Chapter 6

Conclusion

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Chapter 6

*Ultimately, it may only be through the use of multiple lenses that we can
develop a useful body of knowledge about GDSS and its use.*
Abhijit Gopal and Pushkala Prasad

*The only justification for our concepts is that they serve to represent the
complex of our experiences; beyond this, they have no legitimacy*
Albert Einstein

Conclusion

6.0   Introduction

This research was undertaken within the confines of an *interpretive* philosophy, with *hermeneutics* employed both at the philosophical level and as a specific mode of analysis. The quality of the interpretive analysis presented can thus be evaluated in accordance with Klein and Myers'(1999) set of principles as briefly outlined in chapter 4. Before discussing the evaluation and the assessment of the contribution made by the study, we first present the conclusions drawn from it. The conclusions are organised as follows:

Drawing on the literature and the analysis presented thus far, we present in Part IV what we consider to be the prerequisites for decision justification. Part V discusses the enhanced understanding of group decision-making when group decisions have to be justified. This is accomplished by revisiting the theoretical lenses that constituted the analysis framework used in the study. Based on the empirical evidence presented in chapter 5, suggestions are made as to how these lenses could usefully be adapted for decision justification environments. Part VI discusses the implications for GSS use and design ideals informed by Toulmin *et al.'s* schema of reasoning, symbolic interaction and thinkLets. Finally and in conclusion, we discuss some critical reflections and evaluation of the study in terms of its quality and the contribution it makes to information systems research.

Part IV: Prerequisites for decision justification

6.1   Situating the idea of decision justification as a social practice

Using Werner Ulrich's (1991) description, the problem addressed in this study could be described as the *problem of practical reason*. It is the problem of how rational discourse can redeem the validity claims of practical propositions – their claim to secure improvement and to be rationally justifiable (Ulrich, 1991, p.104). Although our problem is a very special case in that the validity claims are group decisions, the problem essentially belongs to practical philosophy as described by Ulrich. Ulrich points out that although contemporary practical philosophers such as Lorenzen, Lorenzen and Schwemmer, and Jürgen Habermas have developed "ideal" models of practical discourse which give us essential insights into the conditions that would allow us to justify disputed validity claims, these models, because they are ideal, are impractical (not realisable). Ulrich dealt with this problem in two ways:- firstly, he developed a new approach called Critical Heuristics of Social Systems Design. Central to Critical Heuristics is the *setting* (own emphasis*)* of *boundary judgments* by those involved and those affected, the *demonstration* that such boundary judgments cannot be justified rationally and the *translation* of their own subjective ways of being affected by the boundary judgments in question into rational, cogent argumentation. Secondly, he proposed a program of research aimed at developing a conceptual framework, which, amongst other functions, would embed conventional "hard" and "soft" systems tools within well defined *institutional and procedural arrangements for rational rebate.*

Based on Ulrich's work, we can describe *justification social practice* as the ability and willingness on the part of those involved and those affected to set boundary judgments and to translate those judgments into their own rational and cogent argumentation within a well defined institutional and procedural arrangement for rational debate.

Combining this description with the three layers of interpretive analysis of Table 4.1 (Flood and Ulrich, 1990), we can present the proposed theoretical framework of the decision justification social practice in Table 6.1.

All forms of decision-making within such a social practice would naturally take into account the need for decision justification. Based on the insights from our analysis, we can further suggest that for a decision justification social practice to be effective, the following criteria needs to be satisfied:

Table 6.1: A theoretical framework for decision justification social practice (adapted from Flood and Ulrich, 1990)

First level: conventional and intentional actions	Second level: social practice	Third level: constitutive meaning
What is done	Set of negotiated rules that explain what is done	Fundamental assumptions that underlie what is done and make it meaningful
Implicit reference to social practice :- society, through its institutions require that:	Implicit reference to constitutive meaning:	Fundamental *a priori* assumptions:
When making a conscious and well intended decision that has a likelihood to negatively affect others;	*Follow rules of rational and cogent argumentation guided by the principle of multiple perspectives and Toulmin et al.'s schema of reasoning.*	*Set boundary judgments and demonstrate that these cannot be justified rationally.*

I.   Both the involved and the affected must be *familiar* with the decision domain; for otherwise the justification process would have neither the basis nor the audience.

II.   The decision made or to be made within the domain must *matter* to the involved and the affected; else why bother about the justification process.

III   The practice must be sanctioned by society through its institutions as one of its

good social practices.

IV.   The involved and the affected must accept and embrace the decision justification
        social practice. They must imagine that the decision made or to be made within
        the domain must be justified to others.

These criteria, especially that pertaining to familiarity with the decision domain together
with the *substantive* and *procedural* aspects of the decision justification social practice,
would require some form of *training* of ordinary citizens, planners, and decision makers
in tracing its normative implications in a manner similar to that alluded to by Ulrich. This
is because as Ulrich (*op.cit.*) puts it, *practical reason requires* that the standards of *value*
of all the affected - be they involved or not - converge. Ulrich gives an example of such a
training as that of explicating the *kinds of boundary judgements* that usually flow into the
definition of a system. In this case, the training could explicate the essence of Toulmin *et
al.'s* schema of reasoning together with aspects of the development of multiple
perspectives in decision-making. We have, at a micro level, developed in chapter 5, a
form of training that could serve as a starting point. One may criticise us and say that it is
too ambitious to think of training ordinary citizens in the way that we suggest. However,
Toulmin *et al.* give us a further recipe of thought about this. They point out that the study
of rationality and rational criticism is like the study of *grammar*, which takes the speech
we use unthinkingly in everyday life and make us more self-aware about the ways in
which language is put to use and the rules that govern its use as a result. So, we can
approach the training in a similar way that we approach the teaching of grammar. The
various institutions in the society that sanction this practice could be used as training
sites.

6.2   *The significance of the proposed social practice*

Not all decisions require to be justified. It could, however, benefit society if all decisions

with broad social implications could be subjected to a *decision justification social practice*, requiring those involved in making them to be able to justify them. The proposal we are making about the need for the social practice arises from the literature as a response to one of our research questions. This was briefly discussed in section 4.2.1 of chapter 4.

Our analysis suggests that such a social practice could be significant in several ways:

I.   It could raise awareness in decision-making groups that certain types of decisions, especially those with broad social implications needs to be rationally justified.

II.   It could enable the surfacing of fundamental assumptions that underlie such group decisions, and thus explicate how cogent arguments based on those assumptions could be presented.

III.   It could inculcate a sense of willingness on the part of those involved and those affected to recognise incompatible boundary judgments at the outset, thereby avoiding circular arguments that get nowhere.

IV.   A set of negotiated social rules embedded within a well defined institutional and procedural arrangement for rational debate, such as the Toulmin *et al.s'* schema of reasoning could be formulated and practices regularly.

The analysis presented throughout this study suggests that such a social practice is both feasible and attainable. With such a social practice in place, the only challenge would be that of accessing the *constitutive meanings* on which the decision-making group draws in their practice of decision-making. We regard the analysis framework presented in this study to be a significant attempt towards promoting mutual understanding among those involved and affected through a continuous search of what lies behind the social practice and makes the group decisions and the decision rules meaningful. 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.

Part V: Enhanced understandings of group decision-making when group decisions have to be justified

6.3   Insights from philosophical perspectives

Guignon's (1979) work on *Heidegger and the Structure of Traditional Epistemological Arguments* in which the philosophical work of Descartes and Heidegger is extensively analysed and contrasted provided us with initial insights on our topic. The most important insight being the fact that Heidegger's *Being and Time* was left unfinished (arguably because his project of fundamental ontology as conceived of in the book was untenable) and that he did not object that the techniques and procedures for grounding and justifying within the regional sciences be left in order as they are. This elevated our enthusiasm in search of what those techniques and procedures could be, taking us through systems thinking, interpretivism and hermeneutics. The discovery of Toulmin *et al's* schema of reasoning took us to practical philosophy. Our analysis framework reflects these philosophical underpinnings.

6.4   Through the eyes of the theories used in the framework

6.4.1 Toulmin et al.'s schema of reasoning

The contribution made to our study by Toulmin *et al.*'s schema of reasoning can best be summed up in their own words when introducing reasoning and its goal in the following way:

> "Rather than aiming at some unattainable ideal of mathematical perfection, we shall describe practical reasoning, as it occurs in daily use, in the hope of understanding better its actual assumptions and potentialities. Rather than abandon decision-making to whim,

power, or the effects of unreasoned persuasion, we shall describe the critical procedures through which ideas are examined in competition with each other and judged by relevant criteria so as to make it possible for us to arrive at *reasonable* choices." (Toulmin *et al.*, 1979, p. 16)

Although used in combination with other theories rather than in isolation, the analysis framework enabled us to assess the efficacy of Toulmin *et al.*'s schema of reasoning both theoretically and empirically. In using it as part of our analysis framework, we came to the conclusion that its practical explicatory power, especially for group decision justification, could substantially be enhanced through coupling it with a hermeneutic circle as shown in Figure 6.1. We called this enhanced schema the Group Decision Justification Schema (GDJS).
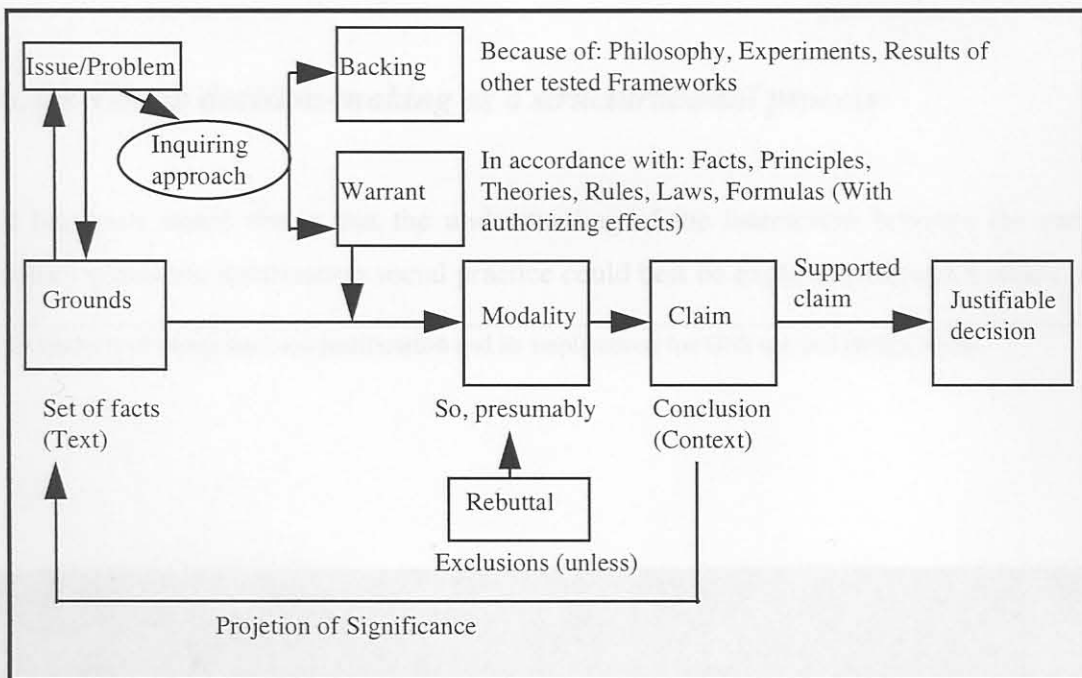

Figure 6.1: The Group Decision Justification Schema (GDJS)

The schema would function in the following way:

At the outset is an *issue or a problem* belonging to a particular social domain which meets

the prerequisites of a decision justification social practice. The surfacing of each group member's *fundamental assumptions* about the issue or the problem would be undertaken hermeneutically, with members advancing their claims and then supporting them with grounds, warrants, backing, and so on. This process would continue until the group is satisfied that a particular claim as perceived by the rest of the group is *reasonable*.

Because the group members know in advance that they will have to justify their claims to others, they would make their respective *inquiring approaches* explicit, thereby consolidating their grounds, warrants, backing, modalities and possible rebuttals into those of the group as a whole. Assuming that the group succeeds in satisfying itself to the extent that they, together, are able to say 'we claim that..., and therefore have decided...'; the justification process would be a straight forward undertaking. We are assuming here (as required by the decision justification social practice) that those to whom the decision must be justified are already familiar with the particular decision domain in question, else some form of training as alluded to earlier would be necessary.

6.4.2 Courtney's new decision-making paradigm for DSS.

The basic tenets of Courtney's new decision-making paradigm for DSS have been presented in chapter 2 and section 4.2.3 of chapter 4. They have also been used as part of our analysis framework.   We have pointed out and discussed how it too could be enhanced and better adapted to the decision justification environments (section 4.2.3, page). It commences on the assumption that the decision-making group recognizes and value the *decision justification social practice*. Figure 4.12 summarized the implications.

6.4.3 Group decision-making as a structurational process

It has been stated above that the understanding of the interaction between the various actors within the justification social practice could best be explained through Gidden's

theory of structuration and hermeneutics. However, we must point out here that with regard to *substantive* and *procedural* aspects to decision justification, our research problem is simply assumed in Giddens' structuration theory. According to him, human beings are purposive and know a great deal about why they act in the way they do. He argues that they can and do provide rationales for their actions and interactions if asked.

Taking into account the intention of the theory, and the fact that in practice people are not normally asked to explain their actions, we have no qualms with this assumed competence of actors by Giddens. However, when actors act or are perceived to act in a way that affect others, or act contrary to our normal expectations, such as making decisions which negatively impact on others, such assumed competence cannot be left unchallenged, nor can we be satisfied with the explanation that such acts are a result of unintended consequences. In such situations, more than simply assuming their competence is necessary. Even with unintended consequences, those affected must be put in a position where they can judge for themselves that it is in fact so. Other researchers have also expressed concern that this assumed competence of actors is not always sufficient. For example, according to Orlikowski (1991), Heydebrand (1986, p. 5) have pointed out that transformative social practices are not common in organisations: "The notion that social actors are - or become - knowledgeable does not completely address the fact that many actors, even though knowledgeable, fail to change the structural conditions that determine or oppress them, and as a result, simply go on to reproduce these very conditions": Merely being capable of changing structural properties does not imply that those capabilities will be exercised, and while human actors always have some capacity for independent action, there are no guarantees that such resources will be drawn on.

The explanatory power and the relevance of structuration theory to our study as presented by Poole *et al.* and Orlikowski has, however, provided us with essential concepts which substantially informed our analysis. For instance, we have adopted Poole *et al.*'s structurational definition of a group together with that of group decision-making. We

have found that 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* they employ to win assent for their proposals to be positively complementary to both Toulmin *et al.'s* schema of reasoning and Courtney's new decision-making paradigm for DSS. Our analysis immensely benefited from this complementarity.

6.4.4 An understanding in a nutshell through the analysis framework

We mentioned in chapter 4 that the analysis framework was our own temporal construct which, guided by the research questions, served as a lens enabling us to make sense of the data and research problem space from different theoretical perspectives all at once. The framework is therefore in keeping with the process-based research framework presented in chapter 3. By breaking it up into Framework Schemes and the corresponding Grids of Interpretation, we were able to operationalize what is essentially a theoretical construct. In addition, putting more than one theory to use within the same framework paid off in two major ways. The first was that it enabled multiple interpretation of the same data sets and the second was that it enabled us to identify areas where one theory better illuminates an aspect of the data while the other does not. As a result, it has been possible for us to suggest some enhancements to both Toulmin *et al.*'s schema of reasoning as well as Courtney's new decision-making paradigm for DSS. We can therefore reasonably claim that our understanding of group decision justification has been substantially enhanced.

Part VI: Implications for GSS use and design ideals

6.5 Understanding GSS use through thinkLets and symbolic interaction

Through the use of some form of Group Support System (GSS), we now wish to support a decision-making group within the decision justification social practice. Could consistency and repeatability of results of such form of support be our goal? It clearly should not be. Our goal should rather be to understand *how* GSS are used in those situations. Such an understanding is likely to offer us more insight on both the

technology itself and the contexts of its use, leading us to effect improvements on both the technology and the social practice. There is a very crucial aspect to be taken into account here, and that is :-

The potential support that is likely to be provided to the decision-making group through GSS use must be surfaced as part of the decision justification social practice.

In other words, if in justifying its decision, a decision-making group would use some GSS technology, then such technology must be subjected to the same level of critique as the group itself. A decision-making group cannot refer those seeking explanations to the use of a technology they do not understand. The underlying fundamental assumptions about how it would support the justification process, together with rules, facilities and other support resources embedded in it must be exposed and understood. Once again, Jones' (1994) comment that "the 'system' that supports group decision-making needs to be viewed more widely than simply the technology and should include appropriate elements of the social context" is very relevant here.

From the results of our analysis, there does not seem to be any indication that the search for consistency of GSS phenomena is a viable research undertaking. What seems to be holding some promise is a focus on understanding the interaction of group members as they use the technology. Studying patterns of thinking during group interaction as they use GSS through approaches such as thinkLets (Briggs *et al.* 2001) and symbolic interaction (Gopal and Prasad, 2000) could provide new avenues for GSS researchers.

We know from Orlikowski's structurational description of technology that technology does not determine social practices, but can only condition them by enabling or constraining them - it is a medium of social practice. One form of usefully constraining these social practices could be through stimulating patterns of thinking similar to Toulmin *et al.*'s basic pattern of an argument. Patterns of thinking during GSS group interaction

could be observed, described, interpreted and in the case of thinkLets, even created

through some careful stimulus. One can then match these patterns of thinking to particular ways in which the GSS is used. Because these patterns of thinking are created through well controlled stimuli, there is hope that they may be repeatable - to the delight of positivist GSS researchers. However, repeatability of a pattern of thinking should not be confused with replicability of GSS use results. For instance a point-counterpoint thinkLet would stimulate a predictable pattern of thinking, but the results of such a pattern would differ from context to context.

We were able to make more sense of the two GSS sessions presented in this study through the use of concepts from symbolic interaction, structuration theory and thinkLets. In our view, more studies along these lines hold some promise for the future of GSS research.

6.6   *Embedding Toulmin et al.'s schema of reasoning in GSS use and design*

Interaction amongst group members as they engage in the process of group decision-making is a double-hermeneutic process. During group decision-making, group members bring to the group their own perspectives, prejudices, fore-understandings and expectations. How these interactions manifest themselves could be understood as a structuration process. Symbolic interaction and thinkLets provide *substantive categories* of interaction, which could embed Toulmin *et al.'s* schema of reasoning for *procedural* purposes when used within a decision justification social practice. Symbolic interaction would categorise the *various symbolic realities* of GSS use as perceived by the group members while thinkLets would categorise *patterns of thinking* about these realities. When used with symbolic interaction and thinkLets within a decision justification social practice, the schema of reasoning could serve as a procedural justification template.

6.7   About supporting the group decision justification process through GSS use

Support through use

Often, GSS use is a facilitated activity, with each individual coming to a GSS software facilitated session having an agenda, expecting the other people to listen to him/her, and if possible to accept his/her viewpoints.   Assuming this takes place within a decision justification social practice, then the principles of the GDJS and the new decision-making paradigm for DSS in decision justification environments must apply.   This implies that there has to be a process of sense-making and shared understanding amongst the group. This sense-making has to happen *before* the use of GSS technology, but *within the same contextual frame*.   The group must make sense of the decision-making process and the GSS technology all at the same time (regard them as parts of a single system). This can be very challenging, calling for learning on the part of the group. Training of group members in systems thinking could help the group to realise that the last "S" in GSS as well as in the new decision-making paradigm for DSS refer to a system. Training groups on how the GDJS could be used in different contexts of an argument could better prepare them to use any GSS not just to complete their decision-making task, but also to provide a very clear audit trail of the process they have followed to reach their goal, and thereby using the GSS technology as a group decision justification support system.

Supporting the design process

The GSS to support the GDJS should clearly be designed through a hermeneutic process of dialogue between the designer and the decision-making group.   The designer must seek to understand what the group seeks to achieve.   Like the decision-making group, the designer needs to understand the decision domain in which the group is involved, the social practice and the perspectives of the group itself.   The hermeneutic circle requires that the designer continually question and make explicit his and the group's prejudices and fore-understandings, but must also use them to facilitate understanding of the context

within which the group is operating (i.e., the broader context of the social practice). We have already pointed out that generally, GSS are designed with certain assumptions by designers. These too must be made explicit, just as group members, through the setting of boundary judgments, are expected to make their constitutive meanings explicit. The GDJS could serve as a common evolving repository as the hermeneutic process continues.

Part VII: Critical reflections and evaluation of research

6.8   Critical reflections

A multi-dimensional study such as this one cannot be smooth sailing. While it sought responses to the questions that it has raised, it has created many others which it cannot respond to. In this section, we point out areas where such questions and challenges arose and briefly discuss our attempts at addressing them, or where other authors, whose work we have referenced have addressed them or could have done better.

The nature of the research problem:

We have addressed the problem of practical reason, which as Toulmin *et al.(op.cit.)* have noted, may deceptively give us the impression that we have belaboured the obvious. The idea that we should approach the study of rationality and rational criticism in a similar way as we approach the study of grammar is useful. On the other hand, the study on decision justification should as well have attracted the attention of decision theorist and practitioners over the years. In as much as we have numerous *decision support systems* and frameworks, we should be having corresponding *decision justification support systems*. The absence of thinking along these lines by decision theorists as reflected in the literature, could be attributed to the fact that decision-making is perceived as a top-down process, where decisions are made for people rather than with people. With this thinking, only certain classes of society are capable of making "good" decisions on behalf

of others while the rest must just "appreciate" them as such decisions may be too complex for them to understand.   In this regard, we agree with Giddens (1984) who argue that there is no mechanism of social organisation or social reproduction identified by social analysts which lay actors cannot also get to know about and actively incorporate into what they do. So, even though our research problem has its roots in practical philosophy, it should not have escaped the imaginations of decision theorists, especially with the pursuit of democratic values which are hailed as good for the rest of the world as noted by De Hoog and Van der Wittenboer (1986) in chapter 2. They pointed out that although the obligation to justify one's decision occurs rather often, this phenomenon has not received much attention from decision theorists.   We believe that this study contributes significantly towards the achievement of this goal.

Construction of the analysis framework and its temporal nature:

We have adopted Walsham's (1993) approach in the construction of our analysis framework in the sense that our framework is not an "out-there" theoretical frame, but rather a temporal one for analysis convenience. Our aim was not to construct a super-theory through the framework, but to use it as a construct through which to look at our problem space and the data. It is not a model, but a multi-theoretic and multi-level framework necessitated by the multi-dimensional nature of the research problem. Normally, researchers construct a theoretical model, collect data in accordance with the model and then analyse the data in order to refine the model. In this study, and contrary to the said normal approach, it is the theoretical lenses encapsulated into the framework about which refinements, only in as far as the research problem is concerned could be suggested.   In other words, having accomplished its goal, the analysis framework disintegrates into its constituent theoretical components.   However, other researchers following interpretive analysis of a hermeneutic nature may find a similar approach helpful.

Interpretive schemes:

One of the major inventions of this study was the creation of Framework Schemes of interpretation embedded within a hermeneutic circle.   We called them Grids of Interpretation and we used them as springboards of our analysis. Using the consolidated morphological field graphs which were also our unique invention, we were able to transcend the various levels of our data sets organised according to these grids of interpretation. This demanded a very high level of thought, not only in constructing the schemes but in using them to analyse the data as well.   Using the Framework Schemes required simultaneous multi-level thinking throughout the analysis which we found rewarding but very challenging.

Research design and the nature of data:

The most challenging phase of our research was the data collection phase. After two observations and three interviews, we discovered that neither direct observations nor face-to-face interviews were yielding meaningful data. What we observed in the two observations we made were processes of decision-making, rather than decision justification processes. With the face-to-face interviews, the third respondent explained after the interview that what he had just told me was what *ought* to have been happening and not what was actually happening. One wondered as to how best one could go about in accessing what was actually happening. Having decided in advance that one would use an interpretive approach in analysing the data, this was a serious setback in our research design. One had to pause for while and once more look at the literature for alternatives. It was the literature on hermeneutics that pointed to other accepted and valid forms of data within the interpretive tradition (see section 5.1 of chapter 5). One of these accepted forms was *documentary artefacts* - written accounts by respondents.   We were comfortable with this form and decided to use an open-ended survey-like questionnaire, which we sent to selected organisations. By hindsight, the notion by a respondent that group decision justification *ought* to have been happening in a particular way was a good

motivation for the decision justification social practice we propose. Data collection with regard to GSS use went according to plan, except that students were used as subjects within a laboratory setting. While many researchers in GSS have used students as subjects in laboratory experiments, Introna and Whitley (1999) have presented a very valid critique of the general validity of such results. We have acknowledged these limitations elsewhere (Phahlamohlaka and Roode, 2001), but due to the limited use of GSS technology in the South African context, we could not think of any viable alternative. In addition, Nunamaker *et al.* (1991) noted that foregoing laboratory research in favour of an exclusive focus on field research is not a viable answer, given the difficulty to assemble groups, measure phenomena, and assign cause and effect in the field.

6.9   *Evaluation of research:-Klein and Myers' set of principles and   our evaluation guidelines*

Klein and Myers' set of principles

Klein and Myers' (1999) summary of principles for the conduct and evaluation of interpretive field research were presented in section 4.4 of chapter 4. Since our entire analysis is based on an interpretive philosophy of a hermeneutic nature, explicating how each of the principles applies to our research will amount to an unnecessary repetition. The authors point out that the fundamental principle of the hermeneutic circle is fundamental to all the other principles. The principle of the hermeneutic circle underpins our analysis framework. It follows therefore that all the other principles applies and could be used as a *checklist* of our arguments through all the chapters, starting with the literature study in chapter 2, the choice of the research method in chapter 3, the construction of the analysis framework in chapter 4 as well as the research design, data, and the interpretation thereof in chapter 5.   The principles informed our entire research and trying to itemise and explicate them here would be pointless. We can perhaps just point out that principle 4 (The Principle of Abstraction and Generalisation) manifests

itself through the decision justification social practice, emanating from the application of the analysis framework in interpreting the data. What we wish to discuss are the guidelines that we have set which in our view, needs to be considered by the evaluator of this study.

Evaluation guidelines of this study from the authors' point of view

Evaluation guidelines of theses are normally prescribed by examiners in accordance with set academic standards. It is the responsibility of the author to ensure that such set evaluation standards are met. We have not seen studies similar to ours where authors have suggested evaluation guidelines in order to complement those set by examiners. We believe that this is an omission and suggest that authors assist examiners by prescribing their own guidelines and then explaining to the examiner how they have met those

guidelines in their study. We hope to achieve that in this section. Without discussing them, we have prescribed in section 4.4 of chapter 4, the evaluation guidelines of our study as the following:

The significance of the problem being studied and the research purpose.

The philosophical foundation, the appropriateness of the research method and the analysis approach.

The extent to which the research framework enable both the researcher and the decision-making group to obtain a deeper insight in the decision justification process through interpretation.

The extent to which the use of existing theories in combination illuminate various aspects of the decision justification process.

The extent to which the framework enable the identification of areas where the theories

in use are more helpful and where they are not, thus an enhanced understanding of the theories themselves.

Whether the research questions raised have been satisfactorily responded to.

Each of these guidelines is separately discussed.

The significance of the problem being studied and the research purpose:

Theoretical and empirical evidence suggest that a great deal on decision theory and the process of decision-making could have been learnt had the concept of decision justification been simultaneously considered in such studies. The fact that decision theorists did not pay attention to the concept of decision justification mean that the

available decision support systems are meant to support decision-making, and not the justification of such decisions.

Although not all decisions require to be justified, there are many instances in our day-to-day lives when such justifications are called for. For this reason, the significance of the problem addressed in this study does not only pertain to the contribution it makes to practical philosophy, but to decision theory in general and in particular, to group decision-making and group decision support systems.

The research purpose of this study has been stated as:

To acquire an enhanced understanding of the group decision-making process and the potential benefits this process could obtain through the introduction of the concept of justification.

To identify, describe and interpret the possible implications brought about by this

justification process for GSS use and design ideals.

We are satisfied about the extent to which this purpose has been served. The earlier parts of this chapter were devoted to showing the outcomes of this pursuit.

The philosophical foundation, the appropriateness of the research method and the analysis approach:

We have clearly stated the philosophical foundation underpinning this study together with the research method and the analysis approach in chapters 3 and 4. The interpretive and hermeneutic philosophies as well as a hermeneutic mode of analysis embedding other theories that are compatible with the interpretive tradition were followed.

The extent to which the research framework enable both the researcher and the decision-making group to obtain a deeper insight on the decision justification process through interpretation:

The hermeneutic nature of the framework is such that not only the researcher is capable of using it to interpret the text as it is produced by the decision-making group, but the group members themselves are enabled to engage each other in sharing perspectives through the hermeneutic circle. Toulmin *et al.'s* schema of reasoning which is the locus of the framework guides the justification process as the hermeneutic process continue. The GDJS explained earlier would be more helpful to the decision-making group while Framework Schemes, Grids of interpretation and Scripts proved useful as interpretive schemes by the researcher.

The extent to which the use of existing theories in combination illuminate various aspects of the decision justification process:

The use of various theories in looking at empirical data enabled multiple interpretations.

Evidence from empirical data shows that groups use various forms of processes and schemes to justify their decisions. Making sense of these processes would have been difficult from a single theoretical perspective.

The extent to which the framework enable the identification of areas where the theories in use are more helpful and where they are not, thus an enhanced understanding of the theories themselves:

This was the main achievement of our analysis framework both in terms of the analysis of empirical data itself and the outcome thereof. The Framework Schemes, Grids of interpretation and Scripts which were used for the analysis were designed in accordance with identified theories or specific research approaches such as thinkLets and symbolic interaction. Practical outcomes includes the GDJS and the new decision-making

paradigm for DSS in decision justification environments explained earlier.

Whether the research questions raised have been satisfactorily responded to:

Responses to the four primary research questions were sought from the literature and empirically. At the empirical level, secondary questions were raised in accordance with the process-based research framework (Roode, 1993) and analysed using the analysis framework we have developed. A close analysis of the components of Toulmin *et al.'s* (1979) schema of reasoning and its application revealed a mapping between these components, the components of the process based research framework (Roode, 1993) and the four essential elements of any complete theory as proposed by Whetten (1989). As part of showing how the research questions were responded to, we presented such a mapping in the last chapter, but due to its relevance in the next section, it is briefly revisited.

6.10   Assessing the contribution of the study

What this study has demonstrated is that adding the concept of justification to the decision-making process significantly alters our understanding of the decision-making phenomena.   It also changes our understanding of decision theory and imposes a particular requirement on the design of group decision support systems. For instance, it reinforces Claudio Ciborra's (1999) argument for designing systems which constitute a shared context for interpretation as well as those which can support reflection-in-action and learning for what he calls smart improvisation. We have outlined such design ideals in the last chapter and in Part VI of this chapter. They are ideal in the sense that they require a design based on hermeneutic dialogue. Theoretical insights, according to Whetten (1989), comes from similar demonstrations. Whetten (1989), identifies four essential elements, viz., "what", "how", "why" and "who, where and when" as constituting the building blocks of a complete theory. "What" addresses which factors,

i.e., variables, constructs or concepts, should be considered in the attempt to explain a social or individual phenomenon. Inclusion of the "right" factors is judged according to their "comprehensiveness", or whether all relevant factors are included, and "parsimony", or whether irrelevant factors can be removed. "How" addresses how the identified factors are related. Together the "what" and " the "how" elements constitute the subject or domain of the theory. The "why" element motivates why the factors have been selected by identifying the underlying psychological, economic or social dynamics which justify this selection. This is required to motivate why colleagues should give credence to the particular representation of the phenomenon under scrutiny. The three elements provide the essential ingredients of a simple theory, i.e., description and explanation. "What" and "how" describe, and "why" explains. "What" and "how" provide a framework for the interpretation of empirical observations. Combining "whats" and "hows" provide typical models from which testable propositions can be derived. The mapping presented in Figure 6.3 (previously Figure 5.1) demonstrates how the elements as proposed by

Whetten (1989) naturally combine with those of Roode's (1993) process-based research framework to inform a justification approach based on Toulmin *et al.*'s schema of reasoning and underpinning the GDJS.
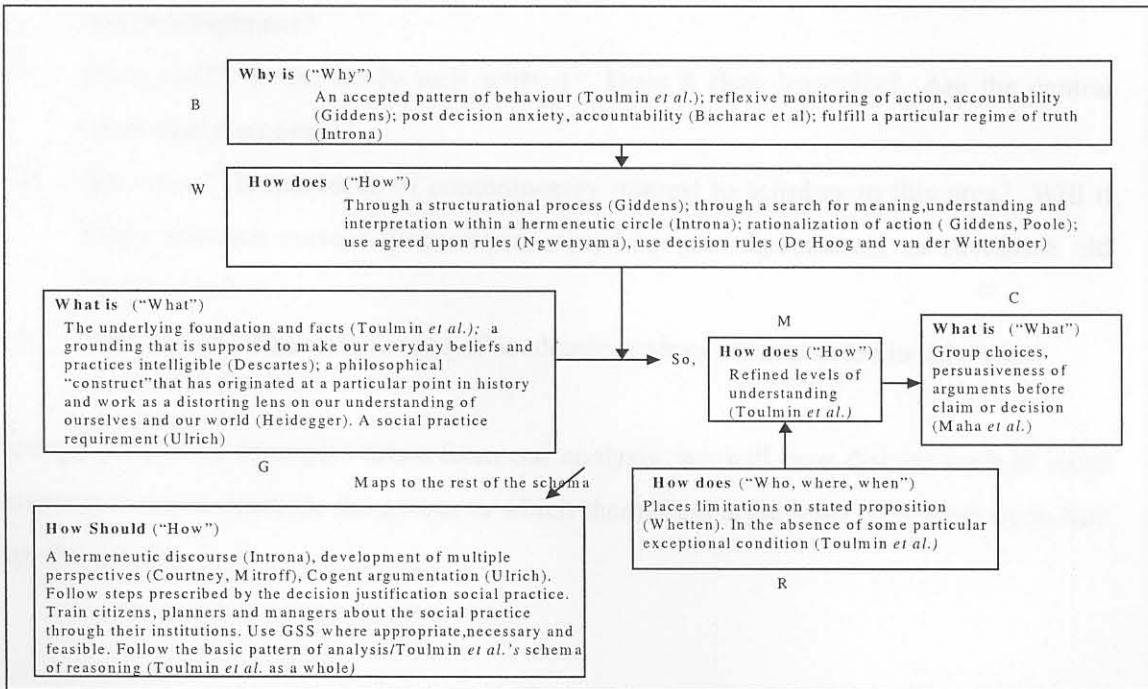

Figure 6.2 (previously Figure 5.1): A mapping of the process-based research framework (Roode, 1993), elements of any complete theory (Whetten, 1989) onto Toulmin *et al.'s* schema of reasoning- Responses to our research questions.

The GDJS and the new decision-making paradigm for DSS within the decision justification environments are typical models from which testable propositions can be derived.   It was in response to the "what" question that the decision justification social practice and its theoretical framework proposed in this study came into being.

Although we have already presented and discussed what the evaluator of this study should specifically look for, Whetten (1989) and Introna (1992) have formulated equally valuable, more general criteria which can be used to assess theoretical contributions of a study.   There is a considerable overlap between the two criteria. We could use any of

them to complete the assessment of the theoretical contribution made by the study, but since we have already described a mapping of our research questions and an inquiring approach to the four essential elements of a theory proposed by Whetten, we will use Whetten's criteria.

Whetten's (*op.cit.*) criteria is in the form of questions which are often asked in judging theoretical contributions of a study. There are seven questions which he lists in order of importance as follows:

(I)   *What's new?* Does the study make a significant, value-added contribution to current thinking?

(II)   *So what?* Will the study likely change the practice of science in this area? Are linkages to research evident (either explicitly laid out, or easily, reliably deduced)?

(III)   *Why so?* Are the underlying logic and supporting evidence compelling? Are the author's assumptions explicit?

(IV)   *Well done?* Does the study reflect seasoned thinking, conveying completeness and thoroughness?

(V)   *Done well?* Is the study well written? Does it flow logically? Are the central ideas easily accessed?

(VI)   *Why now?* Is this topic of contemporary interest to scholars in this area? Will it likely advance current discussions, stimulate new discussions, or revitalize old discussions?

(VII)   *Who cares?* What percentage of academic readers are interested in this topic?

Through the use of examples taken from our analysis, we will now discuss each of these criteria in order to illustrate the extent to which theoretical arguments presented are in line with the criteria.

(I) *What's new?* **Does the study make a significant, value-added contribution to current thinking?**

The problem of practical reason, which encompasses the concept of justification is itself not new. It continues to receive the attention of practical philosophers. What is new is the new theoretical insight on group decision-making and group decision support systems when group decisions have to be justified. We now know that the often assumed competence of actors in those circumstances is not sufficient and needs to be enhanced so that those involved and those affected can judge for themselves that the decisions made are reasonable. We know too that the design of group support systems to support this justification process should be through a hermeneutic dialogue. The study also reveal that there is a current thinking on GSS research which moves away from a focus on GSS technology to a focus on users interaction and patterns of thinking. Two new models, the GDJS and the new decision-making paradigm for DSS in justification environments together with a new construct, the decision justification social practice, emerged from the study. These are all significant and value adding and radically changes the current thinking in both decision theory and group decision support systems.

(II) *So what?* **Will the study likely change the practice of science in this area? Are linkages to research evident (either explicitly laid out, or easily, reliably deduced)?**

As the world yearns for democratic ideals, 'good governance', 'transparency', 'accountability', 'participatory decision-making' and other similar notions that reflects the general desire for a common good, evidence is beginning to emerge that the importance of the decision justification social practice will increase world-wide. A typical example is what is currently happening in South Africa. Completion of this study coincides with the introduction of a code of Good Administrative Conduct (Section 10 (e) of the promotion of administrative justice act, 2000 (Act No. 3 of 2000)).

The Act:

(a)   Sets out the rules and guidelines that administrators must follow when making
        decision;

(b)   Requires administrators to give reasons for their decisions;

(c)   Requires administrators to inform people about their rights to review or appeal
        and to request reasons; and

(d)   Gives members of the public the right to challenge the decisions of administrators
        in court.

These requirements amounts to a prescribed social practice to administrators about procedures of decision-making when such decisions are likely to negatively affect others. It is indeed an example of a decision justification social practice for administrators in the South African public service. Insights from this study would not only contribute to a better understanding of processes such as this, but could also assist in the design of information systems aimed at supporting them. For instance, administrators could use the Group Decision Justification Framework in their decision-making process in anticipation for a possible challenge or just to ensure that they remain within the requirements of the code. This represents a clear change in the practice of decision-making. The practice of designing support systems for this new way of decision-making has to be a learning process for both the designer and those to be supported by the system. Figure 4.12 - implications for the decision justification social practice on the new decision-making paradigm for DSS; Table 6.1 - a theoretical framework for decision justification social practice; Figure 6.1 - the Group Decision Justification Schema (GDJS) and Figure 5.4 - Group Decision Justification Framework all show linkages of this study to research.   In addition, a new line of inquiry closely related to this study is presented by Turoff *et al.* (2002). They provide a statement of the requirements for and some design examples of what should constitute a Social Decision Support System (SDSS). The design ideal of such a system embodies the hope that modern human networking technology can be configured and used to allow the emergence of a collective human intelligence by very

large groups of individuals. This study, together with similar studies such as the one just cited are likely to change group decision-making processes and the design of the accompanying computer-based systems aimed at supporting these processes.

(III) *Why so?* Are the underlying logic and supporting evidence compelling? Are the author's assumptions explicit?

The underlying logic and supporting evidence to our study is contained in the analysis framework. By closely following arguments from the literature, we were able to construct the framework. Research questions were formulated, enabling us to collect data which we interpreted in a systematic way using the analysis framework. Two GSS use sessions were also analysed using the framework. Our assumptions are contained in the philosophical position which we explicitly stated in chapter 2 and in section 3.3 of chapter 3 - indicating that we consider the need for decision justification as an essential component of every group-decision making process. Our analysis reveal that although not all decisions need to be justified, groups mostly make decisions which have broad social implications and therefore mostly need to be justified.   A quick re-look at the table of morphological fields [Table 5.1 Consolidated Morphological Fields] and the accompanying morphological graphs together with the interpretations thereof presented in chapter 5 reveals empirical evidence to support this.

(IV) *Well done?* Does the study reflect seasoned thinking, conveying completeness and thoroughness?

The multi-dimensional nature of the topic suggests no other route, but that based on seasoned thinking. It required multiple interpretation and multi-level analysis which could only be achieved through thorough thinking. This is reflected in the manner in which the framework schemes based on various theories were constructed and used in analysing empirical data. The data itself was obtained through the application of a

process based-research framework which entails looking at the research problem from various perspectives, ensuring completeness. The outcome of the analysis process is the Group Decision Justification Framework (Figure 5.1 in chapter 5), which encompasses a decision justification social practice.

(V)   *Done well?* Is the study well written? Does it flow logically? Are the central ideas easily accessed?

The central ideas in the study comes from practical philosophy and are motivated by our interest in decision theory and group decision support systems. Easily accessible and extensive literature on each of these areas exist and have been suffciently explored in the study. After introducing the topic in chapter 1, we explored the literature in chapter 2

followed by a discussion of research methods as well as how and why we have arrived at the choice of the research method that we made. Based on the literature, we constructed an analysis framework which we used to interpret the data. A theoretically well established process was used in obtaining the data for the first part of our research purpose while two GSS use sessions were used for the second part. Using an interpretive analysis of a hermeneutic nature reflected in the analysis framework, we performed an extensive interpretation of the data. The literature together with an understanding which emerged from the interpretation enabled us to propose a theoretical construct - the Group Decision Justification Framework

(VI)   *Why now?* Is this topic of contemporary interest to scholars in this area? Will it likely advance current discussions, stimulate new discussions, or revitalize old discussions?

This thesis argues that the concept of decision justification should accompany any form of group decision-making and that it was an omission that decision theorists did not pay

much attention to it. Decision-making models such as those of Simon (1976) have greatly influenced major areas of the information systems field, such as Artificial Intelligence (AI), Decision Support Systems (DSS) and Management Information Systems (MIS). Both Weber (1964) and Simon (1976) argue that the meaning of the decision can be traced in the objective circumstances, in the value premises and preferences of the actor, in the act of selecting alternatives, and so on. This partly explains why the need for decision justification was ignored in traditional decision theory. Instead, the idea attracted much attention from practical philosophers such as Jürgen Habermas, David Gauthier (1986), Michel Foucault (1977), Thomas Kuhn (1970), Stephen Toulmin (1979) and phenomenologists such as Schutz (1967) and Garfinkel (1974) who take different positions from those of Weber and Simon.

The arguments presented in this study are rooted in practical philosophy but closely align with those of phenomenologists who argue that the *in-order-to* component in rational decision-making is just the tip of the iceberg (Garfinkel, 1974). Below, there are the actor's past experiences - selectively evoked according to the existential circumstances valid at the moment of making the decision. These are constitutive meanings - the *because-of* component of the action which can explain the reasons why and how a situation has been perceived as problematic in the first place (Ciborra, 1999). The decision justification social practice is aimed at assisting the decision makers as well as those affected by the decision to access these *because-of* components, which are only selectively and circumstancially evoked. Because the topic originates outside the information systems field, interest is only beginning to emerge. Needless to mention its central role in practical philosophy and contemporary liberal-democratic political theory (D'Agostino, 1997).

(VII) *Who cares?* **What percentage of academic readers are interested in this topic?**

Two papers addressing different aspects of this topic have been reviewed by academic readers in the information systems field. The first was favourably considered and was

presented at the European Conference on Information Systems (ECIS2001). It was also requested by one of the leading researchers in the area of Group Support Systems (GSS) who remarked that the topic was very interesting. The second has recently been accepted for presentation at the Human-Computer Interaction International Conference (HCII2003). Three reviewers rated it exceptionally high, once more indicating the level of interest that the topic is beginning to attract in the information systems scholarship.

6.11   *Limitations and Further research*

Limitations

While discussing the critical reflections in section 6.8, we pointed out some of the limitations of this study and acknowledged them appropriately. Key limitations have to do with our research design and data collection. The first set of limitations is that the nature of our topic did not allow for data collection through direct observations. Initial face-to-face interviews yielded unsatisfactory data and was abandoned in favour of a survey-like questionnaire. These limitations were extensively discussed in chapter 5. The second limitation is the fact that for the second leg of our research, we have used students as subjects in a laboratory setting in a study which ideally should have used a field study. Once more, reasons which we regard as adequate have been given. None of these limitations were found to be out of step with reported work on interpretive IS research of a hermeneutic nature and GSS.

The third is not so much a limitation but our own philosophical position on the concept of decision justification. We took the position that it is in the interest of a 'common good' that those entrusted with the responsibility of making decisions on behalf of others should be able to justify such decisions when asked to do so. This position was supported by the literature and is in line with democratic ideals which we perhaps mistakenly assume is a world-wide human endeavour. It may well be the case that there are societies or even communities which do not share this ideal. Therein comes the limitation of this study –

for in such societies and communities, the contribution that this study could make would be minimal, if at all. We take comfort in the knowledge that at least in the country in which this study is conducted, such ideals are dearly cherished.

The fourth and last limitation is the nature of our analysis framework. We used various theoretical lenses to look at the empirical data. Because of this, we have mostly seen what the theories suggest, although a conscious effort was made throughout to allow the data to directly talk to us, rather than only through the theoretical lens. Using hermeneutics as a mode of analysis mean that we took a textual view of the world, thereby acknowledging that there is an infinite number of interpretations of any text (White and Taket, 1994). Perhaps Derrida (1978, p. 292), who view interpretation as *play* may assist in accentuating this limitation: 'a world of signs without fault, without truth,

and without origin which is offered to an active interpretation'. We believe, however, that if decision justification is taken as the focal concept, then other interpretivists will be able to make sense of the data and our interpretation. In order to cater for this, we have included all empirical data in the main body of the thesis.

Further Research

At a theoretical level, the first area of further research could be to revisit various decision theories with the concept of decision justification in mind. In particular, one could analyse Weber's and Simon's models assuming a decision justification social practice. One could introduce the concept of decision justification into these models and inductively re-assess their explanatory power of the decision-making process. Since these models have to a very large extent informed the designs and development of decision support systems that we have today, studies on the possible development of decision justification support systems along the lines of a new decision-making paradigm for DSS proposed by Courtney (2001) could be undertaken.

The second area of possible further research could be to test the possibility of using Toulmin *et al.'s* (1979) basic pattern of reasoning (schema) as a thinkLet (Briggs *et al.*, 2001). Results from this study suggest that this line of inquiry may theoretically and practically enrich GSS research. For example, although performed outside the scope of this thesis, we have used a point-counterpoint thinkLet during a GSS session in a decision justification environment guided by Toulmin *et al.'s* schema. The preliminary results are pleasing and seem to indicate that the use of this particular thinkLet may accelerate the pace of the decision justification process. There are indications too that the use of tight *scripts* may enhance a better understanding of the requirements of the elements of the schema, thereby increasing the clarity of the justification process.

The third area could be the testing of the proposed Group Decision Justification Framework in various practical contexts involving facilitated sessions in which groups

are encouraged to practice the decision justification process. In the South African context, this could be achieved through aligning the study with the implementation of the new code of Good Administrative Conduct (Section 10 (e) of the promotion of administrative justice act, 2000 (Act No. 3 of 2000)) through the Department of Justice and the Department of Public Service and Administration. The study could include the development of a training programme for a decision justification social practice including GSS use in support of the process.

The last area of research could be technical, involving the design and development of a generic Group Decision Justification Support System (GDJSS) for the South African public institutions. However, this could only be sensible once the code of Good Administrative Conduct is in operation.

6.12 A final word

This research used an extensive literature review which lead to the development and use of a multi-theoretic analysis framework to study and better understand the process of group decision-making when group decisions have to be justified. Based on this enhanced understanding, we were able to identify, describe and interpret the implications for GSS use and design ideals brought about by this justification process, thereby attaining the intended purpose of the study. We have developed a theoretical framework for a *decision justification social practice* and a *Group Decision Justification Schema* (GDJS) which together, constitute a *Group Decision Justification Framework*. Through the use of *Grids of Interpretations* and *Strips* within theoretically informed *Framework Schemes* bound by a hermeneutic circle, we made chaos look like order (Mumford, 1991). Through the Framework Schemes, we created a way of seeing and a way of not seeing - a coherent interpretive analysis of empirical data. Not withstanding the limitations discussed above, we submit that this study makes both a theoretical and a practical contribution to interpretive IS research. For the sake of pleasing Foucault (quoted in Dreyfus and Rabinow, 1982), our final word is that "... because all interpretation is arbitrary, there can be no final interpretation".