The Creation of a Paradox: The Development of Shared Mental Models and Groupthink

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Introduction

The task of groups is to produce a consensual decision, based on combined individual preferences, for the purpose of problem solving. Among the conditions known to improve the cognitive makeup of a decision making team is diversity among team members. Because team members may have different perspective, the process used can have a substantial impact on the final decision that is made. The use of system dynamics has been and is currently used more and more often to help groups determine appropriate policies (plans of action) that could have positive impacts on their organization's future. System dynamics may act as an aid in conflict management, since it allows members of groups in conflict to visualize the systemic causes of their problems rather then viewing them as personal. System dynamics models can be used for scenario development in strategic planning to play "what if "games, or they can be incorporated into management flight simulators to aid learning and decision making. Group model building (Vennix, 1996; Richardson, 1995) has been the process typically recommended for the development of a useful model.

The group model building process is one that requires patience and careful planning. Model building requires both participation and its management. Also, as Homer (1996) points out, model building is iterative in nature. A problem that often occurs in practice is that the type and amount of participation is not the ideal participation that might be envisioned by those dealing in organizational interventions. Too often, what we call participation deals with critical issues that stem from power, where power flows from top to bottom rather than empowerment and where typical participation schemes are more advisory then representative. Several techniques, all sharing a common basis of dialectic methods, or the process of debate, in order to elicit information and knowledge, have been developed to assist in the modeling process. Such techniques include Interactive Planning Process (Ackoff, 1981), Assumption Testing(Mason, 1969), Soft Systems Methodology (Checkland, 1988) , Group Model Building **(**Vennix, 1996 and Richardson, 1995), SODA (Strategic Options Development Analysis,1989). It is during this process that the modeler needs to be aware of the possibility of unintended consequences, such as poor group process and development, accompanied by failures in group decision making.

Failures within groups to reach quality decisions can be attributed to such characteristics as poor group make up, poor process management, ineffective leadership, and groupthink, to name a few. The problem of groupthink has been chosen for discussion and was prompted by the underlying theme of system dynamics, the development of 'shared mental models'. Groupthink can be viewed as an unintentional, yet dysfunctional, by-product of group process. The theory of

groupthink rests on a set of generally unstated assumptions. Aldag and Fuller (1993) list these as:

1) The purpose of using a group is primarily to enhance decision quality.
2) Group problem solving is essentially a rational process.
3) Benefits associated with using a group include development of a variety of perspectives on the problem.
4) Groupthink can prevent actualization of these benefits.
5) By taking steps to prevent groupthink more rational decision making can occur.
6) An illusion of well being is presumed to be dysfunctional.
7) Concurrence occurs because of agreement seeking drives and pressure for consensus.

As people build models and try to develop a shared mental model or consensus of what their problem and its structure is, the members of the model building group can run up against psychological pressures, developed due to influences either internal or external to the group process. The concern is that groupthink could develop since members of the group have an expectation that the model will be a shared model. Such sharing may become an expected norm and drive the process counter to the actual behaviors which the model builder desires. In reviewing the literature on system dynamics modeling, little information about this potential problem has been discovered. Therefore this paper will review the literature on groupthink and evaluate how susceptible different model building approaches may be to promoting undesirable outcomes related to groupthink.

Groupthink

In 1982, Irving Janis published his study of decision making and policy formulations which led to poor outcomes or fiascoes. These decisions were made by experts in their fields and dealt with high level issues. Upon implementation, the results were disastrous. One such decision, for example, was the Bay of Pigs decision made during the Kennedy administration.

Groupthink has been described as consisting of the following set of symptoms:

1. Overestimation of the group, creating an illusion of invulnerability, which leads to excessive optimism and encourages the taking of risks. Attached to this is an unquestioned belief in the group's morality therefore inclining members to ignore the ethical or moral consequences of its decisions.
2. Closed mindedness- defined as a collective effort to rationalize in order to discount warnings or other information that might lead the group to reconsider their assumptions.
3. Pressure towards uniformity which contains--
   Self-censorship of deviations from group consensus, reflecting the inclination to minimize the importance of doubts and counter-arguments, while sharing an illusion of unanimity concerning judgments conforming to the majority view all of which is re-enforced by the direct pressure against anything that questions the groups illusions of commitments. All this along with the evolution of self-appointed mind guards to protect the group from adverse information that might shatter complacency. (Janis, 1982).

Janis dealt with the social-emotional aspects of groupthink, especially where this dominates the task aspects of achieving group goals and objectives. If groupthink is to be acknowledged as a preventable phenomenon, we must be able to disentangle the positive and negative effects of different types of cohesion (Bernthal and Insko, 1993). The groupthink model tends not to deal with the issues of commitment to the solution or member satisfaction. However, "many have argued that decision processes promoting agreement among team members are more likely to enhance organizational performance than decision processes that do not promote consensus."(Mason, 1996, 125). Members of the team must not only agree but be committed to carrying out the decisions made.

Fortunately, groupthink does not always happen. It is likely that members are exposed to a set of predisposing issues that create the groupthink process. Group cohesiveness is one antecedent condition that may lead to groupthink. You would not, according to Janis, expect to find groupthink symptoms where members did not like one another. A lack of impartial leadership is a second condition. Under such conditions the leader of a policy making group could use his or her power and prestige to influence the members of the group to approve a policy alternative he or she prefers instead of encouraging open inquiry and critical evaluation. Another issue is the lack of norms requiring methodical procedures for dealing with the decision making task (Janis, 1982). Even where power is not an issue a preferred style of management may cause the problem. In some cases groupthink may be linked to the leadership style in use: A closed style where a leader does not encourage divergence or expresses their opinions first in a strong manner can create group think (Neck and Moorehead, 1995).

The problem in examining groupthink according to Neck and Moorehead (1995, 538) is that "considering the popularity of the concept, the scarcity of research examining its propositions is startling." Not enough is known of antecedent conditions other than the ones Janis outlined. For example, Whyte contends "that groups tend to select the options supported by the majority at the outset of group discussions, and they tend to do so regardless of the presence or absence of groupthink" (Whyte, 1989, 41). The combination of these effects can occur due to primacy or polarization. [(1)] Polarization can occur due to: 1) people wanting to present themselves in a favorable light or 2) informational influence (operating on the basis of information that supports our view). These authors add the antecedent condition of consequentiality to the groupthink language. A highly consequential decision is one in which the outcome of the decision greatly impacts group members as well as outside parties. Additionally, "these decisions are usually associated with unexpectedness and a sense of urgency which may erode the possibility of a truly informed group decision (Gouran, 1982, cited in Neck and Moorehead). It has also been suggested that if groups are task oriented, conflict will not affect the group's focus on the requirement of completion; if groups are relationship oriented, conflict will affect the group's relationship and social cohesiveness.

The problem for management of such groups is that as members are pushed to perform at the expense of relationships, satisfaction and group development can be negatively impacted. Team members with more negative sentiments towards one another or towards the team in general are less likely to participate fully in the decision making process. (Mason, 1996). The paradox that exists is that, the pursuit of acceptance can reduce decision quality while the pursuit of diversity can create conflict. From a systems perspective this might lead to anger among members and more conflict.[(3)] Similarly, interaction processes designed to minimize confrontation may increase consensus and affective acceptance but lower decision quality by encouraging teams to pursue only those alternatives that can be readily agreed upon (Mason, 1996).

For groupthink to occur antecedent conditions and symptom manifestations need to be present along with the expected immediate consequences--the symptoms of defective decision making (Janis, 1989,60). However, there are other causes of bad decisions besides groupthink. Norms developed within groups that tend to control group processes may also lead to the development of groupthink. For example, a norm of cohesiveness may enhance performance, while the reverse, too close a relationship, might degrade performance. The development of group roles is a process of construction. It is during this process that due to insecurity concerning member roles and group norms, groupthink can develop. There is evidence that dissent, even when erroneous, contributes to the detection of truth and to the improvement of both performance and decision making.

The remainder of this paper will deal with problems that can arise during the consensus building process of model construction. In the desire to develop a shared vision of the system and operations, which the model represents, can we as facilitators inadvertently establish or be dealing with a set of conditions that lead to real group failure, while we believe the model to be a success?

Group Modeling Approaches

There is an ongoing dispute between several authors, Ackoff and Checkland on one side of the issue and Jackson on the other, as to the impact of conflict on the process of systems thinking approaches. Ackoff and Checkland look at conflict as something that deals with the facts of an issue (*cognitive conflict*), whereas Jackson believes that "real conflicts (*affective conflict*) would obstruct genuine agreement on the ideal future between participants on the idealized design process"(Rosenehad, 1984, 80). Conflict, therefore, has two effects: 1) when functional it is task oriented, aimed at how to achieve common objectives, and generally contributes to decision quality by encouraging thorough evaluation of alternative underlying assumptions; 2) when conflict is dysfunctional it tends to be emotional and focus on personal incompatibilities (Mason, 1996). What we perceive as cognitive conflict in the beginning can become affective conflict and obscure the positive effects. Janis has recommended the use of the Devil's Advocate Technique to improve the dialectic process. This technique embodies the use of one or more parties to play the role of reality checker and question the wisdom of a group's decisions. It has been compared to dialectic inquiry and consensus building by Schweiger (1986). However, in the attempt to trigger functional conflict we can trigger affective conflict, creating another set of unintended consequences.

While limited space prevents a thorough review of each technique, areas of concern for the model builder will be examined and questions which need to be evaluated for improved model building will be posed. The specific areas that will be evaluated are: the Interactive Planning Process (Ackoff), Assumption Testing(Mason), Soft Systems Methodology (Checkland), Group Model Building (Vennix and Richardson), and SODA (Strategic Options Development Analysis). Selection of topics was driven by the feeling that concepts taken from each have been used in developing the modeling process of system dynamics. A quick review of each of the process follows along with associated comment on the technique.

The Interactive Planning Model (Ackoff, 1981), has three key principles. The one of interest to this review is the "participative principle"-- the basis of this principle is that in planning, the

process is the most important product, not the plan. A major consequence of participative planning is the reduction in difficulties in implementation, as people are more inclined to implement what they have had a hand in producing. The acceptance of the principle implies that the culture of the organization is one that will accept participation. This idealized design is dependent on the development of a strong organizational culture. Deal and Kennedy offer several problems dealing with strong cultures, among which are belief systems that can cause resistance to a change and resistance to seeing problems from alternative frames (Deal and Kennedy, 1982). In addition the process does not seem to deal with coercive situations, an issue well reviewed by Flood (1991).

Assumption Testing (Mason, 1969) informs us as to the key characteristics of management that engage in such processes, which are:
1) It is concerned with future states of the world and predictions about them.
2) It seems to secure a preferred future state according to its underlying value system.
3) It believes it has a choice between two or more behavior patterns for a firm's activity.

However, the real validity of the plan depends as much on the relevance of the particular assumptions that management brings to bear on the problem as it does on the accuracy of the logical process employed. Through his experience the manager develops habitual ways of viewing the organization and coping with its problems. The collection of these habitual ways of viewing the business and its planning problems forms the underlying assumptions (or world view) of the plan. It is not habit, since many decisions can be made with habit, but the ability to determine when habit is being used and if it is appropriate for the situation (Louis and Sutton, 1991). This world view becomes so implicit that management is normally unaware of the full import of its influence in the planning process. If one desires to improve the planning process, it is important that these assumptions be exposed and subjected to conscious deliberation and reflection. Once management is made aware of the assumptions they can reconsider and perhaps reformulate them (Mason, 1969). This assumes that management wishes to reformulate and that once we are aware we will take action.

Vennix descibes a three stage approach to model building."The first stage entails the development of a preliminary conceptual model by the project group, based on relevant literature and on general insights. This first stage is necessary because, in our opinion, it is easier to confront people with a preliminary model in hand than to approach them for the first time unprepared"(Vennix, 1996, 94). In the second stage he uses a Delphi questionnaire. In the process described they allowed experts who had responded to a Delphi questionnaire (a possible way to avoid group think) to confront one another at a meeting. According to Vennix, the first two cycles have a focusing function: they eliminate those elements from discussion in the workshop on which there is a great deal of consensus in the panel. However, areas of consensus should also be discussed for clarification, since different interpretations of the questions can impact answers. [A review of decision research shows that they way a question is framed can affect the process (Plous, 1993).] Even Vennix reports :

> "with respect to the statement on the relation between workload and the number of prescriptions approximately 50% agreed and 50% disagreed. Careful analysis of the arguments, however, revealed that the two groups did not hold the same kind of concept. One group considered a temporary rush while the other looked at structural workload" (Vennix, 1996, 200)."

While the process produced a general consensus, whether it produced full support of the conclusion was questioned. Even though the workshop allows for criticism of the model, has the seed for a group view of the issues been planted? Especially when we remember the possible effects of primacy on decision making.

Richardson has suggested the use of a team of model builders, each having a specific set of roles, one of which is a gatekeeping role "the gatekeeper role serves two functions, within the organization (it) speaks for the modeling process and within the modeling support team it speaks for the client group and the problem."(Richarson, 1995). The use of teams should give members of the modeling team the opportunity of making team members aware if groupthink starts to raise its head. A single facilitator can become trapped in the process with no observer to catch the problem. Richardson has made a good suggestion in terms of using teams to build a model and has suggested several team roles. When it comes to speaking for the organization we are reminded who the client might really be, that is, who is the client--the group or the organization paying the bill? What impact can the gatekeeper have on the group decision process if that person speaks for the paying organization? When a member speaks for the corporation the problem of power by vested authority may begin to affect the perception of participants as this "bestowed " individual express his/her point of view.

The use of the Soft Systems Method has been advocated by Checkland (1988). This philosophy deals with views of the real world and their definition.

> "Since real world action is always more complex than the structured activity in the model of a human activity system, then a number of models, built according to different viewpoints, will have to be constructed in a system study of the richness of the real situation is to be embraced."

Once models are constructed they are used to structure a debate about change. Models are built by identifying the root definition of a problem or system. These models are compared with perceptions or real world actions. The process allows for the use of a dialectic debate, a debate which, hopefully "will change perceptions of the problem situation, suggest new ideas for relevant systems (leading to iteration) and concentrate thought on possible changes" (Checkland, 1988, 27). However, ground rules for the debate are not established and it maybe easy for those in power to foster their views on those below, which impacts on the process of participation. Remember, the style of leadership can effect the development of groupthink by limiting discussion.

The use of SODA (Strategic Options Development Analysis) is a method for working on complex, messy problems. Much as Richardson has suggested, it encourages the consultant to bring together two sets of skills: first, the skills of a facilitator of the process involved in getting a team to work together and secondly, the skills to construct a model and analyze the issue which each member of the team wishes to address. The aim of SODA is to get consensus and commitment to action. The focus is on the point at which people feel confident enough to take action. Success is evaluated through a consideration of the personalities, roles, politics and power dimensions of the specific group of individuals that make up the decision making team (Rosenhead, 1989). One could also be reminded of Checkland's idea that to implement technology successfully it has to be not only feasible but acceptable too. Each member of the group is held to have his/her personal subjective view of the real problem. The basic process is to interview each client and create a cognitive map on the run, which leads to spontaneous questions and answers (There are no predetermined questions; as a result separate maps can be compared

after the interview process. The client needs to see the consultant not as expert in content, but as a helper in thinking through the issues. This concept is used in organizational development and group process consultation). Each map is created with an individual interview. The individual maps are merged to create a strategic map, and participant's views are known before the meeting. The process has the potential for avoidance of groupthink, as long as the expression of individual maps are protected by the facilitator.

Each of these processes are beneficial to the development of a model, most having in common the sharing of what we consider individual thoughts and open expression of these thoughts. However, this may not be the real process. Like an iceberg, underlying the visualized process are the dynamics of the group and organization. In theory the use of teams of model builders accompanied by a predetermination of each of the participant's mental models or perceptions would do well in protecting against the development of groupthink. The members of the modeling team could be aware and protect the process, while the predetermined preferences allows a check of reality against the process.

Power, Post Process and Team Membership

1. Rosenhead (1989) points out that most studies are requested by upper management and often do not take into account the concerns of lower management, except where upper management is concerned about conflict, "the effect of such conflict on the conduct of a study is a matter of relative power**".** He reminds us that the support of such a project is in the control of upper management which funds and commissions such projects. He also points out the participants in such a process "will be constrained by the knowledge that once outside the planning process he or she must resume the role of subordinate. They will be constrained by awareness of the power balance--there is no point in articulating demands which are evidently out of keeping with what is attainable. This is the phenomenon of 'non-decision making' by which contentious issues and opinions are tacitly ignored when one interest group is known to have countervailing power" (Rosenhaed, 1989). He also points out that team composition especially in a larger scale model needs to be carefully considered for balance. System Dynamics modeling usually brings together a small group of managers who know the field and in itself may create a bias within the model. This is important as Kanter (1983) feels that team process may continue well after the team meeting has taken place. Process is just that, it has its own dynamic and delays, many of which a facilitator fails to see or deal with because of effects occurring after the model builder is long gone.

Methods of preventing group think:

Janis advocated the use of the Devil's Advocate Method to help avoid groupthink. However, this method has its own problems. Management can assumes the role of an adverse and often carping critic of the plan. It attempts to determine all that is wrong with the plan and to expound the reasons why the plan should not be adopted. The assumption behind it is that truly good plans will survive the most forceful opposition and that a sound judgment on a plan occurs when that plan is subject to censure. Disadvantages of the Devil's Advocate Plan include:

1. It exposes some underlying assumptions but does so by exposing what is wrong with them not what they should be.
2.If the censure prevails and the plan is rejected there is no new plan to replace it
3.There is a tendency for management's attitude to be destructive rather than constructive

The planners response may be to develop safe plans(Mason,1969).

However, each of the suggestions carries with it the following concerns:

1. Censuring the plan does not get to underlying assumptions.
2. Who should determine what the assumptions are, if they are exposed?
3. The process allows for no new plan if one is rejected
4. There is a tendency for the process to become destructive rather than be constructive.
5. The process may drive planners to become risk averse.

Recommendations for Group Process

The group model building effort allows for the members of the group to understand how the model works, dependent on their participation for its construction. Leadership for the building phase is facilitator dependent.

- When building a model we generally build one. The use of several smaller groups to build sets of initially smaller alternative models, although time consuming, could allow for fuller examination of individual differences. We base this on the fact that the model is a reflection of the assumptions, possibly tested or not of the specific model building group!
- The skills of the model builder requires a background in group process to avoid the development of poor model building environments. We need to make sure that both the quantitative and qualitative skills of the modeler are balanced. Neck(1995) recommends that "the leader of the policy forming group should assign the role of critical advisor to each member, encouraging the group to give high priority to airing objections and doubts.
- If conflict develops, how will it be managed as part of the process? There is a delicate balance between affective and cognitive, or substantial and emotional conflict. The facilitator needs to take responsibility for controlling levels of conflict.
- To ensure participation and avoid the development of a model created by those who participate most often and are sure of themselves, the model building team must "work the room" to assure that each participants views are made clear, not just those who tend to speak up or more often.
- The facilitator should know about pre-modeling preferences of the members of the group and how they might effect the models outcome. The model building team should interview participants so as to get a clear idea of each participants views of the system before building the model. This can serve two purposes: 1)to educate the model builder about the system problem and 2) allow for the builder to have in mind if any one preference is being avoided.
- Make sure that members of the group have had experience in conflict management and are not afraid to deal with diverse issues or interpretations
- Make sure the group is as heterogeneous as possible. The inclusion of external stakeholders can often provide perspectives that internal members of the organization do not see or value. When building a model of the system include external stakeholders of the system.
- Determine group culture and norms. Suppose we are modeling a process aimed at saving cost in manufacturing, what will occur if the assumption is being made that downsizing may be an alternative possibility? How will it affect the model building groups description of the system and what will member's response be to this as part of the model?
- According to Frey, Hardt and Stahlberg (1996), homogeneous teams tend to be selective in information search. A good team needs enough size to allow for the development of an influential minority.It is recommended that consideration be given to team membership in terms of:

1. Disproportionate levels of power.
2. Team heterogenisoty
3. Team size

Conclusion

Many methods have been developed in an attempt to improve group decision making, especially to improve the group model building process. To date no one method has become the accepted process by which to obtain information necessary to build a good model. However, the review does pose two issues that need further response. These are 1) Who should participate versus who does participate? And 2) What type of group process is appropriate for a model building environment? Of interest is a section taken from Kameda(1996)--"social choice theorists have evaluated the functioning of ...aggregation procedures, pointing out that even intuitively appealing rules can in principle yield a collective decision that is sometimes counterintuitive or even unacceptable in terms of democratic values." The modeling process is just that, a process, which implies a continuous effort to improve both the process and its outcomes. The intent of this review was to create reflection upon issues that may need closer examination as the use of system dynamics becomes a more accepted practice in management institutions and among groups, both small and large.

Notes

1.Primacy refers to the tendency to remember which arguments are presented first within the decision making process while polarization deals with support of an initial dominant argument against others.(Plous, 1993)

2. Remember that groupthink involves perceptual distortions that prevent members from recognizing real conflicts as they exist in the group. Does this lead to the development of single loop learning or a MOD I environment?

3. For a discussion of anxiety effects see The Sytems Thinker .1997.Overcoming Organizational Anxiety, Wilenson,J.M.,Voyer,J. and Ford,D.N. Vol.8 No. 8 October 3-5

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