Towards a Design Theory for Collaborative Technologies: Habermasian Analysis of Comprehensive Urban Planning

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Abstract

This article proposes a design theory for collaborative technologies based on pragmatism and multiple discourses (Habermas 1984; Schultze and Leidner, 2002). The practical value of the theory is explored via empirical data gathered in the context of an intervention enabled by Group Support Systems (GSS) in regional governance and comprehensive urban planning. During the study representatives of the regional council and territorial authorities meet to evaluate three scenarios prepared over a seven-year period. Qualitative measures were obtained of the degree of confusion (lack of understanding) and conflict (lack of trust) before and after the meeting, and participant performance and satisfaction with electronic discourse. The focus question is “Do electronic discourses enhance participants’ understanding and trust in scenario planning?”

Keywords: Collaboration systems, emergent knowledge processes, governance, strategic urban planning, critical interpretive case study

1. Introduction

This paper applies ideas about pragmatism [1, 2] and systemic intervention [3, 4] to a practical problem. The dual focus on concepts and practical experience is in the tradition of enquiring systems [5], problem structuring methods [6], systems thinking [7, 8], and critical pragmatism [9]. The purpose is to identify the concepts of rationality associated with different discourses [10], and to propose a discourse-based design theory for collaborative technologies [11]. The design principles directly address the issues of governance and power relations, and accept that elements of dissensus – confusion and conflict - are integral to collaboration. The resulting theory complements Information Systems design theories [12, 13], and the engineering of collaboration in organizations [14], that more directly address issues associated with the IT artifact.

The practical problem is as follows. In the urban region of Auckland, New Zealand, decision making is embedded in an historical context. Decision making requires communication on complex issues among a large number of local government organizations. Actions in the Auckland region are governed by elements of national government, the regional council, four cities and three districts. These authorities are collectively responsible for some 64 organizations. The public participates in governance by electing officials, working with one of 31 community boards, and paying taxes. While the purpose of the system is collaborative, the political, funding, and operational complexities reflect confusion (lack of understanding) and conflict (lack of trust). Confusion arises from the complexity of the power relationships among decision makers. Local Government legislation confers powers on the regional council to plan for the region ‘in consultation with’ territorial authorities. Each authority maintains a planning office responsible to its own council. Each is empowered to look after the...
Table 1. Research paradigms. Adapted from [21].

<table>
<thead>
<tr>
<th>Research Paradigm</th>
<th>Positivist</th>
<th>Interpretivist</th>
<th>Critical Pluralist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perspective of researcher</td>
<td>Stands aloof and apart from stakeholders and subject matter so that decisions can be made objectively</td>
<td>Becomes more fully involved with stakeholders and subject matter to achieve a good understanding of the stakeholders’ world</td>
<td>Active involvement with stakeholders to surface illusions and to implement alternatives that will improve their world</td>
</tr>
<tr>
<td>Goodness or quality criteria</td>
<td>Conventional benchmarks of “rigor”; internal &amp; external validity; reliability.</td>
<td>Trustworthiness and authenticity; Fit with social norms and values.</td>
<td>Historical situatedness; erosion of ignorance and misapprehensions; sincerity of beliefs; action stimulus.</td>
</tr>
<tr>
<td>Validity claim</td>
<td>Objective truth of evidence base</td>
<td>Rightness of community norms</td>
<td>Truthfulness in self-understanding, and sincerity in expression</td>
</tr>
</tbody>
</table>

interests of its own constituency and expects the comprehensive urban plan to serve its own interest. Regional planning is informed not by a search for an analytical hierarchy but by communication to resolve tensions between emergent competitive and cooperative goals of stakeholders. Collaborative planning occurs from time to time under the auspices of the regional council, the mayoral forum, and the regional growth forum. Planning becomes the exercise of technical skills on behalf of constituencies with a history of confusion, conflict, and the exercise of power.

Over the last three or four decades a combination of limited resources and population growth has exacerbated conflict, especially about transportation issues. Trip times are increasing and transportation costs, which include lost productivity, are increasing. While transportation modelling is used extensively, issues of governance, funding, and collaborative planning remain. Organizational roles include control, participation, planning, funding, and operational/management. Each organization manages a part of the transport system but none is responsible for the system as a whole. In the absence of a single governance structure, the deliberations in the regional growth forum are likely to remain conflicted [15, 16].

1.1 Collaborative technologies

The role of collaborative technologies in planning meetings of the regional growth forum is unclear. Group Support Systems (GSS) technology offers advantages but, in this case, the design of decision making processes must directly address challenges to governance, and inter-organizational conflict. For example, if GSS technology is employed by the regional growth forum, whose interpretation of the ends served by the electronically-supported meeting should determine success? Who is the client? [17] What roles and responsibilities will be recognised? [18] Is it sensible to expect powerful stakeholders to use collaborative technologies when it introduces unwanted accountability and makes their exercise of power more difficult? [10, 19] By what concept(s) of rationality or validity should the facilitator be held accountable for a positive outcome? [20] Concepts to guide a systemic intervention, and illuminate the complexity of the issues in which these decision makers are embedded, must draw on multiple perspectives [21] (Table 1).

While [12-14, 22] offer design support and theoretical foundations from a positivist perspective, and [23-27] offer design support and theoretical foundations from an interpretive perspective, we see the need to approach situations with a significant degree of dissensus from a Habermasian perspective [11, 28, 29]. We hope that a focus on Habermasian validity claims will bridge the gap between reflexive/theoretical applications of critical perspectives and their practical application as facets of a design theory for collaborative technologies, such as group decision support. This aim is also supported by [1-9, 30-37].

This research provides a retrospective account of a discourse theory that is aligned with the author’s intuitive design, implementation, and evaluation of an electronically-supported decision-making meeting for the regional growth forum. The report is organized as follows. Section 2 describes the discourse theory. Section 3 describes methodology. Findings from the periods before, during and after the meeting are reported in sections 4, 5, and 6, respectively.

2. Discourse theory

Habermas, and pragmatism in general, are key sources of theory for regional planners, especially those concerned with personal experience,
collaborative techniques, institutional practice, and decision making [38-41]. This section develops a practice-oriented architecture for Habermasian discourses and operationalizes the resulting theory for use in scenario planning.

2.1 Habermasian discourses

Outhwaite (1996, p.12) [42] claims that the central idea in Habermas’ Theory of Communicative Action is remarkably simple. It is that every standard use of language to make statements involves certain presuppositions (claims to validity): that what the speaker says is true, that it is sincerely meant, and that it is normatively appropriate. Habermas gives the example of a professor asking a seminar participant to fetch a glass of water. The participant may question three types of validity: 1. Factual presupposition or objective truth that there is water available (“Is there water? Where is the water?”); 2. The normative appropriateness or rightness of such a request. (“Do you think we are in a restaurant?”); 3. The professor’s sincerity or truthfulness in asking for it (“Are you kidding?”). Habermasian inquiry evaluates three perspectives on knowledge.

Technical Perspective. The least inclusive, lowest or most embedded level is the world of external nature, i.e., how it is, the technical world of material fact that is the totality of all entities about which objectively true statements are possible, or could be bought about by purposeful intervention. The mode of existence is objectivity. The mode of access is observation. The mode of validation is objectivity.

Interpersonal perspective. The middle level is our world of society, i.e., what we say, the social world that is the totality of interpersonal relations legitimately regulated by contextual expectations or norms. The mode of existence is inter-subjectivity. The mode of access is participation. The mode of validation is truthfulness.

Personal perspective. The most inclusive, holistic or highest (i.e., most aspirational) level is my world of internal nature, i.e., why I feel, the personal or subjective world that is the totality of the experiences to which the speaker or actor has privileged access. The mode of existence is subjectivity. The mode of access is experience. The mode of validation is truthfulness.

Habermasian discourses provide a standard of excellence for the reflective communicative action undertaken by two or more stakeholders in order to stabilize mutual understanding. Conflict among different humans (or within one reflective, yet conflicted, human) is understood by surfacing, testing, and integrating discourses on three perspectives on knowledge. For each knowledge perspective, prospective and retrospective reflections constitute separate discourses that surface collaborative intentions and outcomes, respectively. Group decision is seen as a collaborative process that seeks “rightness” in the fit (coherence) between evolving problem representation and solution hierarchies, each of which is defined by relations between personal values, interpersonal objectives and technical decision criteria [43]. Integration may be effected by discourses on intentions that proceed from the personal to the technical, followed by discourses on outcomes that proceed from the technical to the personal.

Each pair of discourses (intention and outcome) in the same knowledge perspective evaluates intentionality (rationality) via the relevant knowledge claim. Habermasian inquiry develops and tests the coherence among intentions and outcomes via the gold standard of ideal speech i.e., social actors’ emergent claims for valid technical, interpersonal and personal knowledge. The standard of excellence can be expressed as follows: personal commitment (validated by truthfulness) to an interpersonal consensus (validated by rightness) for technical excellence (validated by objective truth) (Figure 1).

![Figure 1 Architecture of Habermasian discourses](image-url)

2.4. Operationalization for comprehensive urban planning

Habermasian discourses and architecture may serve as the archetype for mid-range theories useful in areas that require a critical appreciation of conflicting perspectives. Strategic planning involves the surfacing and testing of assumptions from multiple perspectives [44]. In dialectical terms a pair of perspectives is seen as an Hegelian thesis and
antithesis [45]. Ignorance is reduced via active engagement with the confusion and conflict that is required to reconcile opposing perspectives and give birth to a new, more current synthesis. A common application of GSS technology is the support of groups engaged in strategic planning activities [46, 47]. Strategic planning is complex and lacks well-articulated theoretical assumptions [48] and guidelines for practice [49]. Therefore a mid-range operational model was created for the purpose of developing and testing the coherence between intentions and outcomes via scenarios developed in the context of strategic planning (Figure 2).

3. Methodology

This section describes the methodology by which empirical evidence is generated. The focus question is “Do electronic discourses enhance participant’s trust and understanding in scenario planning?” Because of the complexity of the issues, and the importance of power relations, and the emergent nature of their interactions, this question will be difficult to measure with precision. A non-positivist method of inquiry is adopted that draws on elements of pragmatism [1, 2], Churchmanian enquiring systems [5], Hegelian dialectic [45], and Habermas’s theory of communicative action [11]. In information systems research, Habermas is closely associated with reflective research of a theoretical nature [50]. (Table 2). In regional planning, Habermas is employed in a practical manner to reduce confusion and conflict about existentially real decisions made in complex institutional settings. The research aims to apply the architectural frameworks developed in section 2 in a practical way to a complex decision made by the regional growth forum. The methodological findings are intended to contribute to the integration of all four quadrants in Table 2.

<table>
<thead>
<tr>
<th>Theoretical</th>
<th>Decisionistic</th>
<th>Reflective</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

The aim is to describe the general nature of the phenomena observed and to interpret actions, events, and consequences. The purpose of the methodology is to identify the evolution of validity claims through the pre-meeting, meeting, and post-meeting phases of decision making. Data is gathered before, during, and after an electronically-supported meeting. In the focal meeting evidence is also sought on participants’ satisfaction with electronic discourse. The design of the GSS-enabled meeting reflects the following principles of Habermasian electronic discourse.

Technical Perspective. Are claims to objective truth presented via briefs by technical experts? Are these critically examined and documented? Is the procedure for evaluating the evidence validated by a willingness to adopt a cognitive, objectivating attitude towards the facts?

Interpersonal Perspective. Are claims to rightness enacted via the inclusion of all those who are legitimately entitled to be represented? Is the procedure for evaluating the evidence validated by full participation in a debate conducted according to the professional norms of participants?

Personal Perspective. Are claims to truthfulness expressive of participants’ subjectivity? Are periods of silence provided as an aid to ethical self-reflection? Are participant’s aspirations unconstrained by technical issues and unrestrained by the interpersonal context?

Coherence. Assuming that emergent claims for valid technical, interpersonal and personal knowledge are established, are they coherent? Do apparent contradictions (thesis and antithesis) serve as precursors to an Hegelian synthesis?

Overall Success. Does Habermasian electronic discourse lead to overall success of the meeting? Success is conceptualized in Churchmanian terms as a meeting that creates the capability of choosing the right means for one’s desired ends. This requires participants to develop and integrate perspectives from generic roles that Churchman terms designer, decision maker and client [5]. More specifically, success is indicated by insight leading to a consensus model that provides decision makers with a rationale for action.
Evidence on the evolution of validity claims requires a study that is sensitive to the historical context. The data reported is part of a larger study that is a modified historical analysis. This report focuses on data collected in the key period, that is, the pre-meeting, meeting and post-meeting phases of the focal electronically-supported meeting. Sources include: 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 focal 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 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 subsequently published by the regional planning authority [51].

The focal meeting is sponsored by mayors as part of the regional growth forum. The purpose of the meeting is the strategic evaluation of a comprehensive 30-year plan for the Auckland region. This plan, known as the Auckland Strategic Planning Model, had been constructed over a seven-year period. It developed three scenarios for an increase in population from 1m to 1.5m. Consolidation drives scenario one. More controls, particularly environmental controls, are imposed to limit the spread of population into rural areas. The result is a higher population density and increased use of passenger transportation (buses, light rail). Expansion drives scenario three. Planning controls are relaxed, allowing the spread of population into rural areas. The result is lower population density and increased use of private transport (cars, freeways). Scenario two is an amalgam of the more desirable attributes that emerge from the development of scenarios one and three. (Table 3).

Table 3. Evaluation criteria and scenarios

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Scenario One “Consolidation”</th>
<th>Scenario Three “Expansion”,</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. $Cost</td>
<td>More environmental, etc. planning controls; Higher density; More passenger transportation (buses, light rail)</td>
<td>Less environmental, etc. planning controls; Lower density; More private transport (cars, freeways)</td>
</tr>
<tr>
<td>B. Amenity &amp; landscape</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Housing choice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Access and Transportation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Water Quality</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Before the meeting

The database of evidence gathered in the pre-meeting phase revealed that participants in the focal strategic planning meeting were there to represent seven territorial authorities (four cities and three districts) and the Auckland Regional Council (ARC). (Figures 1 and 2). Each was a professional planner responsible for advising his/her own (elected) council. In Churchman’s inquiring system, each participant is primarily a designer of an urban area for which the elected council is the decision maker [5]. Each territorial authority constituted a part of the whole of the Auckland region. The issues associated with embedding ‘a part’ of an urban region in ‘the whole’ are complex. Participants recognized the difficulties in achieving the goals of their respective councils and engaging in consultations about comprehensive region-wide plans with planners from other councils. Perceptions of costs and benefits varied with the allegiance of the participant and the history of his or her interactions. The chief planner for the ARC advised that most participants have been involved in prior consultations marked to some degree by confusion and conflict. As the day of the focal electronically-supported meeting approached it became apparent that considerable difficulties were being experienced by ARC planners, and that these were directly related to technical, interpersonal and personal issues. Details omitted.

Summary. In summary, data gathered before the focal electronically-supported meeting reveals major problems. The empirical evidence is that the pre-meeting phase was fraught with technical, interpersonal and personal problems. There was little or no alignment between personal commitments, consensus and technical excellence. While some stakeholders may have preferred a more tractable problem, the evidence is that they were faced with a situation in which key aspects of the problem situation (intentions) and judgments about the “right” solution (outcomes) [43] have yet to emerge holistically as themes in discourse at three levels – technical, interpersonal and personal. The Habermasian analysis suggests that the observed levels of guarantors (trust, rightness and truthfulness) immediately before the focal electronically-supported meeting were low.

5. During the meeting

The facilitator of the focal GSS-supported meeting chose to develop trust and mutual understanding by applying the concepts in the mid-range operational model for strategic scenario planning. He envisaged the purpose of the meeting as developing and testing the coherence among the validity claims illustrated in Figure 3.
The first part of the meeting focused on expression of concerns and issues motivating each stakeholder. The last part of the meeting focused on expressions of degrees of commitment to action, for and against, any or all of the scenarios. More than half of the agenda items were devoted to electronically-supported discourse about a decision matrix developed in the weeks leading up to the meeting. Three strategic scenarios (columns) were evaluated against five classes of criteria (rows) – cost, amenity and landscape, housing choice, access and transportation, and water quality (Table 3). In Churchman’s inquiring system, the urban planners are characterized as system designers who evaluate the decision matrix to provide insight about measures of performance [5]. The consensus of system designers on a preferred option provides decision makers (the councils that employ the planners) with a rationale for action. Each row of the decision matrix was the subject of a 50-minute session using the GroupSystems Topic Commenter tool [28]. This 50-minute session included speech and the ordering by each participant of his or her preference for each scenario [52].

Participant satisfaction with electronic discourses was solicited anonymously via structured and unstructured methods and the results compared with observational data. The electronic meeting technology used in the focal meeting provided two key functions important to reducing conflict and confusion. Firstly, the software provided automatic recording (‘group memory’) that enabled procedures for idea generation (divergent thinking) to be separated in time from procedures for information analysis (convergent thinking). Secondly, the technology provided anonymity that reduced the anxiety about surfacing sensitive issues. This enabled a separate focus on interlocked issues about relationships (trust) and cognition (understanding). A two-by-two analysis produced four separate measures of satisfaction with electronic discourse (Figure 4).

A structured survey instrument was employed that includes scales for these four measures. The instrument, which has previously been used to evaluate electronically-supported strategic planning in the presence of inter-organizational conflict, was administered to all participants at the end of the electronically-supported meeting. The architecture of the instrument consists of rows and columns that identify process steps linked in a distinctive V-shape similar to that in Figures 1-4 [53]. Participants’ satisfaction with electronic discourse averaged 6.0 on a 7 point scale (1 = Low satisfaction, 7 = High satisfaction). Unstructured comments were collected anonymously from participants by means of the GroupSystems Topic Commenter tool. The responses were overwhelmingly positive. Participants remarked that the meeting generated goodwill and momentum. Many people expressed surprise that the technology existed and stated that the meeting outcomes would not have been possible without electronic support.

Observational data in the form of a video record showed that electronic discourses enabled...
participants to interact in silence for four hours in the eight-hour meeting. The atmosphere was one of intense concentration, as though participants were committed to the success of a difficult cognitive challenge. It was observed that the resulting text received intense scrutiny during the meeting.

In summary, participants’ satisfaction with electronic discourses and observations during and after the meeting, support the value of the electronic discourse. Yet such conventional measures of GSS instrumentality do not directly address the purpose of the meeting. The purpose of the focal electronically-supported meeting is to develop and test the coherence among the validity claims illustrated in Figure 3. The following subsections critiques the success of the meeting through the theoretical lens of Habermasian inquiry.

5.2. Evaluation of claims to objective truth

Participants arrived at the meeting carrying extensive briefing documents that they had received in the mail. The video record showed that the initial expression of personal views was heated. It took some time before most participants were ready for mutual problem solving. Participants then examined the briefing documents in detail as they worked through each row (criterion) of the decision matrix. Each participant was a senior planning generalist and this part of the meeting provided the occasion for the exercise of technical skill. Through the use of the GroupSystems Topic Commenter tool participants produced ten pages of text on each criterion. This text or ‘frozen discourse’ includes key issues that were prioritized via a weighted voting procedure [54].

Table 4. Evaluation of claims to truth

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Prioritized key issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: $Cost</td>
<td>1st Transport dominates the issue (44 points)</td>
</tr>
<tr>
<td></td>
<td>2nd Little difference – are options extreme enough? (27 pts)</td>
</tr>
<tr>
<td>B: Amenity and landscape</td>
<td>Author’s note: All except 15th made no explicit mention of options (233 points)</td>
</tr>
<tr>
<td>values</td>
<td>15th Greater choice, diversity, variety in Option 1 (7 points)</td>
</tr>
<tr>
<td>C: Housing choice</td>
<td>No explicit mention of options in any of the key issues (240 points)</td>
</tr>
<tr>
<td>D: Access and transportation</td>
<td>1st Stuff all difference among options (40 pts)</td>
</tr>
<tr>
<td></td>
<td>2nd Are we wasting money on public transport without major density increases? (25 points)</td>
</tr>
<tr>
<td>E: Water quality</td>
<td>1st Any option has significant sediment impacts (44 points)</td>
</tr>
<tr>
<td></td>
<td>7th Lack of difference among options (14 pts)</td>
</tr>
</tbody>
</table>

Table 4 illustrates the priority and nature of some key issues and the number of votes each received. Participants cast a total of 240 votes for each criterion. The issues were expressed in a manner that is exploratory and descriptive (emergent), rather than evaluative. For example, the issue of the extent to which population density must increase to make public transportation sufficiently viable is central to the choice between scenario one (consolidation) and scenario three (expansion). Yet at the end of a seven-year planning exercise that included extensive traffic modeling, the issue was raised as a question rather than as the evaluation of a factual proposition. No explicit mention of any of the scenario options was included in the top 14 key issues about criterion B (amenity and landscape) or in any of the key issues about criterion C (housing choice). The key issues on the remaining three criteria (cost, access and transportation, and water quality) provided no information about which scenario option was preferred. The detailed investigation of the briefing documents produced a consensus that studies by technical experts had failed to find significant difference between the scenario options. This constitutes support for the following interpretation.

Decision Outcome: Under the norms of a cognitive, objectivating attitude towards the facts, the ‘truth’ is that all three scenario options are equal.

5.3 Evaluation of claims to rightness

At the end of the discourse on a criterion, each participant privately recorded how well each scenario performed against that criterion. This is a more holistic measure than the key issues recorded in Table 4. Participants must interpret technical findings from the perspective of their own norms and values. Each scenario received a rating on a five-point ordinal scale from each voting participant. The aggregated ratings on each scenario were made accessible to each participant. The aggregate preference orderings for scenarios one and three are illustrated in Table 5.

Table 5. Evaluation of Claims to Rightness

<table>
<thead>
<tr>
<th>Performance on Criterion</th>
<th>Scenario One Number who choose</th>
<th>Scenario Three Number who choose</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: $Cost</td>
<td>Number who choose ++ / + / 0 / - / --</td>
<td>Number who choose ++ / + / 0 / - / --</td>
</tr>
<tr>
<td>B: Amenity and landscape values</td>
<td>4 7 3 1 1</td>
<td>3 1 3 4 5</td>
</tr>
<tr>
<td>C: Housing choice</td>
<td>1 7 3 3 2</td>
<td>5 7 2 1 1</td>
</tr>
<tr>
<td>D: Access and transportation</td>
<td>5 7 3 1 0</td>
<td>1 3 2 5 5</td>
</tr>
<tr>
<td>E: Coastal water quality</td>
<td>5 1 4 4 2</td>
<td>0 1 2 3 10</td>
</tr>
</tbody>
</table>
Modal values are underlined. On criterion C (housing choice), scenario one and scenario three were rated equally. On the remaining four criteria, scenario one performed distinctly better than scenario three. Scenario two (which had been constructed as an amalgam of scenarios one and three) received ratings between those for scenarios one and three. All three scenarios had been developed through a consultative process over a seven-year period. This coupled with observations from the pre-meeting and meeting phases constitutes support for the following interpretation.

**Decision Outcome**: Under the norms of established legitimate inter-personal relationships, scenario one is more ‘right’ for us than scenario two or three.

### 5.4. Evaluation of Claims to Truthfulness

The discourses on truth and rightness were framed by the briefing documents. After the time allocated for these discourses was exhausted participants were encouraged to express more personal judgments about the three scenarios. Electronic meeting technology supported electronic discourse on the question “What is it like to live in Auckland under scenarios 1, 2 and 3?” In Churchman’s inquiring system, participants were being asked to drop their usual role of designer and adopt the role of client [5]. The goal was disclosure of speaker’s subjectivity, unconstrained by the (technical) structure of the model and unrestrained by the interpersonal context. The strategy was to get each individual to write a personalized account of what it would be like to live in Auckland 30 years hence under each of options 1, 2 and 3, then to read the account of others to identify the most valuable visions. The procedure was a 60-minute silent envisioning exercise in which each account is identified only by a code. Anonymity was almost complete.

<table>
<thead>
<tr>
<th>Personal preferences</th>
<th>Scenario One</th>
<th>Scenario Two</th>
<th>Scenario Three</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of participants strongly in favor of</td>
<td>14</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Number of participants indifferent to</td>
<td>0</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>Number of participants willing to work against</td>
<td>2</td>
<td>0</td>
<td>14</td>
</tr>
</tbody>
</table>

The video record shows that participants developed their personalized accounts with a silence and intensity reminiscent of students in a final exam. Some participants insisted on working on their accounts beyond the time allocated. Their self-absorbed silence contrasted strongly with the shouted social consensus that accompanied the reading of the account of others. The most valued visions of what it would be like to live in Auckland 30 years hence showed intense personal support for scenario one, a lack of engagement with scenario two, and a willingness to work against scenario three. (Table 6).

**Decision Outcome**: Under the norms of disclosure of speakers’ subjectivity, 14 of the 16 participants will, in all truthfulness, only support Option 1.

### 5.5. Summary

The positive results obtained from the meeting are in strong contrast to the confusion and conflict that existed at the end of the pre-meeting phase. Participants’ perceptions and performance as a result of the electronic meeting technology were positive. Participants were satisfied. These findings are similar to those in the meta-analysis reported in [28]. While some participants were reluctant to attend the focal meeting, and expressed negative views at the beginning of the meeting, all participants provided positive evaluations at the end of the meeting. The functionality of the GSS software was supportive of an overall positive result. Participation by all participants was intense. By the end of the meeting, electronic discourse produced 80 pages of text. Intense participation in four key aspects of electronic discourse resulted in each of the three decision outcomes being documented and coherently linked to the relevant underlying validity claim. The data gathered during the focal meeting support the claim that the combination of Habermasian inquiry and electronic discourse were successful in reducing conflict and confusion.

The empirical evidence is that each of the knowledge perspectives (technical, interpersonal and personal) in Habermasian analysis is useful in capturing phenomena important to the success of the focal electronically-supported meeting. The focal electronically-supported meeting enabled a critical examination of claims to valid technical, interpersonal and personal knowledge. Observations confirm that the decision outcome in each knowledge world was grounded in the corresponding validity claim - truth, rightness or truthfulness. It is not clear, however, that the electronically-supported meeting integrated the technical, inter-personal, and personal perspectives into a consensus model that provides the rationale for action.
6. After the meeting

A ‘valid’ and ‘coherent’ evaluation of the three scenario plans is desired. The meeting succeeded in documenting technical, interpersonal and personal decision outcomes and grounded in the relevant underlying validity claim. We have yet to consider the degree of coherence among the three perspectives. Participants found no difference between the scenarios on the basis of technical knowledge. Moderate claims in favor of scenario one were made based on interpersonal knowledge. Strong claims in favor of scenario one were made based on personal knowledge.

The degree of coherence among the decision outcomes at different levels is poor. There is a major discrepancy in preferences at various stages of the decision process. The 80-page report generated by electronic meeting technology (from which the data in tables 4, 5 and 6 are extracted) was circulated to all participants immediately after the meeting. The introductory section of the report highlighted the fact that the participants were strongly supportive of an option that lacked factual support. The report became subject to intense scrutiny. Regional planners met repeatedly among themselves about the report and consulted other meeting participants. Support grew for the interpretation that the information in Table 4 should be taken at face value – scenario options were not extreme enough. In Hegelian terms, the dialectical logic (synthesis) of this interpretation was initially lost on the regional planners because they were so firmly wedded to their decision framework (thesis) that they experienced profound difficulty in recognizing that the framework itself was flawed (antithesis). An abbreviated planning round was subsequently undertaken with more extreme variations on scenarios one and three (based on a 100% increase in population) and support was found for scenario one at technical, interpersonal and personal levels.

6.1. Discussion

Support has been found that framing the electronic discourses as an instance Habermasan inquiry reduces participants’ conflict and confusion about a comprehensive urban plan and preferences for three scenario options. The meeting enabled bounds to rationality to be loosened by active testing of each participant’s knowledge against other points of view. Intense scrutiny of the meeting report produced a significant increase in the coherence of the belief structure of meeting participants. Specifically, the apparent contradictions in preferences surfaced at different stages of the meeting served as a precursor to a Hegelian synthesis. Participants’ insight that the model was flawed led to a consensus model that provided decision makers with a rationale for action. Using the definition of success in Churchman’s inquiring system (“insight leading to a consensus model that provides decision makers with a rationale for action”), the meeting was a success.

6.2. Conclusion

The paper applies Habermasan inquiry to electronic discourse in group decision, and the strategic evaluation of a comprehensive urban plan. In this case at least, the combination of Habermasan inquiry and electronic discourse led to the overall success of a key meeting. The learning process did not produce a coherent decision based on the initial parameters in the planning model, but an appreciation of the gap between the model and the purpose for which it had been developed. After the meeting consensus developed around a new urban planning model synthesized from suggestions by meeting participants. Ten years after the electronically-supported meeting, the essence of the decision in favor of scenario one remains the accepted plan for the future of the Auckland region.

In totality, the empirical evidence suggests that the combination of Habermasan inquiry and electronic discourses enhance participant’s trust and understanding in scenario planning. Seen as an instance of Habermasan inquiry, the benefits of the electronically-supported meeting were three-fold: Technical perspective. 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.

Interpersonal perspective. Support for discourse that interweaves evidence (reflections and experiences, decisions and actions, theories and interpretations, individual feelings and objective facts) from multiple, conflicting yet mutually supportive evaluative frames.

Personal perspective. Support for the ‘psychological safety’ and ‘trust’ needed for direct and unreserved expressions of multiple, conflicting individual perspectives.

This retrospective inquiry was initially born out of a personal concern that the subjectivist story-telling aspects of the design of the GSS session could not be justified, and that harm may result. This appears not to be the case. Retrospective inquiry has enabled this GSS facilitator to find that his intuitions about...
session design are shared by others. Several lessons have been learned. Firstly, in theory and in practice, creativity and conflict are intertwined. An element of self expression via story-telling may get us closer to the truth than available empirical data. Secondly, in practice, individual and group knowledge is mediated and situated, provisional and pragmatic, aspirational and contested. In this case at least, a broad but robust theory of electronic discourse proved useful in teasing out intertwined technical, interpersonal and personal issues. Thirdly, GSS technology has a raw power that the facilitator may direct via the application of this theory. The author has found the architecture of Habermasian discourses a useful archetype for mid-range operational models in various domains. Finally, the methodology of a critical interpretive case study is recommended for critiquing the support provided by collaborative technologies in situations involving dissensus. Such an approach is required to study why participants are inauthentic in their participation in collaboration technologies, or avoid them completely as communication closes down in response to unresolved conflict. The application of ideas about pragmatism and systemic intervention provides a practice model that extends the practical and decisionistic applications of critical research in information systems, and places positivist technology-based theories of collaborative design in the context of power relations.

In practice, interaction on problematic issues is subject to confusion and conflict. However these are the experiences required to disambiguate a mess of facts, norms and feelings. Seen from a Hegelian perspective, the power of a design theory for collaborative technologies based on Habermasian discourses, lies not in achievement of enlightenment but in appreciation of the nature of ignorance, and the practical consequences of belief.

7. References