The Evaluation of GSS-Enabled Interventions: A Habermasian Perspective

Jim Sheffield
University of Auckland
j.sheffield@auckland.ac.nz

Abstract

This article envisions GSS-enabled interventions as electronically supported discourses, designed and evaluated against a gold standard of ideal speech in a perfect communication environment. A model incorporating Habermasian validity claims is employed to evaluate an urban planning meeting (including the use of the Groupsystems software tool) and meeting follow-up. Support is found for four propositions, all of which focus on the degree to which the application of the model unlocks practical value. The paper concludes with a discussion of the nature of the knowledge discovered in GSS-enabled interventions and the potential for a Habermasian analysis of the knowledge discovered in other collaboration systems and technologies.

1. Introduction

Structuring the problem is a key task of the facilitator of a GSS-enabled meeting. In more simple meetings the facilitator may succeed in imposing an agenda. In more complex meetings the agenda will in most cases be contested by the participants. Value-laden conflict about the agenda poses a significant challenge to the facilitator. Whose interpretation should determine success in the design, implementation and evaluation of the meeting?

Systems of inquiry such as that associated with Churchman and Habermas may guide both participants and the facilitator in resolving conflict in interpretation of the structure of the problem. Yet a search of the GSS literature revealed no papers that adopt an inquiring systems or critical perspective to the design and evaluation of GSS sessions.

This article envisions GSS-enabled interventions as electronically supported discourses, designed and evaluated against a gold standard of ideal speech in a perfect communication environment. A GSS-enabled intervention is considered as an occasion for the discovery of knowledge in each of Habermas three qualitatively different knowledge worlds. Knowledge in the personal world is assessed against the criteria of sincerity. Knowledge in the interpersonal world is assessed against criteria of rightness. Knowledge in the objective world is assessed against the criteria of truth. Conflict among different humans (or within one reflective, yet conflicted,

human) is sought by surfacing and testing implied or underlying assumptions about sincerity, rightness and truth. Mutual understanding is constructed via rational communication, that is, by arguments that test (and are tested by) the degree to which claims to sincerity, rightness and truth are valid. In Sheffield (2004) these concepts are embodied in a Habermasian Inquiring System called the VC (Validity Claims) Model and employed to *design* of GSS-enabled interventions in the strategic evaluation of a comprehensive urban plans.

This paper applies the VC-Model to the *evaluation* of an urban planning meeting (including the use of the Groupsystems software tool) and meeting follow-up. Evidence is presented to test four propositions, each of which focuses on the degree to which the application of the VC-Model unlocks practical value.

Data was gathered via phenomenological longitudinal action research that started two years before and ended three years after the GSS-enabled meeting. Data gathering and analysis proceeded simultaneously, driven by reflection, and by ongoing triangulation of qualitative data collected at different times and from different sources.

Sources included: notes from interviews, focus groups and a three-day strategic planning workshop conducted for urban planners; notes on 50 hours of meetings and phone conversations with staff and consultants from a regional planning authority; direct observations and audio and video records of the eight-hour GSS-supported meeting; in-depth study of the documented inputs (i.e. the briefing papers) and outputs (i.e. the electronic transcript) of the GSS-supported meeting; perceptions of participants gathered at the end of the meeting in both free-text and questionnaire form; in-depth study of the report of the strategic evaluation of growth options published by the regional planning authority (Auckland Regional Council 1997); correspondence and continuing contact with regional planning authority staff; media and websites.

The remainder of the paper is structured as follows. Findings relating to propositions 1-4 are presented in sections 2-5 respectively. The paper concludes with a discussion of the nature of the knowledge discovered in GSS-enabled interventions and the potential for a Habermasian analysis of the knowledge discovered in other collaboration systems and technologies.

2. Proposition One

The first proposition is that the application of the VC-Model reduces equivocality about the value and purpose of the GSS-enabled intervention in the strategic evaluation of a comprehensive urban plan.

2.1. The VC-Model

Figure 1 presents the VC-Model developed in Sheffield (2004). The VC-Model may provide a useful multi-disciplinary and multi-methodological approach to the problem-structuring aspects of GSS-enabled strategic planning. For example, phases one to three develop strategic intentions; steps four to six develop strategic outcomes. There are three levels in the hierarchy. The first or upper level assesses knowledge discovered in the personal world against the criteria of sincerity. The middle level assesses knowledge discovered in the interpersonal world against criteria of rightness. The third or lower level assesses knowledge discovered in the objective world against the criteria of truth. Development of intentions and outcomes produce a Wittgenstein 'language game' in which success is measured by cohesion of the 'chain of evidence' (Yin 2003) linking adjacent phases, and the coherence of the 'web of inferences' as a whole.
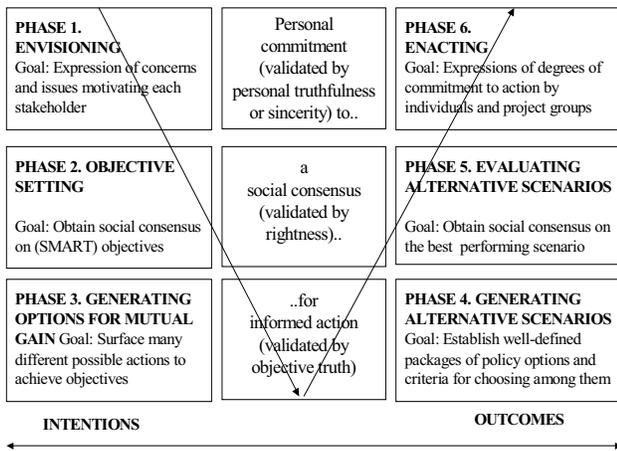

Figure 1. The VC-Model

Inferences in the upper half of the VC-Model are different from those in the lower half. The quality of each is captured by research by Daft and Lengel (1986) into organizational (i.e., interpersonal) information requirements, media richness and structural design. The top half of the VC-Model is concerned with equivocality or conceptual confusion, while the bottom half is concerned with uncertainty or lack of empirical data. These concepts have been the focus of studies in sense-making in organisations (Weick 2001), electronic media (Ngwenyama and Lee 1997, Zack 1993), and GSS (Sheffield 1995). In the VC-Model, activities that link

levels one and two *reduce equivocality* while activities that link levels two and three *reduce uncertainty*. Linking phase one and two reduces equivocality about the multiple ways in which stakeholder visions may be approached, stabilized and framed. Linking phases five and six reduces equivocality about the context in which the scenarios are meaningful. Linking phases two and three reduces uncertainty about the multiple ways in which the objectives can be instantiated. Linking phases four and five reduces uncertainty about the multiple ways in which the scenarios can be evaluated.

Conflict among different humans (or within one reflective, yet conflicted, human) is sought by surfacing and testing implied or underlying assumptions about sincerity, rightness and truth. Mutual understanding is constructed via rational communication, that is, via arguments that test (and are tested by) the degree to which claims to sincerity, rightness and truth are valid (Habermas 1984, 1987). *In summary, the purpose of the VC-Model is to develop and test the coherence among intentions and outcomes in each of Habermas three knowledge worlds.*

The concepts in the VC-Model overlap the work of many other authors. The VC-Model is related to what Churchman (1971) calls an inquiring system in the Singerian tradition. Other writers in this tradition (Courtney 2001, Mingers 2001a, 2001b, Mitroff and Linstone 1993, Nutt 1989, Richardson and Courtney 2004) explicitly recognise three perspectives or levels in a value hierarchy: 1. personal, 2, organisational (i.e., interpersonal or social) and 3. technical.

GSS-enabled strategic planning procedures are modeled as six phases (envisioning, objective setting, generating options for mutual gain, generating alternative scenarios, evaluating alternative scenarios, and enacting commitment). These phases are validated by three linked criteria, namely "personal commitment (validated by personal truthfulness or sincerity) to a social consensus (validated by rightness) for informed action (validated by objective truth)." The validity claims and detailed criteria in the VC-Model are applied to develop and test the coherence among strategic planning intentions and outcomes in each of Habermas knowledge worlds.

2.2. Support for Proposition One

Proposition 1 is evaluated via the qualitative analysis of the data sources identified in section one. These sources included notes from interviews, focus groups and a three-day workshop held with planning staff in the regional and territorial authorities. Qualitative analysis of this data showed that the more strategic activities of regional planning staff are represented by the six phases of the VC-Model.

Additional evidence was generated by engagement with, and a thematic appreciation of, articles appearing in local newspapers (primarily *The New Zealand Herald*), and local authority websites (primarily Auckland Regional Council or ARC). Because action on each step is ongoing and is contested by many stakeholder groups on almost a daily basis, the content is voluminous and fragmented, and lacks conceptual integration. For example, a *New Zealand Herald* article on 9 June 2003 is headlined 'ARC accused of bringing the rail business plan to a halt'. An article on the following day proclaims 'Ratepayers in Rodney District and North Shore City will be paying for the new rail network, but not gaining benefits from it'. In summary there is evidence of considerable confusion. Perhaps the only thing that stakeholders agree on is that mutual understanding and the criteria by which it may be evaluated is lacking, but sorely needed.

The VC-Model criteria for success, linked to the validity claims in each of Habermas knowledge worlds, encompass the 'triple bottom line' focus of the strategic urban plan, the types of knowledge required to understand these issues, and therefore the value and purpose of the GSS-enabled intervention, i.e., the strategic evaluation of a comprehensive urban plan (Table 2). This table and the supporting urban planning literature cited in Sheffield (2004) provides theoretical support for the role that the validity claims in the VC-Model play in the strategic evaluation of a comprehensive urban plan.

Table 2. VC-Model criteria and the value and purpose of the GSS-enabled intervention

VC-Model criteria for success	Strategic urban planning focuses on the 'triple bottom line'	Appreciating the triple bottom line requires three types of knowledge	Urban planning meeting processes and outcomes must reflect..	VC-Model validity claims (Habermas 1984-87)
Personal Commitment to	Environment	Individual beliefs, meanings, values and emotions	Expression of personal experience	Personal truthfulness or sincerity
a Social Consensus	Society	Roles, norms, social practices, culture and power relations	Participation in the social world	Rightness
for Informed Action	Economy	Material and physical processes and arrangements	Action to master the material world	Objective Truth

In summary, qualitative analysis of empirical data and urban planning theory identify that the six steps and three validity claims in the VC-Model are central to the purpose of the strategic evaluation of a comprehensive urban plan. This finding, together with the finding that confusion and conflict are endemic in urban planning suggests that the application of the VC-Model will reduce equivocality about the value and purpose of the GSS-enabled intervention in the strategic evaluation of a comprehensive urban plan.

3. Proposition Two

This section tests support for the proposition that GSS enables meeting processes that reduce uncertainty about the constructive enactment of interpersonal understanding.

Data was gathered by direct observation, and by audio and video records of the eight-hour GSS-supported meeting; in-depth study of the documented inputs (i.e. the briefing papers) and outputs (i.e. the electronic transcript). The following focuses on the analysis of a survey of participant's perceptions and the degree to which the findings may be explained by the existing GSS literature.

Survey instruments are available in the literature to evaluate the instrumentality or supportiveness provided by GSS. Survey instruments to collect participant's self-reports have focussed on: negotiation payoffs, group process gains and losses, participant satisfaction and effectiveness, facilitation and/or electronic technology and GSS performance on different types of tasks. The current study uses an instrument previously applied to evaluate GSS-enabled strategic planning (Sheffield and Gallupe 1995). This instrument is generally consistent with the VC-Model. It measures effectiveness at three levels: 1.Overall, 2. Resources and 3. Process. The constructs at the process level are also derived from a model that is generally consistent with the VC-Model (Fig. 2).
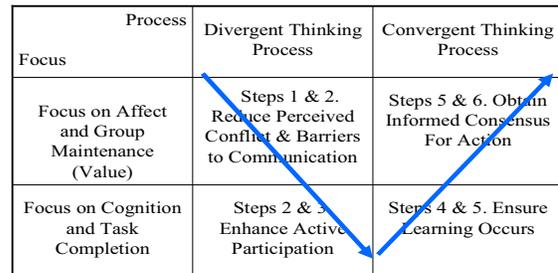
Process Focus	Divergent Thinking Process	Convergent Thinking Process
Focus on Affect and Group Maintenance (Value)	Steps 1 & 2. Reduce Perceived Conflict & Barriers to Communication	Steps 5 & 6. Obtain Informed Consensus For Action
Focus on Cognition and Task Completion	Steps 2 & 3. Enhance Active Participation	Steps 4 & 5. Ensure Learning Occurs

Figure 2. GSS Instrumentality: Measuring the effectiveness of the process

The survey instrument was administered to all participants at the end of the GSS-enabled meeting. Participants' perception of the effectiveness of the GSS-enabled meeting averages 5.9 on a 7 point scale (1 = Ineffective, 7 = Effective) (Fig. 3).

Anonymous comments were collected from participants by means of the Groupsystems Topic Commenter tool. The responses were overwhelmingly positive. Many people expressed surprise that the technology existed and stated that the meeting outcomes would not have been possible without the use of GSS. In

summary, evidence on participants' performance (which includes the joint production of an 80-page document) and participants' perceptions support Proposition 2.
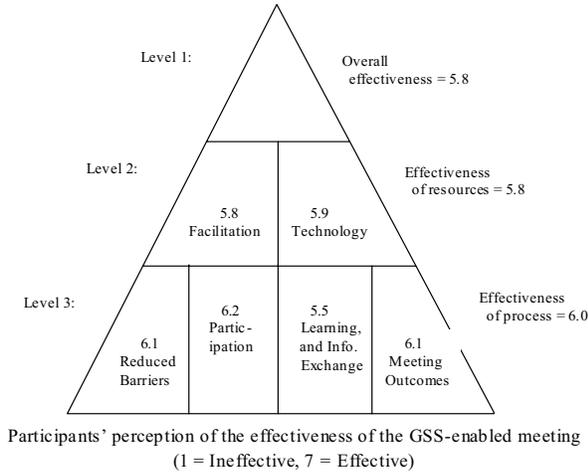

Level 1: Overall effectiveness = 5.8

Level 2: Effectiveness of resources = 5.8

5.8 Facilitation · 5.9 Technology

Level 3: Effectiveness of process = 6.0

6.1 Reduced Barriers · 6.2 Partic-ipation · 5.5 Learning, and Info. Exchange · 6.1 Meeting Outcomes

Participants' perception of the effectiveness of the GSS-enabled meeting
(1 = Ineffective, 7 = Effective)

Figure 3. Participants' perceptions of GSS instrumentality

Empirical evidence strongly supports the proposition that meeting processes increased participant's ability to listen to each other. This finding may not be satisfactorily explained by the existing GSS literature. Because the issues were contentious, the anonymity of the text messages prepared in silence and delivered using Groupsystems Topic Commenter provided much-needed psychological safety. The following paragraph provides some evidence that the technology was instrumental in providing silence as well as anonymity and that the former is at least as important as the latter. Silence is not mentioned in the literature surveyed in the introduction.

The facilitator's observations of the meeting were supported by the video record. The audio track indicated that the meeting was silent for four out of the eight hours. Participant's concentration was intense and reminiscent of the concentration of students taking a final exam. Periods without social interaction created the time and space required for personal reflection. Silence (rather than anonymity) supported the more *truthful invocation* and *sincere expression* of personal experience. Silence (rather than anonymity) provided the personal space for each participant to entertain the possibility that other(s) insights may also be *right*. While silence promoted readiness for mutual problem solving or trust, equivocality about *rightness* is reduced by social presence and a rich communication medium (not anonymity) (Sheffield 1995, Zack 1993).
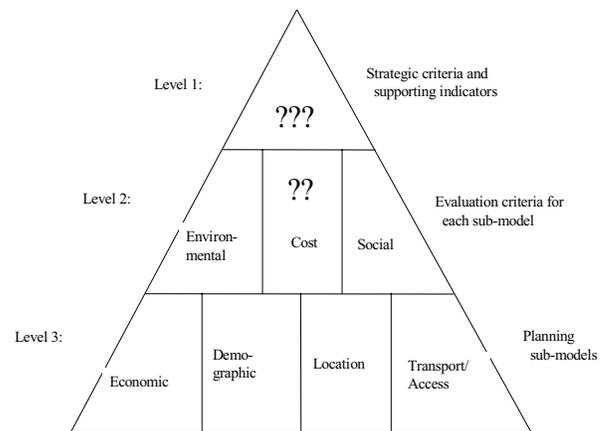
4. Proposition Three

This section tests support for the proposition that the application of the detailed criteria in the VC-Model reduces uncertainty about the knowledge discovered.

ARC planners intend that the key outcome of the GSS-enabled intervention is personal commitment from planners in the seven constituent territorial authorities to a social consensus for action informed by the performance of three scenarios against a comprehensive set of strategic criteria. Claims based on the detailed criteria in the VC-Model are examined in the following sections. Section 4.1 explores the evaluation of objective truth, section 4.2 explores the evaluation of rightness, and section 4.3 explores the evaluation of truthfulness or sincerity.

4.1 Evaluation of Objective Truth

Objective truth and a cognitive, objectivating attitude towards the facts drive phases three and four of the VC-Model (Figure 1). The detailed criteria (viz., goal, strategy, procedure, issues, problems) in seeking objective truth are described in Sheffield (2004). Studies by technical experts are conducted within each planning sub-area. All three scenarios specify common input parameters and values (e.g., population growth) and common output criteria and indicators (e.g., population density and distribution). The experts employ rigorous procedures to measure, for example, trip times in minutes, pollutants in parts per million, and the costs of implementing each scenario.

Cognitive conflict is managed via the use of a hierarchy of criteria and supporting indicators. Yet the complexity of the issues is such that the indicators are not well grounded in fact. For example without detailed (and therefore expensive) study all cost estimates are approximate. While claims to objective truth are mostly successful within the more analytical sub-disciplines they are less successful at higher levels of inclusiveness, and impossible to separate, resolve or rank.

Level 1: Strategic criteria and supporting indicators

???

Level 2: Evaluation criteria for each sub-model

Environ-mental · ?? Cost · Social

Level 3: Planning sub-models

Economic · Demo-graphic · Location · Transport/ Access

Claims to objective truth: 1. Were mostly successful within the more analytical sub-disciplines. 2. Were less successful at higher levels of inclusiveness. 3. Were approximate and impossible to separate, resolve or rank.

Figure 4. Evaluating claims to objective truth

In summary, there is no analytically sound method of combining knowledge from different sub-specialties. The meaning of, and the values given for, the indicators reflect participants' relationships and personal pre-conceptions, pre-judgments and pre-judices as well as the 'facts' established by experts. Figure 4 identifies the overall nature of the result. Under the norms of a cognitive, objectivating attitude towards the facts, the 'truth' is that all three options are equal.

4.2 Evaluation of Rightness

Rightness and establishing legitimate interpersonal relations drive phases two and five of the VC-Model (Fig. 1). The detailed criteria (viz., goal, strategy, procedure, issues, problems) in seeking rightness are described in Sheffield (2004). The scenario options and criteria are documented in a simplified 150-page briefing document and evaluated by the reaction/interpretation by stakeholder groups. The briefing document is designed to support judgments based on the rows (criteria) and columns (scenarios or options) of a standard multi-criteria decision framework. The nature of the urban planning process is such that, after seven years of effort: 1. many issues remain ill-defined, intertwined and contentious; 2. unforeseen contingencies (including unexpected increase

in the urban population) have introduced new planning requirements.

Establishing legitimate interpersonal relations, and maintaining them over a long period of time, is the key to appreciating and evaluating the complex (recursive) interconnections among the elements of the planning process. The GSS-enabled meeting will couple the shaping of social presence via the intendedly-neutral facilitator and his choice of communication media, with the efficiency of GSS technology. The combination is intended to 1. support the creation of a socially and politically acceptable method of surfacing, recording and analysing the diverse interests of stakeholders, 2. assist in managing conflicting interests and in ensuring the attendance of parties who are weak and/or intransigent.

The use of the Groupsystems GSS software and an experienced facilitator did appear to produce the process support, process structuring and content structuring effects documented in Dennis et al (1997). On each of the five urban planning criteria individual participants: 1. produced an eight-page aggregation of individual views, 2. participated in discussion that lead to group consensus on a non-redundant list of key issues, 3. rated issues to produce a group consensus on a prioritized list of key issues, and 4. produced a succinct personal summary in the form of a one-line preference ordering of the three options (Sheffield 2004, Table 9). The electronic record

Table 3. Evaluating claims to rightness – pattern of evidence

Dialogue on performance of each option against each criterion	Option 1: Consolidation -more environmental, etc, planning controls -higher density -more passenger transportation (buses, light rail)	Option 2: Composite of - consolidation - expansion Options	Option 3: Expansion -less environmental, etc, planning controls -lower density -more private transport (cars)
Criterion A: Economic Values			
Criterion B: Amenity & Land-scape Values			
Criterion C: Housing Choice			
Criterion D: Access and Transportation			
Criterion E: Coastal Water Quality			

Claims to consensus were:

1. Strengthened by a group consensus on the nature of the evidence and the prioritised lists of key issues within each criterion. (Some 10 pages of evidence were recorded and discussed on each criterion through the use of Groupsystems' Topic Commenter.)

2. Weakened by the disparity between these social agreements and the associated preference orderings. (The latter is a one-line entry recorded privately, without discussion, by each participant.)

of these activities provides evidence on the judgment policy of participants as they made decisions at increasing levels of aggregation. Note that the judgments elicited in step 1 relate more directly to the intendedly-objective evidence in the briefing document prepared by the regional council, the judgments elicited in steps 2 and 3 reflect more directly the collective norms of the stakeholders from the seven authorities, and the private judgment elicited in step 4 reflects more directly the personal views of individual participants. (Fig. 1)

The use of Groupsystems Topic Commenter (Sheffield 2004) did produce a well-documented consensus that, based on the nature of the evidence in the briefing document and the *prioritised list of key issues*, all options are equally preferred (tables 3 and 4). For example, on two of the five urban planning criteria the highest priority issue was a statement to the effect that there was 'no difference between the options'. No clear statements of difference emerged from the ten pages of electronic text generated on any of the five urban planning criteria. Yet when participants expressed their preferences they chose Option 1 on four out of five criteria (Table 4).

This discrepancy between the *pattern of evidence on each criterion* and the *summary of preferences* was noted at the time by several of the non-voting participant observers and the facilitator. One explanation offered is that at lower levels of aggregation participants place more weight on the (more objective) briefing document and at higher levels they place more weight on their (more personal) experience and opinions (Fig. 2). While the cause for the discrepancy is as yet unclear, what is clear is that, under the norms of established legitimate interpersonal relationships, Option 1 is more 'right' for the participants than Option 2 or Option 3. (See the underlined modal values in Table 4).

Table 4. Evaluating claims to rightness: Summary of preferences

CRITERION	OPTION ONE Circle one: ++ / + / 0 / - / --					OPTION THREE Circle one: ++ / + / 0 / - / --				
A: $Cost	3	5	6	2	0	0	2	3	6	5
B: Amenity & landscape values	4	7	3	1	1	3	1	3	4	5
C: Housing choice	1	7	3	3	2	5	7	2	1	1
D: Access & transportation	5	7	3	1	0	1	3	2	5	5
E: Coastal water quality	5	1	4	4	2	0	1	2	3	10

4.3 Evaluation of Personal Truthfulness or Sincerity

Personal truthfulness or sincerity and disclosure of speaker's subjectivity drive phases one and six of the VC-Model (Figure 1). The detailed criteria (viz., goal, strategy, procedure, issues, problems) in seeking personal truthfulness or sincerity are described in Sheffield (2004). The goal is disclosure of speaker's subjectivity, unconstrained by the structure of the model and unrestrained by social agreements. The strategy is to invite each voting participant to write a personalized account of what it will be like to live in Auckland in 2021 under each of options 1, 2 and 3, then invite them to read other's accounts to identify the most valuable visions. Through the use of the Groupsystems Topic Commenter tool this envisioning procedure is completed in 50 minutes. Because each account is identified only by a code, anonymity is almost complete.

Issues and problems were encountered in the procedures for establishing objective truth and rightness. Issues and problems also exist with the subjectivity encouraged by this highly aggregated or holistic procedure (Sheffield 2004). Shallow thinking is not necessarily the problem insomuch as most participants have been involved over a period of years in the iterative development of the plan that they are now strategically evaluating.

In the GSS-enabled meeting participants did feel free to express personal commitment to act *for or against* each option. The results are striking. The most valued visions of what it is like to live in Auckland in 2021 showed intense personal support for Option 1, a lack of engagement with Option 2, and a willingness to work against Option 3. Under the norms of disclosure of speaker's subjectivity 14 of the 16 participants stated that they will, in all truthfulness, only support Option 1.

This is a very different judgment to the more moderate support given Option 1 under the norms of rightness (section 4.2) and the lack of separation between the three options found under the norms of objective truth (section 4.1).

The evidence on all three validity claims is consistent with the explanation that at lower levels of aggregation participants place more weight on the (more objective) briefing document and at higher levels they place more weight on their (more personal) experience and opinions. This explanation entails the supposition that, overall, the personal opinions of participants do not match the evidence in the 150-page brief. Discussion on this issue is continued in section five.

5. Proposition Four

This section tests the proposition that reflection on the GSS-supported meeting and the validity claims in the VC-Model enhance the value of the knowledge discovered.

The author's reflection on the *GSS-supported meeting* was assisted by his continuing contact with participants (section 3) and experience with previous GSS-supported meetings for strategic planning (Sheffield and Gallupe 1995). A key meeting outcome was the momentum (informed consensus for action) generated by enhanced goodwill and an 80+ page document. The latter documented in considerable detail the focus on each of the VC-Model criteria and the rich interconnection of evidence from separate evaluative frames. Different judgments were made from technical, social and personal frames that participants appeared to accept as valid. The meaning associated with the resultant pattern of judgments remained a mystery for some months after the meeting had ended.

Reflection on the *evaluation of objective truth* revealed that, although many 'facts' had been documented about the scenario options, the analysis of options was considered by a majority of participants to be insufficiently extreme to produce significant variance. The preference rankings that participants could not separate were based on options evaluated over a 30-year planning horizon and a 50% growth in population. In response some participants advocated that the options be reworked with a 50-year planning horizon and a 100% growth in population.

Reflection on the *evaluation of rightness* also placed considerable weight on the extensive documentation gathered by means of GSS technology on a rich array of qualitative responses to the 150-page briefing document. Some participants (including the facilitator) were puzzled and perturbed that the *prioritized lists of key issues* indicated no preference for any one option while the *preference ratings* indicated a clear preference for one scenario option (section 4.2).

The puzzle about the meaning of this difference was replaced by the growing realization that participants were expressing their belief that the scenarios investigated failed to capture important aspects of the debate. The richness of the GSS-enabled intervention was providing evidence that two perspectives were being addressed simultaneously: 1. denoting the objectively *right answer* to the questions framed by the seven-year planning cycle; 2. expressing personal concerns that the planning cycle should address the *right questions*. Upon reflection the facilitator and others agreed that: 1. reducing uncertainty within a given framework is qualitatively different from, and not reducible to, 2. reducing equivocality about the rightness of the framework. The discrepancy found between the two answers is not an error but a measure of the sensitivity of the results of inquiry to evaluative frames that are theoretically distinct and mutually complementary.

Reflection on the *evaluation of personal truthfulness or sincerity* added considerable weight to this interpretation. This dialogue was not constrained by the plan or restrained by the social presence of those who produced the plan. It produced incontrovertible personalized and subjective evidence that participants strongly favored only one option. In the light of this finding the inability to separate the options based on a 30-year planning horizon appeared suspect. Participants recommended that a new planning round should be conducted based on scenario options that looked out far enough to capture the 'facts' and/or to legitimate the 'values' that participants considered most important. Planners for the regional authority began to agree. They completed another planning round called 'The Growth Forum' in only two years that found strong support for Option 1 (higher density, more buses, light rail, etc).

Armed with these insights we can understand more clearly the *three-fold nature of GSS instrumentality in strategic planning*: 1. Support for the 'psychological safety' needed to invoke and express multiple individual perspectives (Personal level); 2. Support for dialog that interweaves evidence (reflections and experiences, decisions and actions, individual feelings and objective facts) from multiple, conflicting yet mutually supportive evaluative frames (Social level); 3. Support for the development and documentation of validity claims about objective truth, rightness and personal truthfulness or sincerity, and the degree of coherence among them (Technical level).

It is noted that GSS instrumentality or support cannot be understood without a model of inquiry (in this case the VC-Model) that identifies the design criteria against which the success of strategic urban planning is evaluated.

6. Conclusion

This article envisions GSS-enabled interventions as electronically supported discourses, designed and evaluated against a gold standard of ideal speech in a perfect communication environment. Evidence has been presented that an experienced facilitator may employ GSS technology to design and evaluate an electronic discourse that surfaces conflict among different humans (or within one reflective, yet conflicted, human) in a constructive manner. Mutual understanding is constructed via rational communication, that is, by arguments that test (and are tested by) the degree to which claims to sincerity, rightness and truth are valid.

Table 5. Correspondence between Propositions and the VC-Model

Propositions Investigated	VC-Model
1. The application of the VC-Model *reduces equivocality* about the value and purpose of the GSS-enabled intervention (Section 2)	1. Linking phase one and two of the VC-Model *reduces equivocality* about the multiple ways in which stakeholder visions may be approached, stabilized and framed.
2. GSS enables meeting processes that *reduce uncertainty* about the reality of interpersonal understanding (Section 3)	2. Linking phases two and three of the VC-Model *reduces uncertainty* about the multiple ways in which the objectives can be instantiated.
3. The application of the detailed criteria in the VC-Model *reduces uncertainty* about the knowledge discovered (Section 4)	3. Linking phases four and five of the VC-Model *reduces uncertainty* about the multiple ways in which the scenarios can be evaluated.
4. Reflection on the validity claims in the VC-Model and the GSS-enabled intervention *reduces equivocality* about the value of the knowledge discovered (Section 5)	4.. Linking phases five and six of the VC-Model *reduces equivocality* about the context in which the scenarios are meaningful.

These concepts are embodied in a Habermasian Inquiring System called the VC (Validity Claims) Model and employed to design and evaluate the GSS-enabled strategic evaluation of a comprehensive urban plan. The validity claims and detailed criteria in the VC-Model are applied to develop and test the coherence among strategic planning intentions and outcomes in each of Habermas knowledge worlds. Inferences in the upper half of the VC-Model are concerned with equivocality or conceptual confusion, while the bottom half is concerned with uncertainty or lack of empirical data.

Evidence for the four propositions in Table 1 were presented in sections two through five. The overall shape of the argument both tests and is tested by some key concepts in sensemaking and Habermasian inquiring systems. For example both the propositions and the underlying phenomenon of GSS-enabled electronic discourse employ the concepts of equivocality and uncertainty. In both Table 1 and the VC-Model equivocality is reduced in the upper part and uncertainty in the lower part. This correspondence is documented in Table 5.

6.1 Nature of the knowledge discovered in GSS-enabled interventions

Inquiry in strategic urban planning is inquiry in an area that has a 'hidden profile' and is therefore the occasion for confusion, disagreement, conflict and the exercise of power. The evidence presented in sections four and five

described the degree of coherence among strategic planning intentions and outcomes in each of Habermas knowledge worlds. The nature of the knowledge discovered about preferences for Option 1 over Options 2 and 3 is summarized in Figure 5.
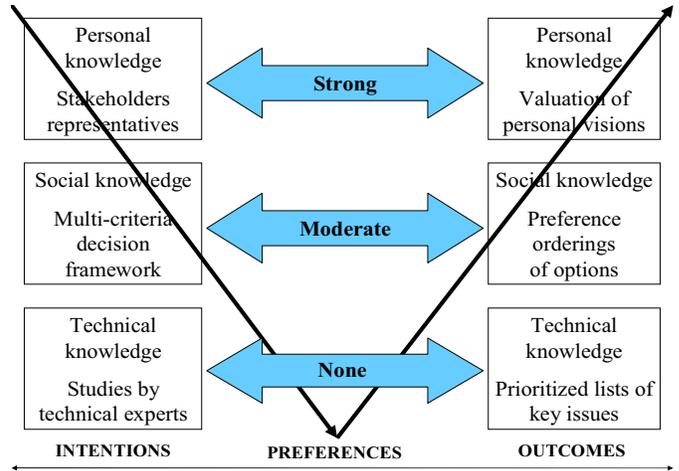

Figure 5. Nature of the knowledge discovered about preferences for Option 1 over Options 2 and 3

Stakeholders preference for Option 1 became apparent only after they moved beyond on the studies by technical experts (Fig. 3) and the prioritized lists of key issues (Table 3). A more personal and reflective process is responsible for the preference orderings of options (Table 4) and the valuation of personal visions (section 4.3). The discrepancies between decision outcomes were the occasion for considerable confusion. On reflection this is not an error but a measure of the sensitivity of the results of inquiry to evaluative frames that are theoretically distinct and mutually complementary (Fig 6).
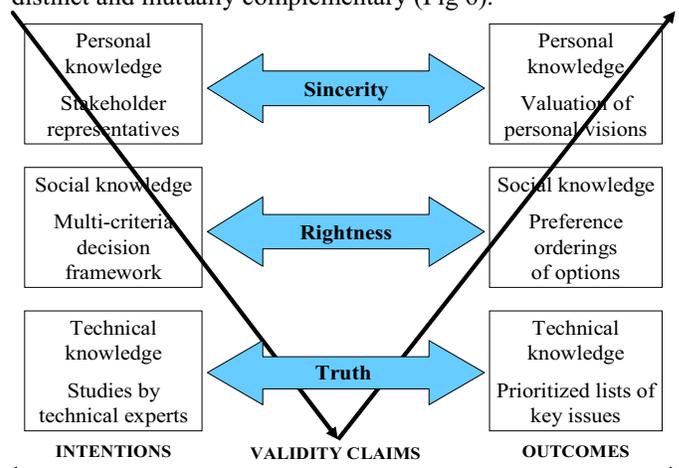

Figure 6. Some elements of a Habermasian Inquiring System for strategic planning

6.2 The potential for a Habermasian analysis of the knowledge discovered in other collaboration systems and technologies

This article envisions GSS-enabled interventions as electronically supported discourses, designed and evaluated against a gold standard of ideal speech in a perfect communication environment. The system of inquiry sketched in figures 1 and 6 may be applied in areas beyond GSS-enabled strategic planning to discover the degree of coherence among intentions and outcomes in each of Habermas knowledge worlds. Other GSS applications, and other collaboration systems and technologies that require facilitation and problem structuring, will likely benefit from a Habermasian perspective on inquiry. The power of the Habermasian approach lies not in the achievement of enlightenment but in the appreciation of the nature of ignorance.

7. References

[1] Ackerman, Fran. (1996), "Participants' Perceptions on the Role of Facilitators using Group Support Systems," Group Decision and Negotiation 5(1), 93-112.

[2] Auckland Regional Council (1997), Auckland Strategic Planning Model (ASP2): Second Round Summary Report, 87 pages.

[3] Checkland, P. and Holwell, S. (1998), Systems, Information and Information Systems, Wiley, Chichester, UK.

[4] Churchman, C.W. (1971), The Design of Inquiring Systems: Basic Concepts of Systems and Organizations, Basic Books, Inc., New York, NY.

[5] Clawson, Victoria, and Robert Bostrom. (1996), "Research-Driven Facilitation Training for Computer-Supported Environments," Group Decision and Negotiation 5(1), 7-30.

[6] Courtney, J.F. (2001), "Decision making and knowledge management in inquiring organizations: A new decision-making paradigm for DSS", Decision Support Systems, Vol. 31, No. 1, pp. 17-38.

[7] Daft, Richard, and Robert Lengel. (1986), "Organizational Information Requirements, Media Richness, and Structural Design," Management Science 32(5), 554-571.

[8] Dennis, Alan R., and Monica J. Garfield. (2003), "The adoption and use of GSS in project teams: Towards more participative processes and outcomes", MIS Quarterly, 27(2), 289-323.

[9] Dennis, Alan .R., Tyran, C.K., Vogel, D.R, Nunamaker, J.F. Jr. (1997), 'Group Support Systems for Strategic Planning.' Journal of Management Information Systems, 14(1), 155-184. Summer 1997.

[10] Dennis, Alan R., Barbara H. Wixom, and Robert J. Vandenberg. (2001), "Understanding fit and appropriation effects in group support systems via meta-analysis," MIS Quarterly, 25(2), 167-194

[11] Eden, Colin and Fran Ackermann. (2001a), "SODA – The Principles," In Rosenhead, Johnathan and John Mingers, Editors. Rational Analysis for a Problematic World Revisited: Problem Structuring Methods for Complexity, Uncertainty and Conflict. Second Edition. Wiley 2001.

[12] Eden, Colin and Fran Ackermann. (2001b), "SODA – Journey Making and Mapping in Practice," In Rosenhead, Johnathan and John Mingers, Editors. Rational Analysis for a Problematic World Revisited: Problem Structuring Methods for Complexity, Uncertainty and Conflict. Second Edition. Wiley 2001.

[13] Fjermestad, Jerry, and Starr Roxanne Hiltz. (1999), "An assessment of group support systems experimental research: Methodology and results," Journal of Management Information Systems, 15(3), Winter 1998-1999, 7-149.

[14] Fjermestad, Jerry, and Starr Roxanne Hiltz. (2001), "Group support systems: A descriptive evaluation of case and field studies," Journal of Management Information Systems, 17(3), Winter 2000-2001, 115-159.

[15] Habermas, J. (1984), The Theory of Communicative Action Volume 1: Reason and the Rationalization of Society, Translated by Thomas McCarthy. Beacon Press: Boston.

[16] Habermas, J. (1987), The Theory of Communicative Action Volume 2: Lifeworld and System, Translated by Thomas McCarthy. Beacon Press: Boston.

[17] Habermas, Jurgen, and T.H. Nielsen. (1990), "Jurgen Habermas: Morality society, and ethics: An interview with Torbin Hviid Nielsen," Acta Sociologica, 33(2), 93-114

[18] Markus, M. Lynne, Ann Majchrzak, and Les Gasser. (2002), "A design theory for systems that support emergent knowledge processes," MIS Quarterly, 26(3), 179-212.

[19] Mingers, J. (2001a), "Multimethodology – Mixing and matching methods", in Rosenhead, J. and Mingers, J. (Eds), Rational Analysis for a Problematic World Revisited: Problem Structuring Methods for Complexity, Uncertainty and Conflict, 2nd ed., Wiley, Chichester, UK.

[20] Mingers, J. (2001b), "Combining IS research methods: Towards a pluralist methodology", Information Systems Research, Vol. 12, No. 3, pp. 240-259.

[21] Mitroff, I.I. and Linstone, H.A. (1993), The Unbounded Mind, Oxford University Press, Oxon, UK.

[22] Morton, Alec, Fran Ackermann and Valerie Belton. (2003), "Technology-driven and model-driven approaches to group decision support: Focus, research philosophy and key concepts," European Journal of Information Systems, 12, 110-126.

[23] Neiderman, Fred, Catherine Beise, and Peggy Beranek. (1996), "Issues and Concerns About Computer-Supported Meetings: The Facilitator's Perspective," MIS Quarterly 20(1), 1-22.

[24] Ngwenyama, Ojelanki K, and Allen Lee. (1997), "Communication Richness in Electronic Mail: Critical Social Theory and the Contextuality of Meaning" MIS Quarterly, 145-167.

[25] Nutt, Paul C. (1989), Making Tough Decisions, Jossey-Bass Ltd, San Fransisco, CA.

[26] Pervan, Graham P. (1998), "A review of research in group support systems: Leaders approaches and directions," Decision Support Systems, 23(2), 149-159.

[27] Richardson, Sandra M, and James F. Courtney. (2004), "A Churchmanian theory of knowledge management system design," Proceedings of the 37th Hawaii international conference on system sciences, Vol. 1.

[28] Schultze, Ulrike and Dorothy E. Leidner. (2002), "Studying knowledge management in information systems research: discourses and theoretical assumptions," MIS Quarterly, 26(3), 213-242

[29] Sheffield, James. (1995), "The Impact of Communication Medium on Negotiation Performance," Group Decision and Negotiation 4(2), 159-179.

[30] Sheffield, James. and Gallupe, Brent. (1995). "Using group support systems to improve the New Zealand economy, Part II: Follow-up results," Journal of MIS 11(3), 135-153.

[31] Sheffield, James. (2004). "The design of GSS-enabled interventions: A Habamasian perspective," Group Decision and Negotiation 13(5), 1-23.

[32] Weick, K. (2001), Making Sense of the Organization, Blackwell, Oxford UK.

[33] Yin, Robert. (2003), Case Study Research: Design and Methods. Third edition. Newbury Park, CA: Sage

[34] Zack, Michael H. (1993), "Interactivity and Communication Mode Choice in Ongoing Management Groups." Information Systems Research 4(3): 207 - 239.