

**Table 5.5:** An extension of Table 5.2 - Grids of interpretation for GSS use sessions 2

GSS Session 2	Framework Scheme IV	Framework Scheme V
<i>Strip 2 - 1</i>	The claim was made in advance and no counterclaim was given by the students in their first assignment. The assumption made was that they would convincingly argue in support of the claim using Toulmin <i>et al.</i> 's schema of reasoning.	Although no counterclaim was given by the students, an observation was made that their argument in support of the claim was largely considered as an academic exercise. Multiple realities about the claim and its context must have been held by the students. The students could be said to have been interacting symbolically in the true sense, for the sake of completing the task at hand.
<i>Strip 2 - 2</i>	This strip is about seeking for grounds on which the claim is made. This required that the participants be well acquainted with the principles of the USH and the overall basic concepts on systems together with the underlying arguments for the suitability of the NQF. Drawing distinctions between the elements of Toulmin <i>et al.</i> 's schema is problematic for the group. Perhaps a <i>script</i> to identify what counts as <i>valid grounds</i> could have been helpful to the group.	Because the grounds based on the USH and the NQF are immersed within a variety of realities in the form of concepts, recognizing these realities in the form of grounds proves to be a difficult undertaking. There is sufficient evidence from the text that eventually the group agreed on what they regarded as their valid grounds. This is despite the lack of a good understanding of what valid grounds are.
<i>Strip 2 - 3</i>	A clear indication that a reasonable level of understanding on what constitute a warrant existed. Perhaps a <i>script</i> to identify a warrant could have been helpful. In this particular situation, students could have picked on specific aspects of the NQF and then compared them with the principles of the USH. One participant recognized this (#88), but the other participant saw this as yet another claim. It is only in accordance with the warrant that we can move from the grounds to the claim.	An emotionally charged interaction took place on what actually constituted a valid warrant. The group continued without a clear shared sense of what constituted their warrant, although members demonstrated a fair understanding of what a valid warrant could be. So, in a sense they continued interacting symbolically in order to complete the task.
<i>Strip 2 - 4</i>	Identifying backing seems to be less problematic for the group. Backing provides the foundation for a warrant.	A good interaction on backing, showing good understanding of what backing entails. The multiple realities are expressed and a

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- Theoretical systems ideas behind NQF as argued by Kraak could have been used as backing. A question and answer *script* to identify a valid backing could have been helpful.
- shared perspective is arrived at.
- Strip 2 - 5** Modal qualifiers indicate the *rational strength* to be attributed to the claim on the basis of its relationship to grounds, warrants and backing. Once more, a script with leading questions could have tightened their lines of argument.
- The transcript of this strip shows that the interaction was without problems with regard to their shared understanding on what constitute the modal qualifiers
- Strip 2 - 6** Surprisingly the participants display maximum understanding of the possible rebuttal, and are able to articulate it very well. Rebuttals are the *extraordinary or exceptional circumstances* that might *undermine the force* of the supporting arguments.
- There must be some other interpretations ‘in-between’ the process which enabled the participants to assign meanings to their interaction as they proceeded. Could it be that the participants initially undermined one other’s lines of argument? Or perhaps the principle of identity in symbolic interaction was at play here - with the participants identifying themselves as ‘just students doing an assignment?’
- Strip 2-7** This strip encompasses all the elements of Toulmin *et al.* schema. It clearly shows that the group did not succeed in reaching consensus using the GSS tool. Except in statement #84, which unfortunately attempts to lump all the elements of the schema under *backing*, there were no explicit modal qualifiers and possible rebuttals. This is a surprising contradiction to strips 5 and 6, which show that the group had a good understanding of what constituted modal qualifiers and rebuttals. This demonstrates that without a proper *script*, groups can easily argue in circles, even if they have a guiding structure.
- The consensus through verbal interaction is very concise. It is mainly symbolic and far from capturing the complexity of the debate that went into it. The presence of two characters amongst the group is evident - one skeptical and the other the “devil’s advocate”. One understands why the group seemed not to appreciate anonymity. Identifying themselves could have assisted them in the interpretation of the GSS text messages based on their knowledge of each other.

### *Making sense of the analysis*

Two pictures emerge from the analysis of the strips using the Framework Schemes. A very rich picture in terms of the possible theoretical interpretation of the GSS transcripts on the one hand, and a mixture of lean and rich picture in terms of the goal of the GSS use session and the learning programme of the group on the other. We draw on the theoretical explanations underlying the Framework Schemes to demonstrate the richness of the GSS text and on the assessment of the GSS use by the group (organised according to Toulmin *et al.*'s schema of reasoning by the author) to illustrate the mixed picture. Following the description of these two pictures, we make observations and draw some conclusions.

#### **A theoretically rich picture**

A person who makes a claim without supporting it and thereafter expect others to construct an argument in its support is similar to an artist who hangs his painting on the wall and then goes about asking others to discover his intentions through the interpretation of the painting. This is our overall interpretation of the second GSS session transcript - about which Toulmin *et al.* present an interesting explanation. Toulmin *et al.* (1979, p. 275) discuss this under the heading 'interpretive exchanges' of arguing about the arts:

“ Normally the creative artist knows perfectly well what he wants to do, and his problem will simply be how to carry that intention into effect. But the onlooker will very often have real problems in figuring out what is 'going on' in some particular work of art. So different onlookers and critics may come to exchange their views, opinions, and interpretations in the hope of seeing their way past those mysteries and difficulties. What is the prime topic of such exchanges? Some people argue that they are essentially concerned with the "intentions" of the artist himself. In this view, what can be perceived in any particular work is what the artist intends us to perceive. Others regard references to the artist's intentions as fallacious. In their view, the artwork must stand on its own feet and be subjected to critical analysis and attention directly, without regard to 'what the

artist mean.’ But this disagreement seems to rest, in part at least, on cross-purposes. Certainly the anti-intentionalists have a point: if an artist fails to bring off the effects he was aiming at, we may comment critically on his actual achievement - for good or for ill - without being distracted by his unfulfilled intentions. But the intentionalists also have a point: the difference between understanding a novel correctly and misunderstanding it certainly involves ‘what the novelist meant’ - in the sense, not *what he was attempting* but *what his message or meaning was.*” ( op. cit)

Within our analysis framework, this problem of intentionalists and anti-intentionalists is resolved through the concept of a hermeneutic discourse. As previously discussed in chapter 4, unless the participants in a discourse closes themselves up from a continuous search for meaning and understanding, they cannot continuously misunderstand each other, nor can they continuously misunderstand meanings portrayed through written text or works of art. We thus arrive at a conclusion that difficulties experienced by the students in interpreting each other’s opinions, views and statements expressed through GSS use are largely attributable to *cross-purposes*, rather than to their misunderstanding of the claim made by the lecturer.

Toulmin *et al.* conclude the discussion on interpretive exchanges by indicating that in interpretive arguments, the connection between the grounds (G) and the claim (C) is far from strict, pointing out that in literature and real life alike, questions of character and motivation have to be judged with a sense of proportion and carefully chosen emphasis (p. 276). They further explain that as a result, we are rarely in a position to present arguments of ‘geometrical’ rigor. They note that however convincingly it is supported, every critical claim or judgement will be open to further comments and qualification as we approach the work concerned from fresh angles and bring novel perceptions to bear. According to these authors, we are almost never in a position to present our argument in the form “G, so *necessarily* C.” Rather, we normally have to qualify our claims and conclusions by indicating the particular standpoint or angle of view from which they are put forward:

“G, so (as a matter of psychological characterisation) C.”

“G, so (as a matter of plot construction) C.”

“G, so (as seen from America a hundred years later) C.”

Much of what is contained in the GSS transcript is illuminated by the above theoretical explanation by Toulmin *et al.* We made a claim and asked the students to construct arguments (and subsequently a consensus argument through GSS use) in its favour. From their first individual assignments, it can be said that each student was able to construct such an argument as expected. The GSS transcripts however, presents a somewhat different picture. The students struggled to put together a convincing ‘group argument’. In this regard, the following can now be said:

1. A considerable level of training on the application of Toulmin *et al.*'s schema of reasoning is required before it could be effectively used in justification arguments.
2. Like the analysis of the first GSS use session suggests, the notion of a *script* could usefully be integrated into every element of the schema in order to prescribe the activities required at each stage of the justification process. It seems that this could be a very helpful spin-off of using the idea of a thinkLet (Briggs *et al.*, 2001) together with the schema of reasoning (Toulmin *et al.*, 1979).
3. Modal qualifiers and possible rebuttals are more significant in interpretive arguments. A good understanding of the importance of modal qualifiers and possible rebuttals could assist groups in making modest and polite statements during arguments, thereby lessening possibilities of conflict.
4. The possibility exists that groups can act symbolically in sharing their perspectives regarding how the justification process unfolded. This could be problematic when

such groups are challenged to justify their claims to others outside the group. One way of avoiding this could be to clearly state the overall purpose of the justification process and to seek agreement and understanding of this purpose before the justification process commences. This purpose must be in line with an accepted decision justification social practice.

### A mixed picture

#### *Group assessment of the second GSS use*

At the end of the GSS use session, the participants were asked to make claims about the session itself, the GSS tool and the process followed. Their claims were to be supported following Toulmin *et al.* schema of reasoning using the GSS tool. The author, afterwards, reorganized their assessment arguments in term of *strips* and the Toulmin *et al.* schema of reasoning in order to align them with the analysis framework. In addition, the participants were further requested to make any other comment regarding their learning programme as a whole, including the GSS session, without necessarily restricting themselves to the Toulmin *et al.* schema. Only three assessment strips (assessment strips 1, 3 and 4) were found to be complete in terms of Toulmin *et al.* schema (the strips are shown below), while strips 2 and 5 were incomplete. These incomplete strips were grouped together with the general comments under assessment strip 6. So the mixed picture could be seen as being made of two sets of assessment strips. Set one consisting of assessment strips 1, 3 and 4 and set two made of assessment strip 6 (the general comment strip which includes strips 2 and 5). The strips are presented next.

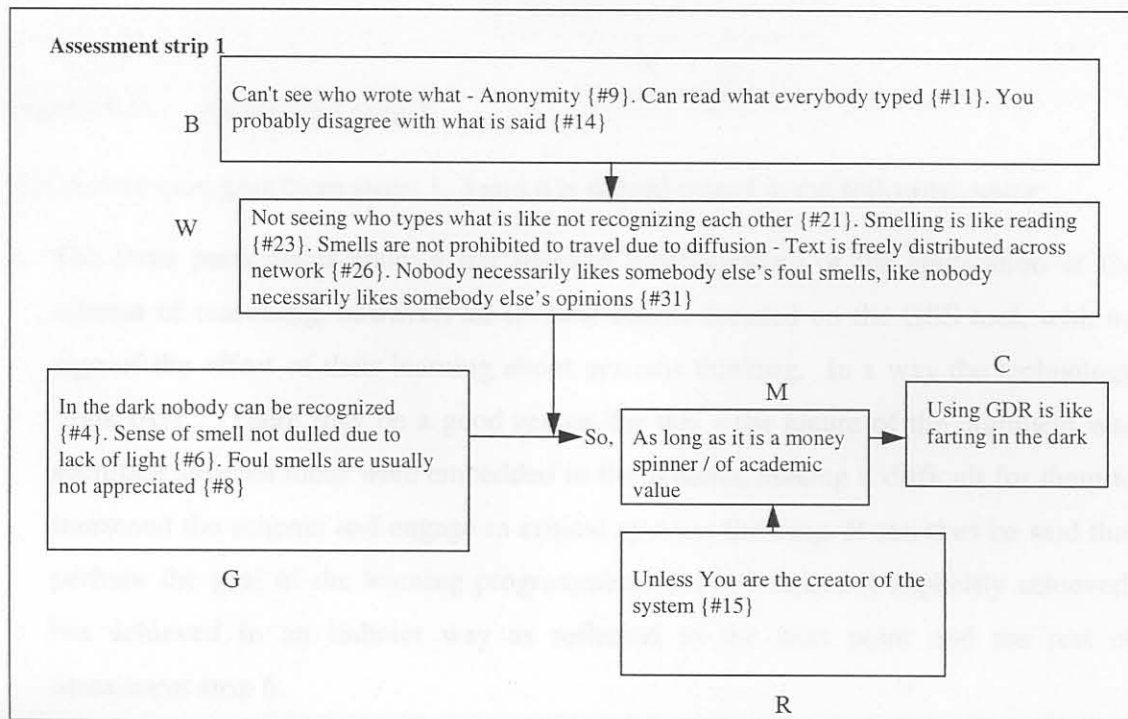


Figure 5.1: Assessment strip 1

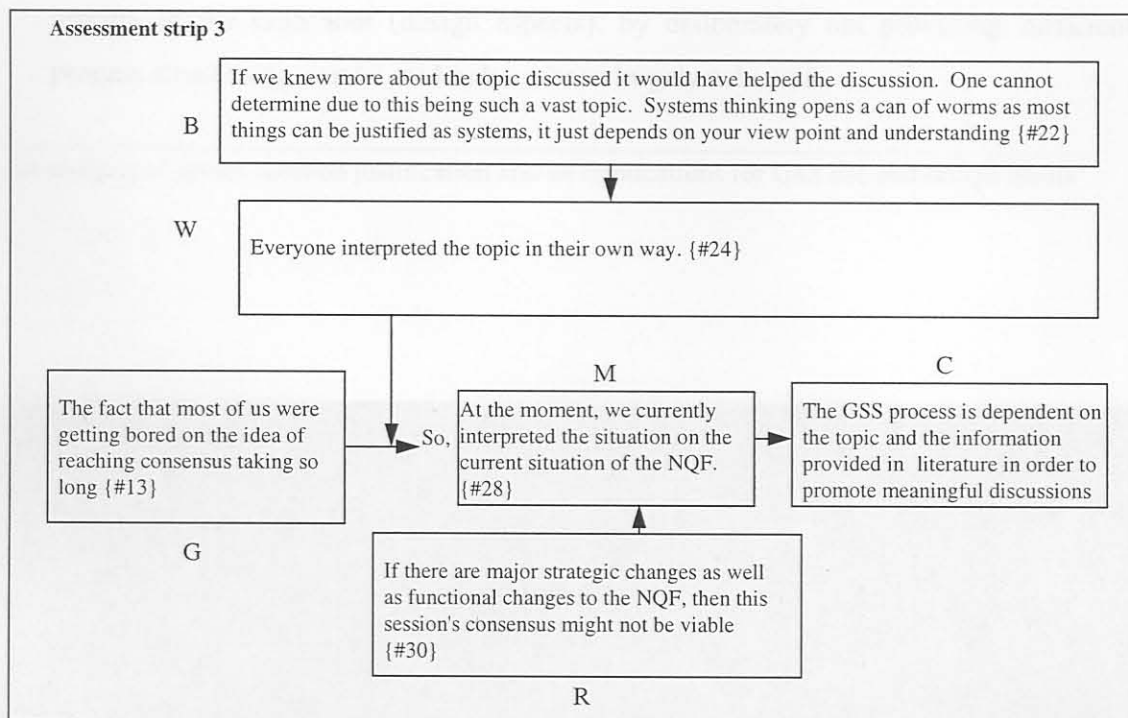
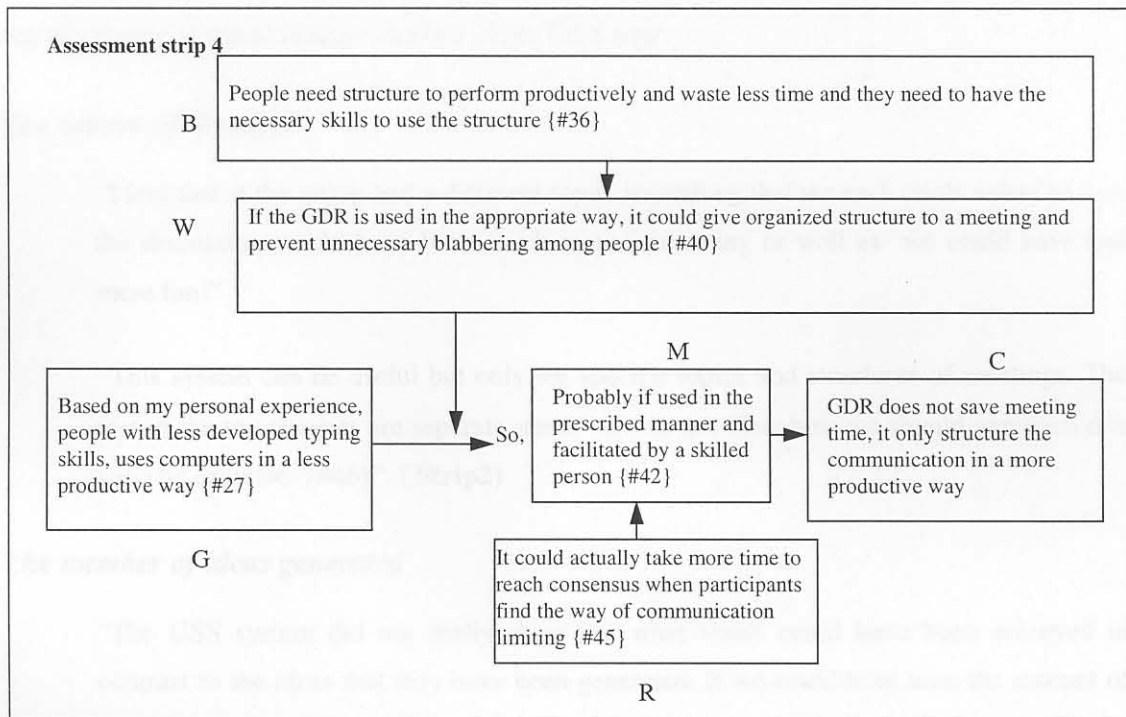


Figure 5.2: Assessment strip 3



**Figure 5.3:** Assessment strip 4

The picture emerging from strips 1, 3 and 4 is indeed mixed in the following sense:

1. The three participants show a fair level of understanding of the application of the schema of reasoning, however, all of their claims focused on the GSS tool, with no sign of the effect of their learning about systems thinking. In a way the technology ‘took over’. There may be a good reason for this - the nature of the argument was such that systems ideas were embedded in the schema, making it difficult for them to transcend the schema and engage in critical systems thinking. It can thus be said that perhaps the goal of the learning programme as a whole was not explicitly achieved, but achieved in an indirect way as reflected in the next point and the rest of assessment strip 6.
2. The goal of enabling the group to discover some of the constraining and enabling aspects of the GSS tool (design aspects), by deliberately not providing sufficient process structuring, can be said to have been largely achieved.



3. Two of the three assessment strips highlight a particular aspect related to a design assumption of the GSS tool. Strip 1 questions the value of the anonymity feature while strip three challenges the notion that GSS facilitated discussions save meeting time.

### ***Assessment strip 6***

All expressions in this assessment strip have to do with the constraining or the potential enabling aspects of the GSS tool. We have categorised them into five themes: the nature of the topic, the number of ideas generated, talking vs. typing and more knowledge about the functioning of the system, inadequacy of perceptions in assessing the GSS tool and the discovery of some design aspects of the GSS tool.

#### ***The nature of the topic***

“I feel that if the group had a different topic, something that we each could relate to then the discussion would have been much more interesting as well as we could have had more fun!”

“This system can be useful but only for specific topics and structures of meetings. The rest of the topic/points are separate items - it was not clear how we should approach this specific exercise. {#46}”. (Strip2)

#### ***The number of ideas generated***

“The GSS system did not really show me what result could have been achieved in contrast to the ideas that may have been generated. If we could have seen the amount of ideas generated by the system vs. the amount of ideas generated by a normal meeting we probably would have been much more at ease with the system {#39}”

#### ***Talking vs. typing and more knowledge about the functioning of the system***

“Also if we were given more information or examples of how this system works, we probably would have been more able to understand the system. For me it was a bit difficult to type instead of talk because you can say what comes to mind, and it is a bit difficult to type when you actually want to say something {#43}”

### *Inadequacy of perceptions in assessing the GSS tool*

“Ground is the foundation of the claim to be accepted - in this case the grounds are personal experience of the application. {#18}. The experiential framework and perception by people of a tool or process is critical to its effective use {#25}. Experience of one person not adequate to judge the acceptability of a solution - additional experience outcomes need to be added. {#32}. Probably this system can be easier when there is lots to discuss, but when one point is being exhausted {#44}. The comments from whole group is based on present perceptions if this is the only exposure to a GSS tool {#35}. A more appropriate structure for discussion may have created a vastly different claim {#38}”

### *Discovery of some design aspects of the GSS tool*

“If you use the append before and after - you can insert your comment after the one you are replying to - this then provides the reason for the exclamation marks in the system - which indicates the comments that you may not have noticed. But then you need to move your cursor onto each statement that you have read so that the exclamation points only show the ones you have not actually read..... {#133}”.

“Communication and discussion is more difficult with GSS than without GSS. Warrant: Good communication requires more than just typed words. Concepts like emotion and tone of voice is missing and makes it difficult to understand the message from the other persons. It is also difficult to go into a discussion if the other party keeps on changing. What I mean is that you are busy with a discussion with one person on a certain topic and someone else makes another comment, it becomes difficult to keep to a certain way of reasoning with the same person. {#41}”. **(Strip 5)**

Although the technology seem to have ‘taken over’ in terms of the goal of GSS use and the learning programme as a whole, almost all the assessment strips point to some aspect of design of the GSS tool, indicating that we have largely achieved the goal of the second leg of our research, at least in as far as the analysis of the GSS text tells us. The students were able to discover some of GSS design ideals regarding the type of support that groups, according to the literature, typically get from such tools.

For completion, we repeat the two primary research questions for this leg of our research purpose:

- *Can the social-psychological aspect of group decision-making be modelled in a way that could inform the design of an information system aimed at supporting the decision justification process?*
- *Are there some predominant design ideals embodied in such information systems and technologies which will emerge only as a result of the decision justification process?*

The next and the subsequent sections of this chapter explains in detail how these questions have been addressed.

#### ***5.24 About GSS design ideals: some observations from the analysis***

The conclusion on interpreting the text from GSS use session could best be described and explained in terms of ideals. It is a fact that behind every GSS there is a design ideal; an ideal which encapsulates the designer’s desire to support the group in achieving their goal. Very often this is hidden from the users as to which aspects in their goal could best be supported. This does not render these ideals useless, as long as they are pursued within a framework that urge humankind on in quest of a better end state (Mitroff and Linstone, 1993, p. 154). If justification of decisions by groups is a desired better end state for humankind, then the ideal of designing GSS to assist in the pursuit of this desired end

is a worthwhile exercise. However, such design ideals must be guided by the ideal of decision justification, and should therefore not be hidden from the group. Our view is that preparing groups along the lines we have presented in this study could benefit both the designers and the groups as GSS design should always be evolutionary. The analysis has shown that prepared groups are able to pick up the hidden design principles of the designer - for instance, the principle of parallel communication in GroupSystems which is aimed at addressing the problem of “process losses” in ordinary meetings. Here are some of the key observations from the analysis of the two GSS sessions:

*Observation from the first GSS use session:*

*Observation 1:* The students were able to consciously and critically reflect on what kind of support they needed from the GSS software in assisting them to accomplish their task. Evidence to this could be found in the following statements by the participants:

*“... is it not better to look at one person’s claim, deal with it and complete it before we moved to the next one ?”*

*“ No, I do not think that is better; you see, I think the power behind this GSS is precisely that fact ... to be able to engage in more than one issue at the same time. That way we can simultaneously be able to see everyone else’s claim...”*

*Observation 2 :* Toulmin’s schema of reasoning enabled the group to see transparently the audit trail of their arguments as they converged towards a consensus claim. A participant remarked with great satisfaction:

*“...yes, we have actually reached a consensus..., and I can see how.”*

*Observation 3:* The knowledge of the students about systems thinking and critical systems thinking enabled them to discover some of the design considerations embedded in the GSS software as demonstrated in the following remark:

*“...can I change the submission I have just made about my backing? OK, so only the facilitator can do that after everyone else has seen it. It means I have to be more careful before submitting”*

*Observation 4 :* The students acknowledged in their written evaluation at the end of the module that the kind of thinking skills they acquired in the module enabled them to look at issues in a much broader context than usual.

*Observations from the second GSS use session:*

*Observation 1:* Although the group went through exactly the same learning programme as the first, the outcome of their GSS use reflects very little explicit impact of their learning about systems thinking. The “thinking” and the “sense-making” of the group *prior* to the use of the GSS seem to have been lost. There is little evidence of a critical reflection based on this “thinking” as they used the GSS software to support them in the justification process. This is contrary to the outcome shown in the first group.

*Observation 2:* Less process structuring resulting from lack of instructions (or script) by the lecturer seem to be the reason why the group focused on the technology, making it difficult for them to transcend beyond this technology to engage in a critical systems thinking mode which could have assisted them to structure their arguments in a systematic way while using the tool. This could have lessened their frustration which is prevalent in their GSS use transcripts. On average however, this group has discovered more design aspects of the GSS than the previous one, suggesting that perhaps our design of the experiment yielded the desired results in terms of the addressing the second leg of our research purpose. The discovery of more design aspects of the GSS tool by this group may be an implicit indicator of the degree of learning of the group from the learning programme as a whole.

Discussions on design ideals takes various forms in the IS literature. For instance De Vreede and De Bruin (1999) refer to them as underlying assumptions and uses an action research approach to challenge six assumptions built into GSS. The assumptions they focus on which they identify from their experience as having guided the design and application of GSS are that : (1) meeting processes should be “fair”, (2) meeting processes should be “open”, (3) meeting processes should be “rational”, (4) groups should be guided by a process facilitator, (5) groups should exchange as much information as possible and that (6) people are cooperative by nature, with respect to each other and to the meeting process. We share some experiences with most of the results reported by De Vreede and De Bruin (1999).

Ciborra (in Currie and Galliers, 1999, p1149 - 151), consider systems for which their design rationale includes a vision of decision-making as an intrinsically improvised process. His discussion is delimited according to key improvisation dimensions of *situatedness* (systems for the here and now), *resources for improvisation* (systems to access and retrieve experiences), *communication and shared context* (systems which constitute a shared context for interpretation) and *reflection and learning* (systems which can support reflection-in-action and learning for smart improvisation, keeping track of *ex post* reconstruction, by an observer or the actor, of the rationale of performed actions or any organizational move and establishing precedents endowed with interpretation). Ciborra gives examples of already existing computer-based systems to support each of these dimensions. The driving ideal behind these systems is improvisation in decision-making, just as the driving ideal in our study is justification in group decision-making.

Klein and Hirschheim (1989) take a philosophical line in discussing IS design ideals. By showing some examples of design ideals, which they see as a description of the ultimate good to be achieved through system design, and presenting the argument that information technology is not “neutral”, they presented what they call the dilemmas of choices between conflicting design ideals in information systems development. According to

Klein and Hirschheim, these dilemmas can be resolved if the doctrine of an impartial professional practice based on a *value free* scientific method is abandoned in favour of a much broader concept of science. They quote Radnitzky (1970, p. 1) as having proposed such a broader view: "We conceive of 'science' essentially as a knowledge improving enterprise." Knowledge in this sense is not limited to what can be learned from empirical data collection or mathematical deduction, but includes all human insight and wisdom that can be exposed in *moral discourse*. In moral discourse, the competing value claims are interpreted, related to each other, and justified. It was largely this philosophical line taken by Klein and Hirschheim that partly informed our initial thoughts in this study.

In an interesting and very relevant study to our topic, Turoff *et al.* (2002) 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. After presenting a process model of a SDSS, they use an example of a typical SDSS to support explorations of the use of EZ Pass technology to detect speeding, and demonstrate that elements of Hegelian, Kantian, and Singerian Inquiry Process underlie such a structure.

Collectively, the design ideals together with the already available technology discussed above point to the fact that the design and development of Group Decision Justification Support System (GDJUSS) guided by a decision justification social practice is both feasible and attainable. We will however not go so far in this study. We would rather leave that out as an area for further research designed along the lines we are proposing.

### ***5.25 Conclusion on interpreting text from GSS use sessions***

We described two interpretive GSS experiments conducted as part of a larger learning programme of masters students in informatics (Information Systems). These interpretive

laboratory experiments provide the basis for further field experiments in which a number of issues with implications for GSS use and design ideals could be investigated:

- Exposing groups to critical systems thinking and Toulmin *et al.* schema of reasoning seems to provide groups with a suitable and flexible framework which could be used in conjunction with any GSS, and which could be useful in the process of justification of group decisions.
- Groups using GSS are not just consumers of the products. Properly exposed to and trained in critical systems thinking and Toulmin *et al.* schema of reasoning, they could be able to add more value during the evolutionary design process of GSS development. There is therefore a need for a move towards “*thinking support systems*” as a “*training intermediary*” prior to the use of any GSS software. It seems to us that research on thinkLets (Briggs *et al.*, 2001) could substantially contribute towards this goal.

Associated with the above issues which have implications for GSS use and design ideals are two additional points: The first is that each individual coming to a GSS software facilitated session comes with an agenda, expecting the other people to listen to him/her, and if possible to accept his/her viewpoints. For this to happen he or she must present a good argument which is compelling and make sense to the rest of the group. This sense-making and shared understanding has to happen *before* the use of GSS technology. This is where prior knowledge of soft and critical systems thinking by all group members could be helpful. Once this has happened, the issue under consideration becomes “harder” and the use of technology is likely to deliver benefits. Training of group members in systems thinking before the use of GSS software could thus be expected to be beneficial. The second point is that GSS researchers repeatedly point to the need of an appropriate framework, structure or protocol to be used in conjunction with GSS. They are, however, cautious to indicate which one is likely to be useful for all group situations (see DeSanctis and Gallupe, 1987), although they accept that in general, adding structure to the decision process positively impacts decision outcomes. We conclude here that in



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instances where justification of decisions are called for, Toulmin *et al.* schema of reasoning is a very suitable and flexible structure which could successfully be used with any GSS software. Training groups on how the schema could be used in different contexts of an argument could better prepare the group 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.

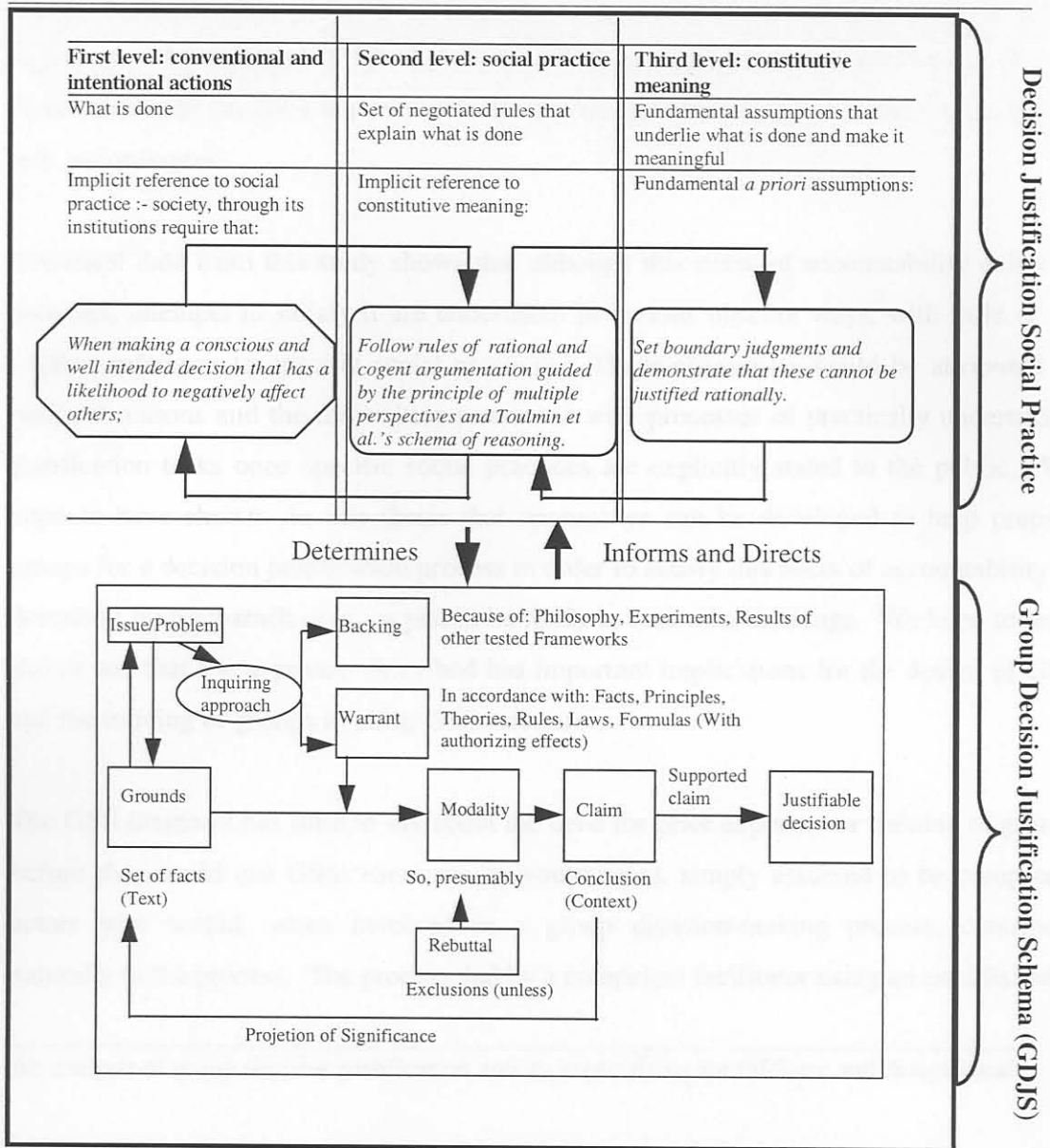
### 5.26 Chapter conclusion

In concluding this chapter, we must emphasise the explanatory power of structuration theory (Giddens, 1984) at various levels of our analysis framework. As Orlikowski and Robey (1991) pointed out, structuration theory allows elimination of the artificial partitioning of research attention between macro and micro levels of analysis. This is because the process of structuration operates at multiple levels of analysis: individual, group, and social system (organization and society). Rather than requiring analysis at either the individual or organizational level, structuration provides concepts for effectively bridging levels of analysis which we found very helpful throughout the application of our Framework Schemes. Orlikowski and Robey (*op.cit.*) indicate further that typically, the role of structural properties in shaping human action and interaction is transparent to human actors. Actors often believe they act freely within organizations, and hence structural properties remain unacknowledged as the conditions of their action. Whether individuals are conscious of the influence of these properties or not, their action is not possible without the interpretive schemes, resources, and norms they use to realise.

Seen within this structurational context and critical systems thinking as proposed by Ulrich (1991), societies that value democratic ideals, could through their institutions, embrace a *decision justification social practice* which would require that:

- 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.* schema of reasoning;
- Set boundary judgements and demonstrate that these cannot be justified rationally.

The acceptance of such a decision justification social practice would, within such societies, determine decision justification practices by various individuals and decision-making groups. Different justification schemas could then be developed in order to inform and direct the implementation of the social practice. In this thesis, we argue that Toulmin *et al.*'s schema of reasoning embedded within a hermeneutic circle should be central to such justification schemas. We thus arrive at Figure 5.1, the Group Decision Justification Framework. We leave the discussion of its finer operational descriptions to the last chapter.



**Figure 5.1:** Group Decision Justification Framework

It is perhaps appropriate at this stage to re-look at what Bacharach *et al* (1995) had to say. They noted that decades of social psychological research suggest that one of the primary factors shaping human decision-making is the anticipation of post-decision anxiety and the decision maker's consequent need to reduce it - indicating that in organizations, a primary source of this anticipatory anxiety is *accountability*. Underlying every

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managerial hierarchy in complex organizations is some norm of accountability. Quoting Tetlock (1985, p.307), they went on to say:

‘Accountability is a critical rule and norm enforcement mechanism; the social psychological link between individual decision makers, on the one hand, and the social systems to which they belong, on the other. The fact that people are accountable for their decisions is an implicit or explicit constraint upon all consequential acts they undertake (if I do this, how will others react?).’

According to this norm of accountability, in order to reduce post-decision anxiety, decision makers must be able to explain their decisions as justified and therefore legitimate. According to Bacharach *et al.* (1995), decisions must be justified not only to those whom the decision maker is directly accountable to, but also to others (e.g., peers, self, subordinates).

Empirical data from this study shows that although this norm of accountability exists in societies, attempts to satisfy it are undertaken in various obscure ways, with little or no explicit reference to specific social practices. These obscurities could be attributed to political reasons and the difficulties associated with processes of practically undertaking justification tasks once specific social practices are explicitly stated to the public. We hope to have shown in this thesis that approaches can be developed to help prepare groups for a decision justification process in order to satisfy this norm of accountability as described by Bacharach *et al.* or just to be ready in case of a challenge. We hope to have shown too that the approach described has important implications for the design of GSS and the training of groups in using GSS software.

The GSS literature has little to say about the need for prior exposure or training of groups before they could use GSS: users are, it would seem, simply assumed to be competent actors who would, when involved in a group decision-making process, contribute naturally to the process. The process, led by a competent facilitator using an established

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GSS, steers the group towards a group decision with ease, achieving much in terms of process gains, as pointed out by GSS researchers. What is unfortunately forgotten, however, is that the members of the group have in the process lost any form of rational reasoning which might in decision justification social practice environments as described above, afterwards be required to justify its decisions. The group has, in effect, just become a synergistic whole creating lists of ideas which are prioritised and fleshed out with action items. We would not argue that this does not have its place in the broad spectrum of group decision-making activities. We do believe, however, that when justification of group decisions are called for, one has to do better than providing stimuli for the mental activities of a group of people and structuring the resultant cognitive results. We submit that the results of the analysis and the group decision justification framework we have developed would make a substantial contribution in helping to enhance an understanding of the group decision-making process and how this process could best be supported through the design and use of GSS technology.

The next chapter discusses the overall conclusion of the study.