## 5.16   *Framework Schemes I-III applied to text from the fourth question*

GFSI -Q4

The aim of question 4 was to find out how the respondent's organization normally goes about in responding to a need for decision justification when it arises. There are four leading variables as shown on Graph 4, viz., *No rigidity unless by policy or legislation*, *Use of organizational artefacts*, *depends on query nature* and *Research is done*. From the variety of discreet conditions described by the respondents, it is clear that most groups do not have response formats or frameworks that could assist them in the decision justification process. This is problematic, for how does the group know that it has sufficiently addressed a particular need for decision justification? It is for this reason that a justification framework, such as the Toulmin *et al.'s* schema of reasoning is advocated in this study. When justifications of decisions are called for, groups must do more than calling meetings, issuing press releases and sending e-mails. All other channels of communication are obviously important, but they can only be assessed within a prescribed justification framework.
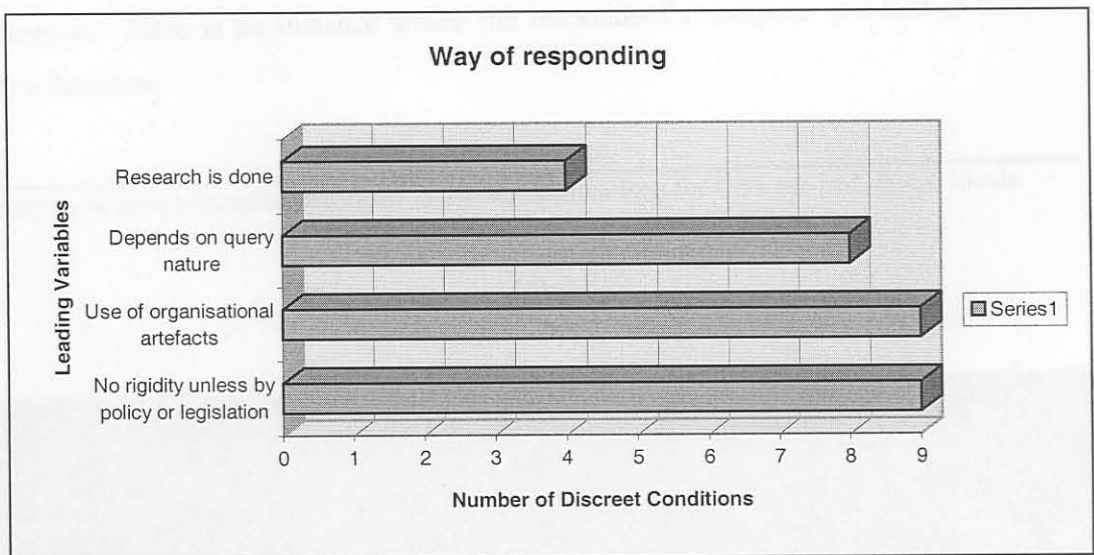
Graph 4: Morphological graph for question 4

Other than the fact that groups draw on institutional rules and resources during the decision justification process, Gidden's (1984) structuration theory in its original form is not very helpful here. However, the value of Poole *et al.'s* group decision-making as a structurational process is evident. For instance the following can be regarded as *strategic tactics* group members employ to win assent for their proposals:

> We call the relevant stakeholders to a meeting and give purpose and reasons why certain decisions were taken. We also use the bargaining fora to disseminate information; print and electronic media are also used. (Respondent 3)

> We have broad planning frameworks, project justification tools, and budgeting templates to help us make decisions. Meetings are a critical way of responding. (Respondent 18)

> When a proposal is received, acknowledgement is done telephonically, then a formal letter is sent to explain the decision. (Respondent 1)

> Visual presentations, workshops, group meetings, one-to-one meetings. (Respondent 13)

> To a great extent it depends on the nature of the query. There is no prototype rigid way in which we justify decisions we have taken unless so stated by a policy or legislation. When we are in a situation like this, what I normally do is to assemble the relevant officials to formulate a report. Once all inputs have been made, the response is then forwarded to the people or institutions that have asked for it. If there is need for a meeting, we convene it and discuss issues openly. (Respondent 26)

GFSII -Q4

Orlikowski's (1992) lens on the duality of technology enable us to see a classic example of how the technology is perceived as assuming the structural property of the organization. Here is an instance where the respondent's computer printout is used to justify a decision:

Every case is treated on merit. Most often it can be justified by computer information. (Respondent 23)

The respondent clearly sees the technology as reified and institutionalised. It may well be that such a printout contain figures, which very often, are said to speak for themselves. Our view is that when decisions have to be justifies, one may have to go beyond the figures themselves, to reveal a process, which produced those figures in the first place.

GFSIII -Q4

All the responses to this question could be classified as falling under perspective synthesis in Courtney's new decision-making paradigm for DSS. However, within a decision justification context, the text from the respondents seems to support the ideas expressed by us in Figure 4.12. When decision justification is called for, actions on the synthesised perspectives need to be reflected upon, leading to reflection on how the perspectives themselves were developed and thus the need to revisit the original problem. The results from actions on the synthesised perspectives do not necessarily lead to the recognition of a new problem, but the same problem from a new perspective. The following excerpts demonstrate this need for reflection:

Sufficient data are gathered and reports are made in accordance with it. This usually forms as the basis of the decision. So when justifications must be made, a data-look-back will usually provide the answer. (Respondent 29)

Both the process and the rules for making decisions are clearly defined, so that when a decision must be justified, it can be done relatively swiftly and with limited problems. Again, on a more down to earth note, all requests are made in writing, as all are responses. Most decisions are accompanied by a reason (justification?) why. (Respondent 11)

5.17   Framework Schemes I-III applied to text from the fifth question

Question 5 is essentially an extension of question 4 in that it asks whether or not the respondents were satisfied with their way of responding as described in the previous question. The *Yes* (expression of satisfaction) leading variable has nine discreet conditions while the *No* (expression of dissatisfaction) has six discreet conditions. Notable discreet conditions for the *Yes* variable are that more consultation could be helpful, rules and processes can always be amplified to obviate future justification, that there is sometimes less time for making decisions and that there is always room for improvement. Discreet conditions of note for the *No* variable are that the process could be done speedier, bureaucratic processes could be reduced; that accuracy and completeness of data is needed, that the process be based on proper information and facts and that proper co-ordination in choosing respondents is needed.

The discreet conditions are qualifiers on the extent of satisfaction or the lack thereof in the responses given in question 4. As a result, the grids of interpretations for question 4 are sufficient for question 5 as well.
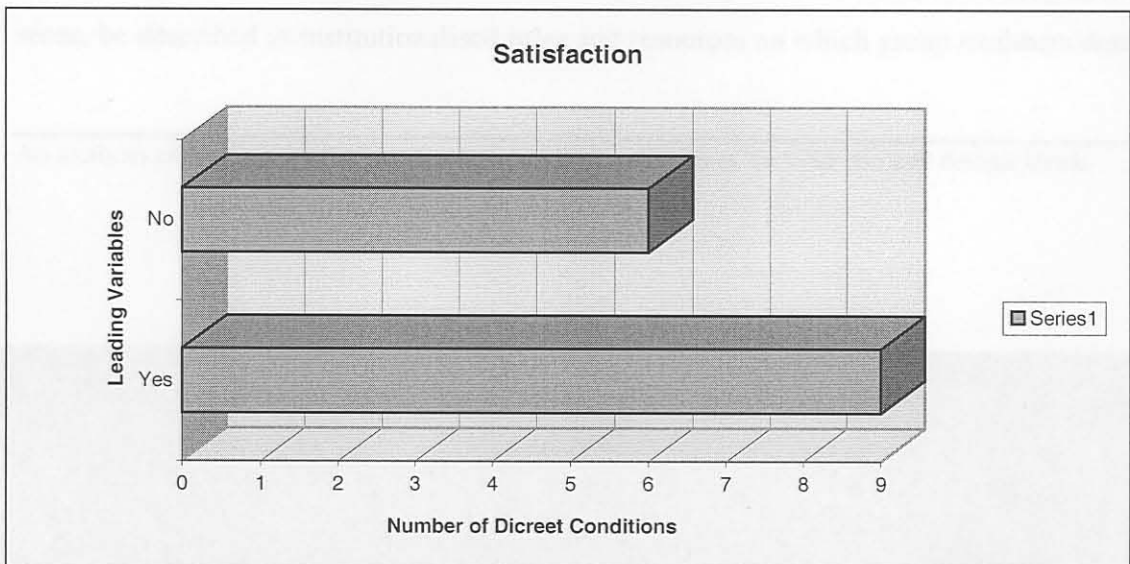
Graph 5: Morphological graph for question 5

Perhaps a particularly important observation based on the following excerpt can be made:

> I am fairly satisfied with the way we respond in my department, however the same cannot
> be said about all the departments in the province. What I would like to see happening is
> for all the departments to have a crack team of officials whose job would be to act as
> Rapid Response Unit. The team must consist of diverse skills. It is in a multi-disciplinary
> team that a department will be able to co-ordinate inputs for a report that justifies their
> decisions. Be that as it may I think communicating with stakeholders right from the
> planning level could save a lot of time. That way your decision becomes their decision
> and you will be able to minimise queries significantly. Justification of decisions taken is
> to me a stopgap measure, which reflects that before the decision was taken there was not
> consensus building with stakeholders. It is therefore vital that participation be stepped up
> running to a decision. (Respondent 26)

The observation made here is that although the respondent is satisfied at his departmental level, he is not at a systemic level (provincial level). The respondent is proposing a decision justification process, which, in our view, could be regarded as a decision justification social practice, which we suggest in this study.

5.18   Framework Schemes I-III applied to text from the sixth question

The respondents were asked in the sixth question to list some of the tools, procedures and frameworks that they commonly used in their organizations in supporting decisions. Eight leading variables emerged: *Resources, Research, Organogram, Workshops, Meetings, Policy, Records, and Constitutional*. Graph 6 captures these leading variables and their discreet conditions in a nutshell.

GFSI-Q6

The tools, procedures and frameworks listed by the respondents could, in structurational sense, be described as institutionalised rules and resources on which group members draw

on in their decision justification processes, thereby comprising part of their organization's structures of signification, domination and legitimation. The knowledge and application of the procedures and frameworks listed constitute structures of signification. The respondents use tools, procedures and frameworks to control their decision justification process, thereby constituting the structure of domination. In the same way, these tools, procedures and frameworks sanction particular ways of going about the justification process, thereby constituting the structure of legitimation.

GFSII -Q6

The tools, procedures and frameworks listed are largely of a technical nature, making Orlikowski's structurational model of technology most relevant for interpretation. The use of certain tools, procedures and frameworks legitimises the outcomes thereof as evidenced by these respondents:

> "Business intelligence software, Project management procedures, Discussion at meetings, Informal discussions, Change control procedures." (Respondent 2).
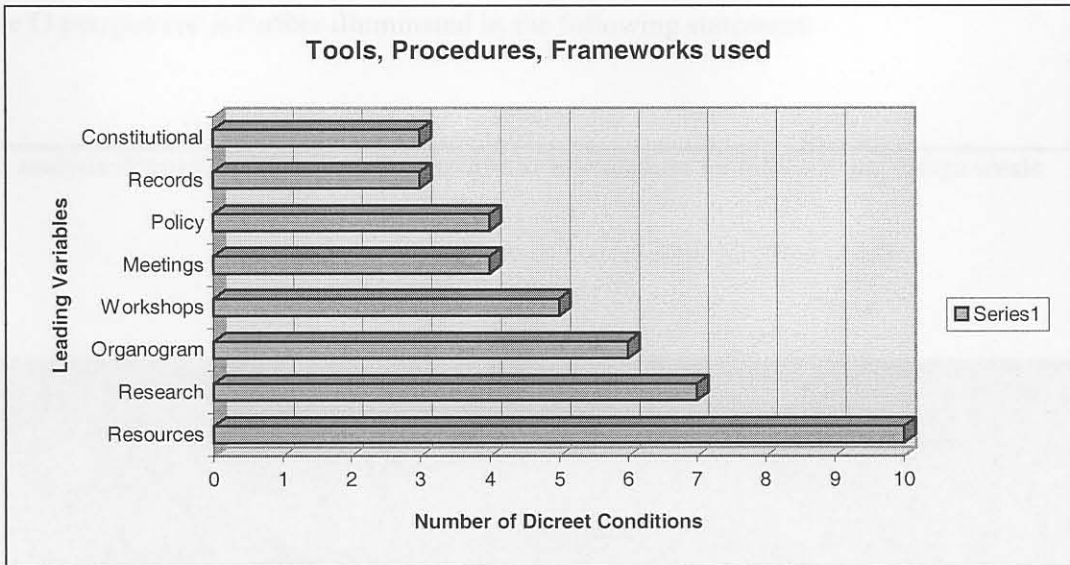
Graph 6: Morphological graph for question 6

"Thinktools for strategy, Structured problem analysis (based on theory of constraints) for action planning, Total cost of ownership for IT." (Respondent 8).

"Press releases, websites etc., are used for communicating decisions. TTT decisions are always supported by the mandated positions of its constituencies - labour, government, community, business." (Respondent 6).

"Central information technology committee governance process, departmental information technology committee governance process, documented IT policy and strategy, documented conceptual architecture, documented IT domain architecture, master systems plan framework." (Respondent 13).

GFSIII -Q6

In terms of Courtney's new decision-making paradigm for DSS, one can immediately see the dominant role played by the T perspective in terms of tools, procedures and frameworks used by groups to justify their decisions. For instance,

MIS/EIS, CBS, budget templates, project management procedures, business intelligence software, and master system plan framework, appraisal formats, mathematical models, figures, databases, documented conceptual architecture, filing systems, computer printouts.

The O perspectives are reflected in the following consolidated list given by the respondents:

Mission, PR department, central IT committee, department IT committee, context of larger organization, and objectives of organization gives framework on decision-making.

The O perspective is further illuminated in the following statement:

"Nothing can replace good research before a decision is taken. One cannot over-emphasise the importance of consulting with key stakeholders for a buy in. The tools procedures and frameworks used are chosen on the merits of the case at hand. We are no longer rule-bound organization, we are cutting down on bureaucratic tendencies, and therefore we respond according to the dictates of the request at hand." (Respondent 26).

5.19   Framework Schemes I-III applied to text from the seventh question

Question 7 is an extension of question 6. Its aim was to check the levels of understanding of the tools, procedures and frameworks used by groups to justify decisions. The *Yes* variable has the most number of discreet conditions, demonstrating that the respondents generally think that group members from their organizations understand them. According to respondent 28, they are the mediums through which group and organizational missions are implemented. Where such an understanding is lacking, training is done and if rules are not well understood, the need for standardised procedures is proposed (respondent 14). A standardised procedure could be something like the basic patter of analysis (Toulmin *et al.'s*). Information overload as a result of the use of e-mail that enable quick exchange of documents is perceived by one respondent as a contributor to the lack of the

necessary understanding of tools, procedures and frameworks normally used to support decisions.

Understanding of Tools, Procedures & Frameworks used
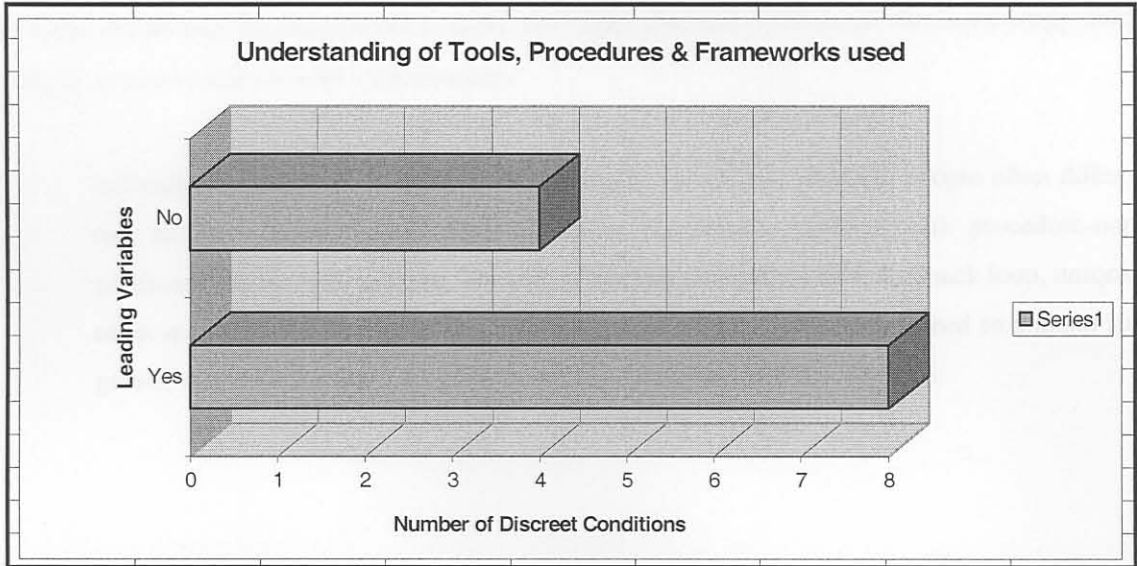
Graph 7: Morphological graph for question 7

The discreet conditions cited for the *No* variable points to the fact that the tools, procedures and frameworks are not necessarily understood, are not always appreciated and that there are some

odd occasions of ignorance on the part of those who use them. Respondent 5 gives an example which demonstrates the lack of multiple perspectives:

> " At universities there seems to be a tendency of taking academic decisions totally separate from   e.g., financial realities and market needs."

For large organizations, it is not surprising since tools, frameworks and procedures emanates from broader organizational guidelines and policies which in most cases are always evolving. Responses for this question cannot be seen as separate from those of question 6. For this reason, it is necessary to relate the interpretaion given here to that of the previous question.

5.20 Framework Schemes I-III applied to text from the eighth question

Our aim in this question was to assess the relative stabilities of the procedures and frameworks used for decision justification. Relatively stable frameworks such as Toulmin *et al.'s* schema of reasoning could give long lasting benefits in different situations and contexts where decisions have to be justified. There are thirteen discreet conditions indicating that respondents revisit their frameworks:

Operating environments dynamic, sometimes compelled, procedures must always be open for changes, periodic reviews useful, resource restrictions, continually revisit frameworks in an effort to improve policy processes, if necessary, they form a useful archive, revisit through consultation, often asked to, when enough research is done, people mostly accept them, top management accept them readily.

Despite revisiting the frameworks, there are eight discreet conditions demonstrating that people do not readily accept explanations:

> Individual expectations not always met, people not always satisfied, people often differ, true to life - people do contest vigorously sometimes, satisfied with procedure-not necessarily agree with content, our policy making procedures lack feedback loop, unions often question our decisions, they form a useful archive, sometimes need to explain in greater detail - especially if a party is not fully informed about procedure.

Acceptance of Explanations
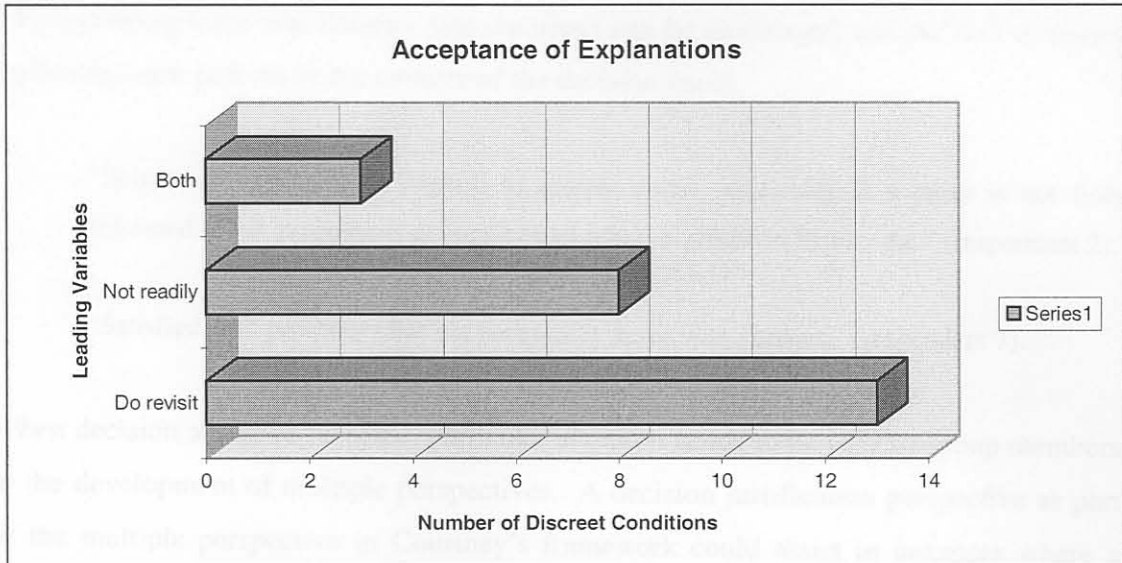
Graph 8: Morphological graph for question 8

GFSI -Q8

The variable with most discreet conditions (Do revisit) reveals the importance of changing context and the need for a total decision picture. Although groups do revisit their decision-making frameworks, those affected by group decisions may still challenge the procedures followed. The merits of a procedural schema such as Toulmin *et al.'s* schema of reasoning could be helpful to the groups in such instances. Because groups use different forms of justification frameworks about which those affected may be less informed, group decisions will be open for a challenge both procedurally and sustantively. Familiarity with Toulmin *et al.'s* schema of reasoning could be helpful. They will know that if they are challenged on procedural basis, they will need technical skills to present their arguments in such a way that they can demonstrate sources of their authority. If they are challenged on substantive basis, they will need the art of recognizing what warrants are applicable and reliable.

GFSII-Q8

We are able to see through this Framework Scheme that explanation frameworks outside accepted social practices are inadequate. This is because in order to explain, people must draw on the structural properties contained in these social practices (structuration). This is well captured is respondent 32's response:

"... they are readily accepted, but the context is changing at an increasingly rapid pace and therefore people need to be constantly reminded what the bigger and total picture for decision-making in the University involves."

GFSIII-Q8

The following responses indicate that decisions can be challenged due the lack of clarity on the decision process or the content of the decision itself:

"Sometimes we need to explain in greater detail -especially if a party is not fully informed about procedures or background info.(i.e, situation history etc." (respondent 2).

"Satisfied with procedure but not necessarily agree with content." (respondent 7).

When decision are to be justified, particular attention needs to be paid by group members to the development of multiple perspectives. A decision justification perspective as part of the multiple perspective in Courtney's framework could assist in instances where a group is challenged on the basis of the procedure they have followed in arriving at a particular decision. Respondent 26 suggests a hermeneutic process:

"When enough research has been done, people accept the explanations, however if the opposite is true, we are compelled to revisit our responses until we have satisfied the people..."

Courtney's framework would still be helpful even in this case, except that in instances such as this, it may be better to introduce justification as one of the perspectives in the perspectives development stages of the framework.

5.21   *Conclusion on interpreting the questionnaire text*

Social structure conditions social practices by providing the contextual rules and resources that allow human actors to make sense of their own acts and those of other people.

We are able to see through this Framework Scheme that explanation frameworks outside accepted social practices are inadequate. This is because in order to explain, people must draw on the structural properties contained in these social practices (structuration).

The explanatory power of Gidden's structuration theory as discussed by Orlikowski (1991) is evident. The three structurational *modalities* as explained by Giddens clearly determine how the institutional properties of social systems mediate deliberate human action and how human action constitutes social structure. Groups draw on *interpretive schemes*, which are standardized, shared stocks of knowledge used to interpret behaviour and events, hence achieving meaningful interaction. They use r*esources,* which are the means through which intentions are realized, goals are accomplished, and power is exercised. They refer to *norms,* which are the rules governing sanctioned or appropriate conduct, and they define the legitimacy of interaction within a setting's moral order.

We are convinced that the *understanding* of the interaction of actors within such a social practice could be enhanced through Giddens' theory of structuration and hermeneutics, while the *substantive* and *procedural* aspects of the justification process would best be guided by Toulmin *et al.'s* schema of reasoning. However, in using Toulmin *et al.* schema as part of the analysis framework, we arrive at a conclusion that its practical

explicatory power, especially for group decision justification, could substantially be enhanced through coupling it with a hermeneutic circle.

The analysis further suggests that in decision justification environments, it may be more helpful if decision justification as a concept become one of the perspectives, in addition to the T, O, P, Ethics and Aesthetics in Courtney's new paradigm for DSS.

Poole *et al.'s* notion of *group decision-making* as the production and reproduction of *positions* regarding group actions underpinned by *members expression of preferences; argumentation and strategic tactic* members employ to win assent for their proposals is positively complementary to both Toulmin *et al.s* schema of reasoning and Courtney's new decision-making paradigm for DSS.

Two important benefits have emerged from the analysis framework, the first is that it enabled us to make multiple interpretation of the same data sets and the second is that it enabled us to identify areas where one theory better illuminates an aspect of the data while the other does not.

We have thus, in a nutshell, accomplished the first leg of our research purpose by finding responses to two of our major research questions:

Question 1:   *Having made its decision, that is, having satisfied all the information processing requirements and most of the social-psychological demands of the group; can a group be able to justify its decision when called upon or challenged to do so?*

A short answer from the analysis to this question is that a group can be able to justify its decision when challenged by others to do so. This, however, could be a difficult undertaking as both the information processing and the social-psychological requirements by social structures and institutions may not have been explicitly and publicly stated in advance of the decision-making process. Because not all decisions have to be justified, there is a danger that even those that need to, could be subjected to dogmatic responses. A *decision justification social practice* is therefore necessary - a social practice that is

sanctioned by society and its institutions which encourages rational and cogent argumentation within well defined institutional and procedural arrangement for rational debate. Both the involved and the affected must accept and embrace the decision justification social practice. Groups functioning within such a social practice will be able to recognize occasions that may call for the justification of decisions and act accordingly. Training of group members and those affected by the decision on a pattern of the justification process is, however, necessary. Toulmin *et al.'s* schema of reasoning could be useful in directing and guiding such a process.

Question 2:   *Assuming that a group can succeed in justifying its decision and that it has actually done so, could there be something new to learn or anything helpful to the group itself and others; which arise from the decision justification process?*

A group that succeed in justifying its decision to itself and others would have satisfied a social-psychological need that reduces the potential for conflict and the problem of post-decision anxiety. Being able to justify a decision would enforce accountability, which Bacharach *et al.* (1995) describe as a social psychological link between decision makers, on the one hand, and the social systems to which they belong, on the other. From an empirical and theoretical perspectives, the introduction of the concept of justification into the group decision-making process substantially enhanced our understanding of this complex process.

Responses to the secondary research questions could be summarized through a mapping of the process-based research framework proposed by Roode (1993) and the four essential elements of any complete theory proposed by Whetten (1989) onto the components of Toulmin *et al.'s* (1979) schema of reasoning. The mapping is shown in Figure 5.1. The elements of any complete theory proposed by Whetten (op. cit.) are discussed in chapter 6 as part of an evaluation of this study. In order to avoid repeating what has already been discussed throughout the analysis in this chapter, we will briefly mention the research

question types (process-based research framework) and how the mapping provides the relevant answers.

What is ("What"): *What is decision justification?* - Map to *Grounds* and *Claims.*
What is decision justification? What constitute the theoretical justification of a group choice as an outcome? What constitute the empirical justification of a group choice as an outcome?

Grounds: The underlying foundation and facts (Toulmin *et al.*); a grounding that is supposed to make our everyday beliefs and practices intelligible (Descartes, in Guignon, 1979); a philosophical "construct" that has originated at a particular point in history and work as a distorting lens on our understanding of ourselves and our world (Heidegger, in Guignon, 1979). A social practice requirement (Flood and Ulrich, 1990). A structurational process (Poole *et al.,*1985).

Claim: Group choices, persuasiveness of arguments before claim or decision (El-Shinnaway and Vinze, 1998.)

Why is ("Why")
An accepted pattern of behaviour (Toulmin *et al.*); reflexive monitoring of action, accountability (Giddens); post decision anxiety, accountability (Bacharac et al); fulfill a particular regime of truth (Introna)

B

W

How does ("How")
Through a structurational process (Giddens); through a search for meaning,understanding and interpretation within a hermeneutic circle (Introna); rationalization of action (Giddens, Poole); use agreed upon rules (Ngwenyama), use decision rules (De Hoog and van der Wittenboer)

C

What is ("What")
The underlying foundation and facts (Toulmin *et al.*); a grounding that is supposed to make our everyday beliefs and practices intelligible (Descartes); a philosophical "construct"that has originated at a particular point in history and work as a distorting lens on our understanding of ourselves and our world (Heidegger). A social practice requirement (Ulrich)

M

So,   **How does** ("How")
Refined levels of understanding (Toulmin *et al.*)

What is ("What")
Group choices, persuasiveness of arguments before claim or decision (Maha *et al.*)

G

Maps to the rest of the schema

How does ("Who, where, when")
Places limitations on stated proposition (Whetten). In the absence of some particular exceptional condition (Toulmin *et al.*)

How Should ("How")
A hermeneutic discourse (Introna), development of multiple perspectives (Courtney, Mitroff), Cogent argumentation (Ulrich). Follow steps prescribed by the decision justification social practice. Train citizens, planners and managers about the social practice through their institutions. Use GSS where appropriate,necessary and feasible. Follow the basic pattern of analysis/Toulmin *et al.*'s schema of reasoning (Toulmin *et al.* as a whole)
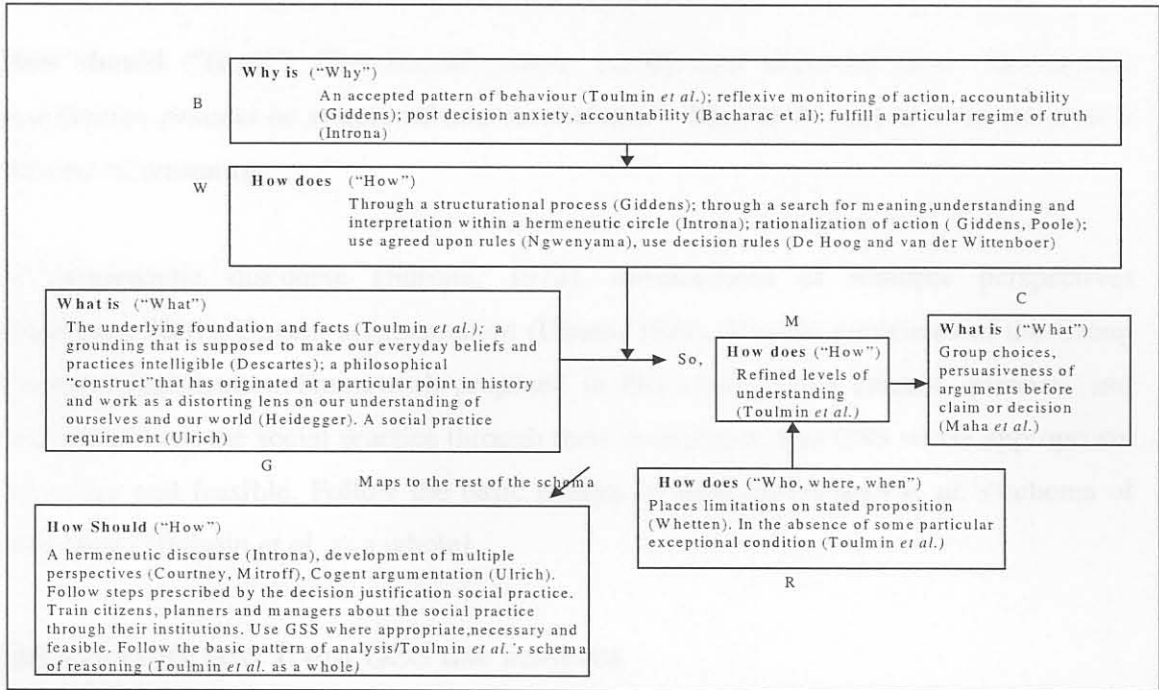
R

Figure 5.1: A mapping of process-based research framework (Roode, 1993), elements of any complete theory (Whetten, 1989) onto Toulmin *et al.'s* schema of reasoning-Rresponses to our research questions.

Why is ("Why"): *Why do groups have to justifying their decisions?* - Map to *Backing*.
Why should groups justify their decisions? To whom should their justification be directed?

An accepted pattern of behaviour (Toulmin *et al.*); reflexive monitoring of action, accountability (Giddens, 1984); reduce post decision anxiety, accountability (Bacharac *et al,1995*); fulfill a particular regime of truth (Introna, 2000).

How does ("How"): *How do groups compently justify their decisions?* - Map to *Warrants*. *Can we say that groups are able to 'act', just like individuals would do in justifying decisions Which tools, procedures and frameworks do groups commonly use in organizations to support their decisions? How does a decision-making group 'behave' within the context of decision justification?*

Warrants: Through a structurational process (Giddens); through a search for a meaning, understanding and interpretation within a hermeneutic circle (Introna, 2000); rationalization of action (Giddens, 1984, Poole *et al.*, 1995); use agreed upon rules (Ngwenyama), use decision rules (De Hoog and van der Wittenboer, 1995).

How does ("Who, Where and When"): *What are the limiting conditions to the justification process*?

Modality: Refined levels of understanding (Toulmin *et al.*, 1979).

Possible Rebuttal: Places limitations on stated proposition (Whetten, 1989). In the absence of some particular exceptional condition (Toulmin *et al. op. cit.*)

How should ("How"): *How should groups justify their decision? How should the justification process be structured and carried out?* - Map to the rest of Toulmin *et al.'s* Schema of reasoning.

A hermeneutic discourse (Introna, 1972), development of multiple perspectives (Courtney, 2001), Cogent argumentation (Ulrich, 1991). Use the guidelines of the Group Decision Justification Framework proposed in this study. Train citizens, planners and managers about the social practice through their institutions. Use GSS where appropriate, necessary and feasible. Follow the basic pattern of analysis/Toulmin *et al.'s* schema of reasoning (Toulmin *et al.* as a whole*).*

Interpreting text from GSS use sessions

While the strips as presented above would serve as organized units for analysis, we will also follow Gopal and Prasad's (2000) advice to look at the entire *project* of GSS use. In this case the project is the learning programme of the students as a result of which the data presented was produced. In line with symbolic interaction requirements, the multiple realities from each group member would be surfaced and discussed. Toulmin *et al.'s*

schema of reasoning would serve as a procedural guide and repository for the ensuing discussion. Then the alternative description of the hermeneutic circle as presented in Figure 4.1 is "swept in" and the group enters into a dialogue as described earlier. Each group member in the dialogue would inject a new perspective and place the rest of the group in a hermeneutic circle. We will call the alternative hermeneutic circle the *internal circle*, meaning the *interpretive level* where the group members are sharing their individual perspectives amongst themselves around the decision problem at hand. Because of the principle of "self" and "identity" in symbolic interaction, the alternative hermeneutic circle would work better because as Introna has indicated, the dialogue here is not the joint interpretation of a given text, but the interaction in the production of a continually changing text; where the text itself and not just the interpretation mutates. In this case the text would be the decision process. As the group members engage in their perspectives, the researcher will in turn interpret their interaction using symbolic interaction principles.

The researcher will in addition use the *external circle* (labelled project-and-understanding in Figure 4.13), which projects the interpretations from the *internal circle* to the *structuration circle*. In the structuration circle, Poole *et al.*'s (1985) notion of group decision making is used as a lens. We will focus on the three elements of group decision-making proposed by Poole *et al.* (*op cit.*) in order to track and interpret any possible convergence to a group decision. These are group members' *expression of preferences* and the negotiation of preference orders; *argumentation* as a means of advancing and modifying premises and preferred orders; and *strategic tactics* members employ to win assent for their proposals. A new understanding will then be returned, through Toulmin *et al.*'s schema of reasoning to the internal circle. The requirements of Toulmin *et al.*'s schema would assist in imposing a validity check on preferences and argumentation, which will be in the form of a series of claims, grounds, warrants, backings, modal qualifiers and possible rebuttals, which in a way would have been used by the group to reach its decision. The work of Orlikowski will also be used to illuminate the interpretation.

5.22   Framework Scheme IV & V applied to text from the first GSS use

The mechanics of the application of this Framework Scheme together with the GSS text have been presented in sections 5.6, 5.7 and 5.10 of Part II. The resulting interpretations and analysis using this Framework Scheme are shown in Tables 5.4 and 5.5, where the two tables are separated only for purposes of distinguishing the first GSS session from the second. What we wish to address in this and the next sections, is the understanding of the GSS use sessions that emerge from these analyses, taking into account both the decision-making context (context of use) as well as the decision justification context.

Table 5.4 : An extension of Table 5.2 - Grids of interpretation for GSS use session 1

	Framework Scheme IV	**Framework Scheme V**
GSS Session 1		
Strip 1-1	The line of argument of the participant framed within Toulmin et al's schema of reasoning is well received, except that the claim needed to be broadened to accommodate participants three's concern about previous wars. Viewing Toulmin et al's schema as a *script* within a *thinkLet* proves to be helpful. Participants engage with each other based on the pattern prescribed by the schema.	The notion of a *project* as a unit of analysis in symbolic interaction requires that all the *strips* be considered in combination as part of one project. Participant three's concern about previous wars introduces a particular contextual circumstance requiring participant one to reconsider his claim. The result was that the group started looking at ways of reformulating the claim while taking into account participant one's line of argument.
Strip 1-2	Although attracting interesting view points from other participants, the claim by participant two is not well supported. This could partly be attributed to the fact that this participant did not give a compelling argument in accordance with the schema of reasoning. Ultimately the claim by this participant was rejected by the group. Toulmin *et al's* warning that unless a claim is supported by the force of a good argument, such a claim is bound to fail, is confirmed.	The context of the claim was on the suitability of the USH in explaining the flood disaster situation in Mozambique. Again, looking at the *strips* taken together in terms of symbolic interaction, there is little evidence suggesting that this particular line of argument was of interest to any of the other participants. This may suggest that it is perhaps the lack of *interest* on the claim by other participants, rather than that it lacking the force of a good argument. This shows that a claim should not only matter, but should also be of interest to the participants.
Strip 1-3	The argument put forward by this participant let to the claim of participant one being refined to that of the group. This is evidenced by the way in which the other participants were able to follow participants three's line of argument. One can see the power of Toulmin *et a.'s* schema of reasoning depicted by the various participants as they engage participant three. The skilful way in which participant one is willing to modify his claim in order to win assent of the other	An interesting observation from this strip is that there is an intense participant interaction evoked by the line of argument presented here. The smoothness of the interaction comes out well in the strip. In symbolic interaction terms, one can see examples of multiple realities expressed here. Although each participant had his own, the flow of the argument in the strip centers around participants one and three's claims. Looking at these strips in isolation would not have been helpful. Thanks to symbolic

An analysis of group decision justification and its implications for GSS use and design ideals

participants is notable. This in line with Poole *et al.*'s concepts of *strategic tactics* as well as the production and reproduction of *positions* as the group moves towards convergence.

interaction idea of a project as a unit of analysis.

Strip 1- 4

This strip is in accordance with a particular line of argument, and not in accordance with a particular participant. However, it emanates from the combination of participant one and three's claims. In arguing for the claim, the participants' arguments cannot be neatly fitted into Toulmin *et al.*'s schema of reasoning. One can see the potential for a circular argument in the absence of a guiding argument structure. It is not easy to see the basis for the various lines of arguments presented. However, almost all the structurational elements proposed by Poole *et al.* can be noticed, with participants putting forward their *message aspects*.

It can be argued that the level of interaction demonstrated in this strip presented the most sense-making phase of the entire session. Strip 1-7 support this. The efficacy of symbolic interaction can be clearly seen in this strip, with participants using various symbols such as countries, helicopters, funds, infrastructure and proximity to assign multiple meanings (realities) to their arguments.

Strip 1- 5

A participant agrees more with a possible rebuttal than with a claim. A re-look at the way in which the claim was formulated suggests that the participant agreeing with the rebuttal but not with the claim may be having a good point, for if the resources were available and the intentions were good, delays due to bad communication should not have arisen. Once more, Toulmin *et al.*'s schema of reasoning provide a validity check on the arguments presented.

There are a variety of meanings assigned by the participants with regard to the speed with which assistance was forthcoming to Mozambique. Some of the meanings tend to be contradictory. These contradictions are however not out of step with the goals of symbolic interaction, allowing one to still make sense of the participants' lines of argument. The meanings that the participants attach to the delay in assistance are clearly emergent. For example the question "are you saying that the US /EU wanted people to die?" is unexpected, yet could be said to follow from the preceding line of argument.

Strip 1-6

This strip shows the convergence of various lines of arguments in accordance with Toulmin et al.'s schema of reasoning. A consensus claim has been reached and the group

Although still looking for better ways of packaging their final line of argument as a group, one can say that at this stage, the multiple realities of the individual participants were being

An analysis of group decision justification and its implications for GSS use and design ideals

is seeking for grounds, warrants, backing, modal qualifications and possible rebuttals to support their claim. A good understanding of the requirements of the elements of the schema is demonstrated by the group.

modified to that of shared meaning by the group. The multiple realities are recognized in the form of the elements of Toulmin *et al.'s* schema of reasoning. For each element of the schema except the claim, there is more than one reality advocated.

Strip 1-7

A consensus through verbal interaction consolidating strip 1-6 is achieved. The strip is neatly scripted following Toulmin et al.'s schema of reasoning. The structure provided by the schema could be regarded as a decision justification meta-thinkLet, with numerous other thinkLets embedded in it. It could also be regarded as a structurational process that depicts the group choice as an outcome.

Much symbolic interaction among the participants took place in arriving at the consensus presented. One can ask as to how much of the interaction could have been captured without Toulmin *et al.'s* schema and the technology support? The verbal interaction resulted in a well worded recollection of ideas generated and argued using the technology.

Making sense of the analysis

Table 5.4 shows the results of the analysis of the GSS session in accordance with Framework Schemes IV and V. The reader is reminded that at a higher level, these Framework Schemes are bound together by the hermeneutic circle. In particular, the *external circle* must be used to read the researcher's account of the text across each *strip*. The alternative hermeneutic circle (internal circle) was used by the group itself as they engaged in the dialogue, guided by Toulmin *et al.* schema of reasoning. The content of the dialogue can be found in the original unedited GSS use transcript presented earlier.

From this analysis, the following can now be said:

1. Using a structure such as Toulmin *et al.* schema of reasoning to guide a group during a GSS use session is helpful, but not sufficient. It appears that what could be most helpful would be to incorporate *scripts* within each stage of the schema. Such scripts could take the form of leading questions whose responses characterise the various stages of the schema. This will help the group to know what is expected at each stage of the schema in order for them to assess the strength of their own arguments.

2. The use of Toulmin *et al.* schema of reasoning to guide the group decision justification process seems unparalleled. It would seem, however, that within a GSS use and design context, the entire schema could best be considered as a *Group Decision Justification thinkLet*. *The tools, scripts and configurations* of such a thinkLet could then be designed, developed and tested under different decision justification contexts.

3. Most, if not all the interactions amongst the group members can be explained in terms of symbolic interaction and structuration theory. Within the internal circle, symbolic interaction concepts are very helpful since the focus at this level is on multiple, rather than shared interpretations of the task to be completed and the GSS itself.

4. Because it was the goal of the GSS session that the group reaches consensus, efforts aimed at obtaining shared meanings by the group should not be interpreted as contradictions to the requirements of symbolic interaction.

5. The goal of the GSS session was achieved - the group went through a justification process to support their claim using a GSS tool.

Strip 1-5 shows a good example of how rebuttals become more significant in management decisions. As Toulmin *et al.* (1979) put it, management decisions function in social situations that almost always demand their acceptance by a number of different individuals or groups, and these social interactions are relied on to generate rebuttals from those holding different points of view. Questions will thus be put by critics to those who advance any claim, in the form of possible rebuttals, and counterclaims must be advanced to meet these rejections. As an outcome of this interaction, the final decision is expected to take all relevant rebuttals or objections into account (Toulmin *et al.*, p. 305). Thus by focusing on possible rebuttals during the dialogue, one could ensure that the multiple perspectives are accommodated in the final decision. This may suggest that GSS designed following the Hegelian approach as discussed by Courtney (2001) and Briggs *et al.* (2001) [for example the point-counterpoint thinkLet] could be more helpful in decision justification environments. Churchman (1971) would support this suggestion as it agrees with his conclusion on the guarantor problem (p.199).

Group assessment of first GSS use

On the GSS use session (use)

In keeping with what most GSS researchers normally do, at the end of the session, we asked each participant to comment about their experiences of using the GSS tool. Each was asked to give only one written comment. We could not trace the written comment from one of the five participants. The self-explanatory comments from four of the participants are presented below without further elaboration:

An analysis of group decision justification and its implications for GSS use and design

" This may be useful in certain situations, especially if you have inexperienced management that cannot control or facilitate."

" Very interesting. A very different way of approaching the lecturing experience. This should be done much more to supply some type of practical experience in the new concepts learned in the class."

" Very enjoyable; novel. We actually agreed and reached consensus!"

" Really enjoyed it. Something new. Something which I hope to take back and use within my own work environment. I think that the group was a good size. Less would not have yielded good results. More would have been too complicated. Appreciate the opportunity to experience it."

Despite the intense levels of debate that took place during the GSS use session as evidently reflected in the GSS transcripts, the participants seem to be generally satisfied.

On the learning programme as a whole (context of use)

One of the main reasons for assessing the learning programme as a whole was to see whether Toulmin *et al.* schema of reasoning (Toulmin *et al.* (1979)) used in combination with systems thinking concepts could serve as a good organising framework to prepare groups for a decision justification process which could suitably be supported by any GSS software. The emphasis emerging from the comments is on the levels of thinking and learning that the programme provided:

" We learnt to think, think hard, think in a new way with systems and Toulmin's schema in mind. It was lateral thinking with some guidelines - but not too rigid. We learnt to work hard at the assignments and meet the deadlines because of the inspiration of the lecturer. Interesting and novel and original presentation. It does take some time getting used to this way but in the long run it was a challenge we wanted to overcome. I can think of no better way, keep it this way in future." General comment: " Hard work for

students and for the lecturer. Giving a straight lecture is much easier. Very enjoyable in spite of the hard work for us."

" I have learnt/gained fairly in-depth knowledge about a number of aspects around systems thinking. The module was taught in a satisfactory way. I liked the combination of lecturing and group participation. It encouraged participation and questioning. An educational experience - I learnt a lot. I would have liked a general, superficial introduction to systems thinking, covering all aspects of systems such as TSI as well, and more about decision-making!"

" Yes, I liked the generic overview. If one needs to know more one can always go and study specifics, e.g. SSM, SODA, etc. Critical systems thinking poses valuable. If video exist for specific techniques it may be used. The class presentations by the students were excellent. We started with less confidence, but it grew over the period. I would keep the course as part of the MCom Informatics. Soft techniques (SSM, SODA etc.) could be presented in more detail at honors level."

" Learnt to expand thinking. Realized that a small change can have big impact. Really enjoyed class participation. Module presentation was good. Feel that students should each prepare a small portion at the next lecture topic and present it to the next class. Too short. Not enough time for all concepts. Could be divided up into separate courses. Really enjoyed the last session."

" Yes, the new concept of critical systems thinking where boundaries can be adjusted to include different systems. The schema of reasoning was also new. The way the class is presented relies a lot on what the class has to say. This helps with the integration of ideas and the understanding of new concepts. This is a very good approach. The CSIR group discussion makes it something different than a normal class environment. Maybe examples can be included to better understand some of the concepts. Very good course, with some good new concepts on systems... and the way we look at it. The group discussion at the CSIR was a very good idea."

The overall assessment of both GSS use and the context of its use provided by the learning programme as a whole is largely very positive. Although other forms of support for the justification process could have been possible, we do not think that anyone of them would have provided a better support than Toulmin *et al.* schema of reasoning used within a systems thinking paradigm. The schema was also useful in organizing the *strips* in the original GSS text. We claim therefore that the Framework Schemes enabled us to make a meaningful interpretation of the data.

5.23   *Framework Scheme IV & V applied to text from the second GSS use*

We proceed in a manner similar to that described in the preceding section. It is thus unnecessary for us to go any further in explaining how the Framework Scheme is employed in the analysis of the GSS session as that has already been done in sections 5.8, 5.9 and 5.10 of Part II. Similarly, the results are shown in Table 5.5. We once more look at the context of use and the decision justification context. But before focusing on the results of the application of the Framework Scheme, we must point out, as a reminder to the reader, that unlike in the first GSS session, here, the lecturer made a *claim*. The participants were asked to either construct an argument in support of this claim or in support of a counterclaim in objection to it. In either case, they were required to present their arguments following Toulmin *et al.* schema of reasoning.