (Pettigrew 1992). These problems often lead to *action research* being viewed as the most appropriate research methodology. By working in a “Research Oriented Action Research” format (Eden and Huxham 2006; Eden and Ackermann 2018) specifically following the cyclical research process (proposed originally by Susman and Evered 1978) in-depth data and insights can be obtained.

Confidence in the use of the GSS to facilitate this particular negotiation followed from the authors having worked with the regulator on a number of significant internal issues. One of the most AVOID REPETITION concerns emerging from this early work was a general feeling of disquiet regarding their dysfunctional relationship with a particular licensee. Importantly it was believed that the licensee also viewed the relationship as dysfunctional. Evidence to support this view stemmed from the fact that over the previous two years various exercises had been undertaken to try to alleviate the situation, but without success. Whilst it was recognized that this relationship would always be, to some extent, adversarial due to the nature of licensees and regulators, many of those involved felt that there was considerable opportunity for improvement. Consequently the regulator suggested to the licensee that using a GSS – specifically *Group Explorer* - might provide a constructive way forward for both parties – and the licensee was prepared to “give it a try”. The illustrative case in this chapter is based upon the reflections undertaken during this project which involved three one-day meetings with the Top Management Teams.

The research data that formed the basis for the reflections includes a combination of notes and observations as well as the computer captured information. One set of notes was generated by the two facilitators running the meeting. These notes were based upon observations made during the meetings and encompassed both process and content management insights. In addition an independent observer provided further observations and comments. Additionally there were extensive comments from members of both organizations. As the engagement had involved the assistance of one ‘partner’/observer from each organization (someone senior enough to know what was happening within the organization but with the time to help make arrangements, provide insights into organizational workings and ensure feedback) who was present but not participating at each meeting, they also were able to also provide valuable observations.

The computer generated research data consisted of the data captured in the model during the interventions (each meeting resulting in an updated version of the model allowing changes in the material to be assessed longitudinally) along with a computer log produced by the GSS which recorded on a time stamped basis each and every contribution made through the system.

Taking account of the focus on ‘soft’ negotiation, the case is structured so as to both provide an illustration of a GSS use in negotiation as well as highlighting important implications pertinent to the design of a GSS for ‘soft’ negotiation. These implications are, where appropriate, framed and informed by the research undertaken by Paul Nutt (Nutt 2002) on failed decisions. In Nutt’s research on decisions that failed he is concerned, in part, with a lack of attention to key aspects of negotiation among participants (power brokers) and other stakeholders. In addition, GSS design considerations will be noted.

4.2 Emergent implications from case study exploration

Getting the right people to the meeting

Case: As noted in the above description of the situation, there were two parties involved in the negotiation – the regulator and the licensee. Careful consideration therefore would be needed when determining how many, and which, participants from each organization should attend. Involving six to eight key participants on either side allowed for a relatively even attendance at the workshop and ensured

perceived equality in terms of contribution. Furthermore it emerged from discussions with the leads from both organizations that a variety of roles would be represented by these identified participants and therefore each of the participants for each organization was likely to present different views about the reasons for the dysfunctionality. This would provide a diversity of view and ensure a comprehensive appreciation of the situation.

GSS Implication:

One significant consideration in GSS use is that of **carefully choosing the participants who should be involved in any negotiation or problem solving event**. This is for three reasons. The first relates to ensuring that a good capture of the range of views is possible – a form of procedural rationality (Simon 1976). The second relates to ensuring that those attending have the authority or informal power to implement what is agreed upon. The third is to ensure equality in voice which touches on the above concept regarding procedural justice (Kim and Maubourgne 1991, 1998). The GSS features of direct entry and anonymity facilitate capture of the breadth reducing the likelihood of ‘group-think’. Ensuring a range of perspectives is likely to encourage creativity from the ability of a GSS to merge perspectives and so see new options.

Nutt (2002: 4) comments that “nearly everyone knows that participation prompts acceptance but participation is rarely used” and thus ownership and commitment to the outcomes is found wanting. This speaks directly to the need to ensure engagement, not only to ensure comprehensiveness of the views but also commitment to the outcomes.

Ensuring a level playing field – for participants and the facilitator

Case: Both sides wanted an opportunity to describe the situation, with its various nuances, as they saw it. They were keen to do this before getting together in a joint meeting so that there was a platform upon which to build a joint understanding. Thus, there was a strong incentive for the facilitators to meet with each group and listen to their point of view in advance of the group meeting. As a result of the original work conducted with the regulator, members of this group were satisfied that the facilitators had a fairly clear understanding of the views from their perspective. Nevertheless, it was important for the facilitators to set out their understanding and check it with the regulator team. As the regulator had already developed a view of the effectiveness of causal maps as a way of communicating understandings, this was the chosen way of reporting their views as seen by the facilitators. However, the position was different for the licensee. It was likely that licensee members saw themselves at some disadvantage because they were aware of the existing working relationship between the regulator and facilitators and their familiarity with the modeling approach (causal mapping).

Therefore a visit to the licensee was appropriate so that the facilitators could listen at length to their views and also familiarize the licensee members with the modelling approach. To achieve these two objectives the views from the licensees were also captured through taking notes in the form of a causal map that was subsequently declared and explained to the licensee group. The resultant causal map became the means for checking the facilitators’ emergent understanding of the licensee group viewpoints. A second meeting with the licensee served the purpose of further checking the understanding and adding any missing elements, and further familiarized the licensee to causal mapping as a representation of their views. The licensee members seemed to be pleased to see their views as a causal map, and reported that the map showed how carefully they had been listened to and that they had gained a better sense of their own thinking.

GSS Implications: Although the above process was particular to the energy case, it is likely that in any workshop participants will have their own definitions and understandings of the situation and therefore

it is important for the negotiation to get this 'out in the open'. Equally participants will wish to ensure that they start from a level playing field – this too is key in any negotiation.

In addition, it is likely to be helpful for the **facilitator to have a good understanding of the different points of view in advance** of the workshop (Ackermann 1996) as they will be able to better design the workshop to support the negotiation. Where it is not possible to meet with each participant in advance, it might be also achieved through conversations with the client and production of pen portraits (Ackermann and Eden 2011: 277).

As noted in the beginning of this chapter, all GSS's utilize particular formats of communication and some **introduction to the GSS format** before a meeting reduces some potential stress about new ways of working. In particular, an understanding of the role of the format that is to be used to help with the listening process, and negotiation, will introduce some confidence to the anticipated proceedings (Mantei 1988). This is particularly the case where different forms of data presentation take place, for example, visualizing the data in the form of maps.

Ensuring a good start

Case: Having established that each of their views was represented with a reasonable level of accuracy, it was agreed with both parties that the facilitators would extract aspects of each party's views that might usefully be discussed in a joint meeting. The intention was to choose material that could fully exploit the 'soft' negotiation potential of the GSS as well as represent the situation. In particular, the facilitators were keen to persuade each party that it would be helpful to display some views about their own weaknesses in the relationship in order to gradually build trust (Ackermann et al. 2016). Their conversations had been dominated, prior to the meeting, by complaints - suggesting that it was only the other party that was at fault.

At the start of the meeting there was considerable tension, and although participants were seated in a U-shaped formation, the setting dynamics exuded the appearance of two teams about to do battle! There had been no conversation across the two groups during the coffee period immediately prior to the meeting – both organizational groups keeping very much to themselves. The first session of the meeting had been designed to absorb the first half of the day, with the period up to coffee break taken to be critical in establishing with most participants the potential for the rest of the day being constructive. Allowing each side to have the opportunity to view not only their own material but that of the other side, without having to respond meant that deep listening could take place. The GSS enabled a more reflective stance to be taken as participants didn't need to respond immediately. After the first hour most, but not all, participants in each group behaved as if they were prepared to accept the possibility that the views of the other party were reasonable, even if not acceptable. There was the beginnings of an appreciation of both side's difficulties. Designed procedural justice appeared to be paying off, and in particular the self-critical points produced humor as well as the potential of both parties thinking together. The research observer (and the two observers from the organizations) particularly noticed the extent to which the GSS had been able to 'separate the people from the problem' -- the interests from the positions. The observers reported that at the coffee break there was still no conversation across the groups, but each group was more relaxed and good-humored, and there were signs of positive expectations for the day. Providing anonymity, a balanced structuring of views, and time for deep listening facilitates negotiation.

GSS implications: It is critical to **get a good start to any group meeting** as this will set the tenor for the day. This view is strongly supported by Phillips and Phillips (Phillips and Phillips 1993) who note that it is critical to get a good start to any group meeting. Using the public screen to project the range of views in a manner that allows consideration rather than immediate response.

Designing deep listening

Case: As touched on above, preparation work prior to the meeting had been very carefully undertaken: a series of causal maps that included perspectives from both parties were produced with each map encompassing a particular theme of dysfunctionality. The order in which these maps were to be presented to the group also had been carefully considered – taking into account both process (for example, not starting with the most confrontational) and content (for example, attending to themes that were central to the overall map structure) considerations. Care had been taken to ensure that each map utilized approximately the same number of statements from each party, and in addition that causality linked the views of one party to the views of the other. In this way, the views of each party were expected to be less stark as they were a mix of criticism, admission, and possible ways forward. A good starting point for negotiation.

The implied options that had emerged from the interviews and earlier engagement were also seen as a useful resource to help resolve the situation depicted under the theme displayed. It had been clear that each party acted as if their view was the only right view, and that therefore, for them, a satisfactory outcome would be win/lose. However when the views were considered alongside each other, the possibility of generating new options that would facilitate a win-win (Fisher and Ury 1982) increased.

During the first part of the meeting, the GSS was used in ‘single user mode’ (rather than using the networked GDSS) (Ackermann and Eden 2001) where one of the facilitators was modifying, elaborating, and developing each of the group maps as a result of reactions and comments. This was to allow both parties to concentrate on the material and interact without concentrating on using technology as well as reacting. The first part of the meeting also helped ensure that both parties became more equally familiar with causal mapping used in a live group setting. The anonymity from individual interviews reduced the face-to-face tensions of a normal meeting. The ability of the GSS to capture the changes in real time also meant the causal map was in continual transition - the ‘transitional object’ allowing the group to slowly transition from two opposing camps to appreciating the wider set of views.

GSS implication: Designing the GSS so that it **allows participants to ‘hear’ one another without prejudice** and thus listen effectively facilitates negotiative behavior. This is achieved through both allowing for anonymous contributions but also through presenting contributions in the context of alternative views. This design to **encourage deep thinking** helps **getting off to a good start**. A GSS that uses causal maps enables the suggestion of several possible **portfolios of options** that are not the same as any single option. The totality of the map of causality is addressed by the group – each participant (rather than adversary) can add to, reflect upon, and suggest alternatives anonymously and at the same time.

Nutt’s (Nutt 2002) research suggests that the notion of a claim – a single clearly stated ‘solution’ - implies a firmness of proposal that tends to take a group down the route of agreement or disagreement with little hope for the creation of new options. The use of a GSS seeks to counter this possibility.

Providing the opportunity for ‘face-saving’

Case: Having established with each party those aspects of their views that they were prepared to have declared during the meeting, these two sets of views were merged together. In addition each statement was deliberately not tagged with any identification regarding the source. Typically participants believe that they can guess the source of the point of view, however the facilitators expected that it was likely that, by encompassing the admissions of both party’s failure, there would be some growing confusion about attribution as the views were explored. As was argued above, the role of anonymity is significant in negotiation. In this case, the facilitators had designed the meeting so that the GSS would utilize anonymity

extensively particularly when further views and responses were being sought. As such there was no need to worry about the social dynamics of presenting a view – they were all anonymously presented on the public screen

GSS Implication: The use of both anonymity of contribution and the **model as a transitional object** enables participants to easily and gradually negotiate a new group view as well as manage their emotions more effectively. They are able to change their mind imperceptibly and thus **avoid losing face** by changing their mind publically. The role of a visual representation for sharing weaknesses from all perspectives combined with the opportunity to use the GSS to ‘discuss’ anonymously the views without the social costs of individual ‘face-saving’ provides a powerful meeting design that would be difficult to attain without this combination (Connolly et al. 1990).

Attending to the emotion – Ensure there is the opportunity for catharsis

Case: The first stage of the meeting started from 'where each participant is at' - their immediate and personal/role concerns, claims, and issues. In doing this it was felt that it would not only enable both organizations to develop a new joint understanding of their different points of view both across and within teams, but also act as catharsis - a release of anger, tension, and frustration. By using the GSS as a transitional object, the views would be taken to belong to participants but nevertheless be de-personalized, and in addition could be continuously developed by the whole group in real-time.

GSS Implications. The process of getting concerns ‘out on the table’ provides important **catharsis opportunities** for participants and thus **assist with face saving**, and getting a good start. Without a GSS some participants are dominant and discourage others from expressing their views and therefore the impact of catharsis is uneven, and tensions can emerge. Acknowledging the importance of attending to emotion and its impact is a growing area of research (Tully et al. 2018).

Establishing priorities and judging consensus

Case: Before the break for lunch all of the themes had been presented, explored, and elaborated. The elaboration had produced more rather than less equivocality of views – suggesting that the positions of each side were softening. A deliberate last stage prior to lunch was the process of asking all participants to individually express an anonymous rating depicting their views of the relative leverage and practicality of resolving the dysfunctional issues under each theme. This would inform the process after lunch. The first step of this procedure was to ask each participant to rate the relative contribution that resolving each theme in turn might make to reducing dysfunctionality. To ensure appropriate anchor points, each participant was required to, at least, rate the resolution of one theme at the highest level, and one at the lowest level. For the second step, participants were asked to make a judgment, on the same rating scale and using the same anchoring process, about the relative practicality of any solutions that might be devised. The underlying rationale for this procedure was to gain insight into both the aggregation of judgments made, and the degree of consensus both across all participants and within each of the parties.

GSS Implication: Build in regular activities to **frequently determine the extent of consensus across the group** regarding the definition of the situation and thus priorities of the group. Monitoring consensus can assist the facilitator and group in the negotiation process. Although many ‘manual’ approaches to reaching agreements use a form of voting (for example, using ‘sticky colored blobs’), the power of a computer based GSS to enable full anonymity in expressing views and priorities with immediate statistical reports of degrees of consensus provides procedural justice.

In addition the process permits the group to **explore more honest differences in views** and so the extent of agreement across different constituents (Watson et al. 1988). GSS facilities permit the dimensions of analysis to be quickly and easily varied – in this case an **evaluation of options for the degree of leverage and practicality of options**.

Managing conformity issues – avoiding ‘Group Think’

Case: Surprisingly there was no consensus *within* each of the parties. The facilitators and participants had expected that there would be relative consensus within each party about both leverage and practicality but less so across the parties. Without identifying who had said what, the results were displayed and the lack of consensus within each party highlighted. The GSS enabled a display of the average rating and the variance (the degree of consensus). The system also showed the rating of every participant but without identification of the participant. The results demonstrated that there was considerably less consensus of view amongst those from within the regulator party than from those from the licensee. This latter result was of particular interest to both the facilitators and the participants as it confirmed earlier impressions from viewing the themes from the aggregated map. One of the dysfunctional theme maps appeared to contain a relative commonality of view, and reasons for it, from within the licensee, as compared to the independence, and independent views, of the inspectors within the regulator. For the whole group to see this discrepancy in opinion proved to be both amusing and helpful in establishing a shared appreciation of the dysfunctions and the multiple views held. The observers reported later that they thought this was probably the turning point in progressing towards a successful negotiation. Notwithstanding that there had not been consensus within the parties there was nevertheless a reasonable consensus about the top three themes, in terms of both leverage and practicality - enough consensus for the group to feel comfortable about focusing on addressing these three themes as a priority and a good use of their time for the rest of the day. The agenda seemed clear.

GSS implication: Using GSS features such as anonymity helps in **reducing conformity behaviors** such as Group Think. **Recognizing different perspectives within the same department or organization as well as across organizations** is easier with a GSS because social pressures to conform within a party are considerably less when anonymity is permitted.

Additionally the GSSs quick and frequent analysis of the differences in views provides the facilitator with powerful help in facilitating negotiation.

The power of social skills

Case: As a result of this “turning point” prior to the lunch break, lunch proved to be more sociable across the parties than had been seen earlier in the day. The view of the observers and facilitators was that most participants felt reasonably buoyant about the prospects for the afternoon. This was partly due to having got a number of things ‘out in the open’ and being able to talk about them, as well as having a relatively shared view of where to go next (rather than one side dominating the direction).

GSS Implication: **Enabling participants to be more open** through anonymous entry and prioritization processes can start the process of effective engagement and social behavior. One party in a negotiation sometimes has better skills to present their point of view. In this case the licensee was articulate and pugnacious, and the regulator would often start presenting a view only to become overwhelmed by responses from the licensee. A GSS can **equalize this type of perceived or real inequality** – power derives from the perception of power as well as from the actuality of it. As such managing the impact of differential social skills assists in both ensuring procedural rationality and justice is attended to

further facilitating the negotiation.

Developing agreements through option generation

Case: The afternoon started with more good humored banter between all participants, and this continued for all of the afternoon. The group returned to reconsider the causal map representing the top priority theme. Each participant was invited to use their laptop to communicate directly with the public screen – focusing upon the map of the prioritized theme. They were asked to suggest options (means of resolving the issue) that might remove the dysfunctionality represented by the material representing the theme. This stage added to the material that had been captured when elaborating each theme during discussion in the morning.

As participants generated options, they appeared on the public screen in a random position. To try to help manage the growing complexity, one facilitator moved each into a position close to the statement that might be resolved by the option (to the best of their ability). At this stage of using the GSS, all a participant was asked to do was to type a short statement of six to eight words representing their proposed option and submit it. They were encouraged to ensure that there was an active verb in the statement, in order to suggest an action orientation. The attribution of statements appearing on the public screen was completely anonymous to the participants, however the GSS provided the facilitator with an awareness of who contributed which statement.

The second stage of this option generation activity was to ask the participants to submit their own views about causality - in other words, if an option they generated was to be implemented which of the issues would it help resolve. For a participant this is a simple process: each statement is tagged with the reference number, and links between one statement and another entailed typing, for example, 54+23, which 'generates' an arrow from statement 54 to statement 23, implying that statement 54 will impact statement 23. Participants were invited to make links between any option and any other statement or option, regardless of whether they had contributed the option or statement. The process ensured that, for the most part, participants 'listened' to the views of others by reading each of the suggested options and considering their potential impact (Ackermann and Eden 2011; Shaw et al. 2009).

GSS Implication: Encouraging participants to not only **generate possible options but do so considering their causal context** assists with the negotiation. Setting new options within the context of others ensures that they are less 'claim' like and more likely to develop consensus.

Each generated option is seen to do something about the situation because it is causally linked, either by the proponent and/or other participants, to possible outcomes. The specific GSS feature used for this task **'forces' participants to address the consequences of suggested options**. Other participants are able to add alternative and sometimes negative consequences by adding new outcomes or simply link options to existing outcomes thus building up the representation and understanding.

Nutt's research suggests that developing "decisions with multiple options are more successful" (p.126). Using a GSS that enable, and encourages, the fast creation of a number of options taps into the wisdom and experience of group members. In addition, his research argues for asking the 'what-for' question: "moving up the ladder answers the 'why' question ... moving down the ladder answers the 'how' question (p.126-7). *Group Explorer*, as a GSS, uses causal mapping which focuses on the use of a laddering technique to create a hierarchy of objectives and once generated, explore and discuss the hierarchy to find the most appropriate objectives to follow. The process helps with respect to two difficulties: firstly, participants becoming fixated on one particular objective and secondly showing there are a large number of *i n t e r c o n n e c t e d* objectives uncovered by the group. The productivity gains derived from a GSS provide more opportunity to

consider multiple options and multiple consequences within the context of a network of objectives.

Quiet participants!

Case: As these tasks unfolded the facilitator was able to monitor the number, and rate of, contributions being made by each participant. This enabled both facilitators to make judgments about the relative dominance of each participant and also to encourage and support those who were relatively 'quiet'. It also allowed the facilitators to ensure that each party was represented relatively equally so as to increase the ownership of the resultant outcomes. Through this shared creation there would also be more understanding of the different considerations further assisting in increasing the likelihood of action.

GSS Implication: **Encourage all participants to engage, and feel engaged**, in the process through active participation independent of social skills. This is more likely to ensure a wide range of views and more equal contribution rates from all participants, leading to a greater probability of a 'buy-in' to agreements. Although one of the positively viewed features of a GSS is anonymity, having this facility doesn't always inspire participants to contribute, and a little support from the facilitator can have a big impact. As such, the provision in a GSS of knowing the rate and range of contributions can help the facilitator to encourage equality of view and engagement.

A group view from individual perspectives: splitting adversarial positions

Case: The public screen, by now, was reasonably cluttered - there was no shortage of suggested options for the top priority theme. Nevertheless, because the material was structured into a causal map, it was possible to structure the newly generated material into clusters. Some options supported other options and so created a hierarchical tree of options. Options at the top of these trees, in effect, summarized the options further down the hierarchy. Some options had an impact on several different parts of the theme - making them potentially potent. Furthermore the GSS information to the facilitator showed contributions from both parties revealing a shared approach to seeking a resolution of the situation they jointly faced.

Given the cluster's hierarchy, it was not necessary for the group to evaluate every option, but rather evaluate the 'summary' options (those that had a lot of options linking into them) and those options that had multiple impacts. Not surprisingly, as a proposal to use the GSS to evaluate these summary options was put to the group, participants sought to make additions and changes to the options in order to refocus the group's attention to their own options (making these options more connected). However, it was also interesting to see some participants gradually remove themselves from a commitment to options they had suggested, and seek to focus attention to the options of others that they personally favored.

New wording for some options was proposed, sometimes under the guise of delivering greater clarity but actually seeking to subtly shift the meaning of the option, and at other times simply elaborating in order to give clarity to meaning. During this time the facilitators sought to attend to the shifting meanings without losing ownership from the original proponents. As the observers commented later, the ownership of some options became extended to many members of both parties as the wording was gradually changed. In effect new options were being created and old options became less identifiable, at least at the level of the summary options.

The causal mapping appeared to have become second nature to all participants by this stage of the meeting, and it was not problematic to remind participants that the meaning of any option was related not just to the wording but also to what it was expected to achieve – the causal links out, and to the ways of making it happen – the causal links in (Eden and Ackermann 2010). The observers, and later examination of the log of the meeting produced by the GSS, demonstrated that the two parties had become a group of multiple parties

each with a point of view that was becoming difficult to attribute to one party or the other.

The GSS was, at this stage, again being used in a single user mode where the facilitators were proposing and making the changes in response to suggestions by participants. The GSS could have been a simple word processor in order to achieve this function. That said, the power of an action-oriented way of understanding what an option was for (out-arrows) and how it could be achieved (in-arrows) helped create new options (following the mapping technique) that achieve the agreed objectives. Continuously editing causal links and wording encouraged participants, and importantly the two parties, to no longer fight over old options but create new options (Fisher and Ury 1982).

GSS Implication: Continue to **play with options** seeking agreement and clarity – through having the material presented on a public screen and **embarking upon a process of continual refinement** as this **ensures that the options are owned by many** as well as being refined in terms of meaning. Having an efficient process for the identification and evaluation of options also ensures that the group's time is effectively used and progress seen to occur further stimulating the group.

The process supported by the GSS ensures that the search for options is not limiting but rather encourages “uncovering ideas” (Nutt 2002: 43). Additionally the search process echoes Nutt's research which indicates that “decision makers also frame things to indicate what is wanted, the results a decision seeks to provide” (Nutt 2002: 111).

Closure

Case: In the final stages of the meeting some sense of closure was crucial for the group (Phillips and Phillips 1993). The group could have spent considerably more time focusing on the process of rewording and adding new options to each of the three themes that had been prioritized, however, an end point was required. The concluding process of seeking to reach some agreements was undertaken using the ‘preferencing’ facility in the GSS. The questions asked of the group were practical: i) “you have only a restricted amount of resource across the two organizations, and this resource is largely your time and energy; given this restricted amount of resource to use to make progress against each of your prioritized themes, choose how to distribute it”, and ii) “we are looking for a reasonable level of consensus, if possible, but recognize that there may be some options that you personally regard as ridiculous; to the extent that you might surreptitiously sabotage them if they were to be agreed by a majority as actionable - thus you have the opportunity anonymously to block these options”. For each theme in turn, each participant was provided with electronic resources through the GDSS - positive resources and blockers - and asked to allocate them. They were invited to use blockers only if they felt strongly and negatively about an option, however they were asked to make use of all of their resources to support options.

The GSS permits the facilitators to see statistics relating to the degree of consensus, the variability of resources allocated, the range of participants using blockers with respect to any option, and the degree of consensus within one party compared to the other. With some relief on the part of all of the attendees (facilitators, observers, and participants) there was a high degree of consensus about the top three options against each theme, but little consensus against other options. Whilst on reflection the outcome might have been predicted by a careful analysis of the involvement of participants in the rewording and elaboration process, it nevertheless came as a surprise to all and was regarded as a remarkable success for the day. For each theme the top three options were much preferred over the others, there was a high degree of consensus, and no blockers had been used against these top options.

However, worryingly, in almost all instances there was one participant within the regulator who was an outlier - an observation derived from the GSS statistics produced for the facilitator in real-time. The facilitators were

concerned that this could result in a possible significant lack of enthusiasm and so commitment to delivery. At the time, it was not possible to think of any useful way of using this data with the group, but both facilitators resolved to raise the issue in the wrap-up meeting with the observers which was due to take place the next day.

The very last part of the meeting was devoted to identifying whether some 'quick wins' might be achieved from within these largely consensual top options. In this case the rating procedure of the GSS was used. Here participants were given a time horizon of one year and participants invited to indicate the time required for each option to deliver its expected and desired outcomes. Somewhat unsurprisingly there was less consensus. When the group explored the anonymous results it became clear that each participant had very different views about what determined a successful delivery of an outcome. Time constraints meant this outcome could not be explored further.

GSS implications Allow participants to **confirm support for options anonymously** to ensure consensus for the outcomes, and provide an opportunity to indicate severe dislike of an option so that **political feasibility can be explored**. While electronic voting and rating systems offer significant gains in facilitating negotiation, unless the participants see similar meanings of statements being rated then the results might suggest spurious agreements (Watson et al. 1988).

Planning Next steps

Case: The following day the two facilitators and two observers met for four hours. The purpose of this meeting was twofold: i) to construct a document that would provide a summary of meeting agreements to be circulated to all participants, and ii) to provide the facilitators, as researchers, with detailed feedback and commentary from the observers.

The first two hours was devoted to the second of these purposes and provided both research data and a context for constructing a document that paid adequate attention to political feasibility (Eden and Ackermann 1998). Although the document was intended primarily for participants it was likely that it would be circulated more widely. Each of the observers represented one of the parties, and during the process of crafting the document each of the observers sought to slant the responsibility for agreements being delivered to the other party. Without the availability of the computer log the agreements made by participants might have become distorted by the observers. Both of the observers commented that this was the first opportunity they had been given to influence the meeting hence their wish to shape the material.

Given the enormity of differences in opinion at the start, both facilitators and observers were pessimistic about the probability of the emotional commitment created during the meeting continuing into the future – "will it last" (Sankaran and Bui 2008). There remained some concern about the position and power base of the outlier – however this particular person was regarded as an outlier in normal work situations, and so there was a view from the observers that his behavior may not have serious consequences for that of the rest of the group. Nevertheless it was important to put in place some mechanisms for ensuring the good will and progress did not get lost. Following the construction of the feedback document, two proposals were made and would be put to the participants by the observers: i) there should be a six-monthly review of progress to be undertaken by the facilitators, ii) all of the participants should meet again in 12 months for another GSS managed meeting.

GSS implications: Follow up with **producing concrete 'minutes' based solely on the GSS material** that notes the agreements and next steps and provides appendices showing the **pictures the group had used during the workshop**).

4 SUMMARY AND CONCLUSIONS

4.1 Conclusions

As discussed above there are a number of implications associated with using GSS for negotiation. A list of the actions associated with these implications is noted below. Facilitators should:

- carefully choose the participants who should be involved in any negotiation or problem solving event.
- have a good understanding of the different points of view in advance
- provide an introduction to the GSS format
- put effort into getting a good start to any meeting
- allow participants to 'hear' one another without prejudice
- use the model as a transitional object
- provide catharsis opportunities
- frequently determine the level of group consensus
- explore more honest differences in views
- evaluate options for the degree of leverage and practicality of options
- reduce conformity behaviors
- recognize different perspectives within the same department or organization as well as across organizations
- enable participants to be more open
- equalize perceived or real inequality
- generate possible options but do so considering their contribution and context
- 'force' participants to address the consequences of suggested options.
- encourage all participants to engage, and feel engaged
- play with options
- embark upon a process of continual refinement
- ensure that the options are owned by many
- confirm support for options anonymously
- produce concrete 'minutes' using the GSS material

Whilst these implications are noted in a list form, most have impacts on others. Attendance to the entire suite will promote more successful negotiation.

One of the most notable aspects of the above summary is an emergence of the significance of the role of anonymity – a significant feature of electronic GSS's. Whilst the advantages of anonymity are not new (Valacich et al. 1992; Valacich et al. 1992), combining this facility with other features such as the use of a transitional object can extend the power both processually (a means for designing procedural justice and reducing social pressures) and contentfully (avoiding being trapped by particular claims on the future).

As the case above illustrates, GSS's have crucial role to play in 'soft' negotiations - acknowledging some of the negotiation literature and extending the view that negotiation need not just be 'hard'. Group decision making thus can be viewed as a form of soft negotiation where the principles of negotiation discussed in this chapter can play a powerful role. Extending this role to help reduce the possibility of falling into some of the traps associated with failed decisions, such as those reported by Paul Nutt, can further assist groups in making better decisions.

Soft negotiations, as shown above, require subtle shifts in meanings through the presence of equivocality,

allowing thinking to gradually shift and agreements reached (Eden et al. 2009). Through facilitating the process of option creation and consequences in a 'safe' environment both emotional and cognitive shifts can be achieved.

One process that could particularly benefit from GSSs supporting 'soft' negotiation is the area of strategy making. Here top management teams using such a GSS would be better placed to consider issues, raise alternatives, appreciate consequences (particularly confirming goals) and slowly develop a shared sense of organizational direction (Eden and Ackermann 2000; Ackermann and Eden 2011).

Understanding the processes of social negotiation, behavioral, cognitive and emotional, is growing in the area of group decision and negotiation support (see MARTINOVSKI, FRANCO, ADAM-LEDUNOIS AND DAMART). Not only for the support of multiple stakeholders seeking effective shared outcomes as reported in this chapter but also through seeking to understand better the micro processes required to support groups (Tavella and Franco 2015). To ensure socially optimal allocations when considering resource allocation problems (Nongillard and Mathieu 2014) and the role of situation and personality when initiating negotiations (Kapoutsis et al. 2013).

4.2 Post Script

All participants of the first GSS meeting, reported above, agreed without hesitation to an annual review meeting utilizing the GSS. One-to-one conversations with each participant suggested that each of them regarded the first meeting as a major breakthrough. Each of them could describe critical incidents during the meeting that they could not imagine occurring using any other form of meeting.

The annual review, that took place almost exactly 12 months later, reported a continuing commitment to the agreed themes (which, as expected, showed mixed progress). The review reported that the highest priority theme had shown the most significant progress -- interestingly, this theme was related to the need to create a developing trust between the parties in relation to working practices. Trust had, of course, been increased simply as a result of the GSS meeting itself. The second annual review (the third meeting using a GSS) occurred a year later and further built on the progress made. It was extremely clear to the facilitators how much progress had been made to both as members from both organizations chatted, joked and shared concerns together. There was an increased openness, an appreciation of the difficulties faced by both organizations and a keen desire to continue to work together effectively.

Although some have written about the low chances of workshops of this sort actually achieving anything of significance (Hodgkinson et al. 2006), this case (and others which have involved the use of the GSS) shows that significant achievements are possible.

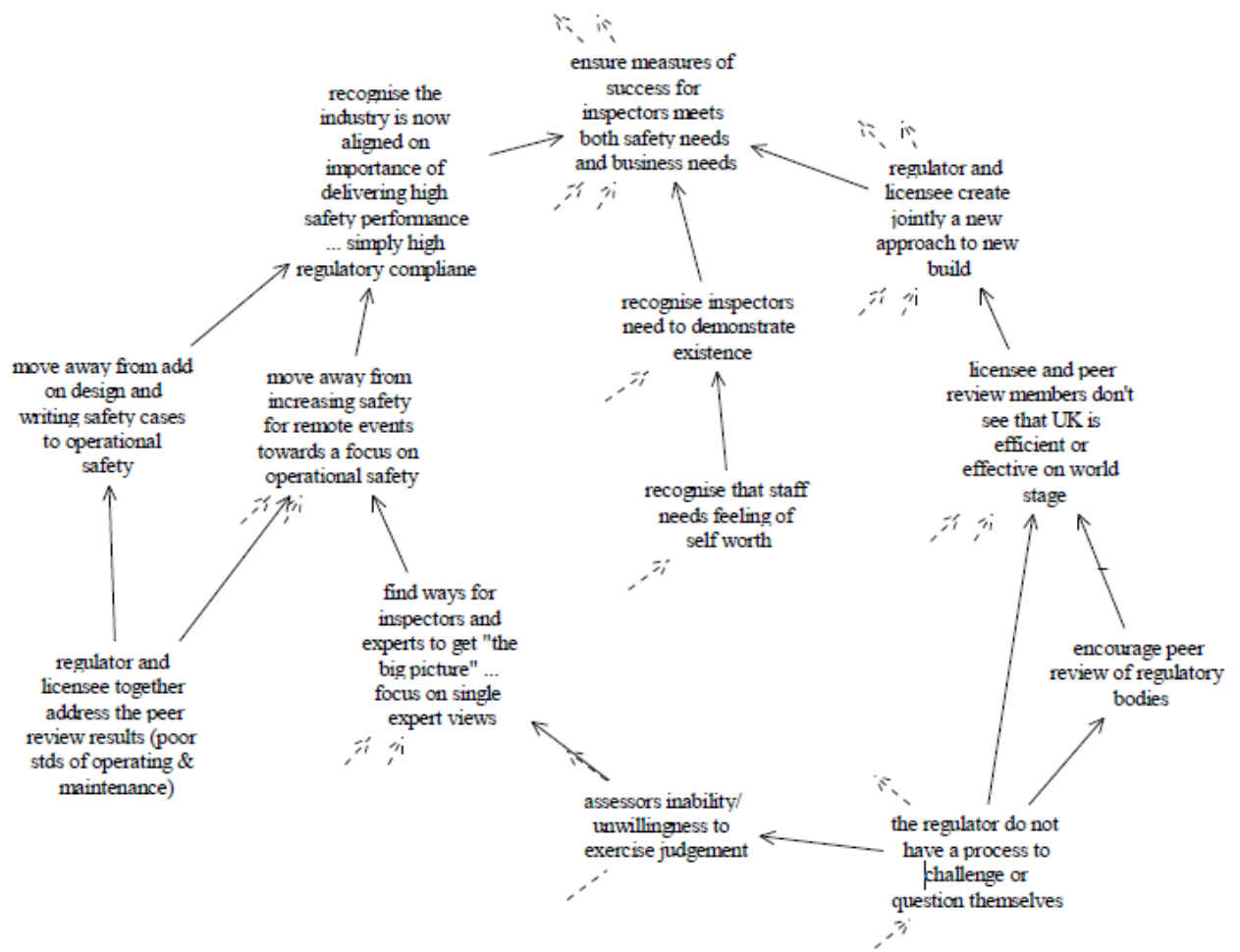


Figure 1 – An example of a part of a cognitive map (statements have been changed to protect confidentiality); dashed arrows indicate parts of the map not shown in the figure



Figure 2: A photograph of a management team using the GDSS

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