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Achieving Success in Large Scale Deliberation

*Analysis of the Fremantle
Bridge Community
Engagement Process*

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This study was conducted in conjunction with Janette HartzKarp, who was responsible for organising the community engagement process relating to the Fremantle Bridge for Main Roads Western Australia. Some of the analysis conducted in this report draws from the data reported in the consultants report for the community process by David Bruce. This report is in no way intended to replace that report. It should be read as a complement, focussing instead on a different set of questions pertaining to the drivers at work during the deliberative process with a view to assessing the impact of specific design features. The results of this analysis are to be pooled with those from analysis of other deliberative/community engagement processes as part of an ARC funded project (Micropolitics of Deliberation) being conducted at the Australian National University (Chief Investigators, John Dryzek & Simon Niemeyer, Political Science Department, Research School of Social Sciences). Further information about this research can be found at <http://deliberativedemocracy.anu.edu.au/Micropolitics.php>.

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1 BACKGROUND

The Fremantle Traffic Bridge is one of two important road traffic links across the Swan River linking the port city of Fremantle to Perth metropolitan area. Its present condition has deteriorated to the stage that either upgrading or replacement is required. Original construction of the bridge was in 1939, followed by an upgrade in 1974 with an expected lifespan of around 30 years, which is now coming to an end.

Main Roads WA, which is responsible for the bridge, identified three key concerns with respect to the current structure of the Fremantle Bridge. All three relate to safety and engineering:

1. Risk collision by river vessels;
2. Structural integrity of the bridge; and
3. Road user safety.

These concerns relate to serious problems relating to river navigation being impeded by both the low level of river clearance afforded by the bridge and the misalignment with a nearby railway bridge, making passage by larger river craft in particular a complicated proposition. Road user safety is made salient by the narrow nature of the bridge and poor provision for alternative users (pedestrians and cyclists).

Additional concerns identified for public consideration include:

1. Heritage significance of the bridge
2. Conservation of the Swan River
3. Indigenous concerns (of the Noongar people).

The heritage significance of the bridge is highlighted by it listing in May 2006 on the interim listing of the State Register of Heritage places. Swan River is also recognized as place of value to Noongar people with respect to its past and current usage as well as due to its mythological and spiritual meaning.

1.1 THE FREMANTLE BRIDGE ISSUE AND COMMUNITY ENGAGEMENT

In order to decide the future of the bridge, the Western Australian state government, through the department of Main Roads, embarked on a decision process that involved a large scale Community Engagement Process. The overall objective was to identify public views on and preferences for the six options developed by the Main Roads to help form Main Road's advice to Government on the proposed future of Fremantle Bridge.

A summary of the Community Engagement Process as a whole is as follows in Table 1.

Table 1. Fremantle Bridge Community Engagement Process

No.	Stage	Description
1	Establishment of a Steering Team	To oversee the process including: the development of materials (survey and info pamphlet) which involved iterative drafts until all parties were satisfied and signed off; geographic areas and participant's from each area; discourses to be covered and speakers to be invited to present; invitees and agenda for stakeholder meeting; keeping all parties to the issues engaged; and a final debrief to overview and evaluate the process, including what had been learnt.
2	Community/Industry Stakeholder workshop	Approx 40 participants to amend the pamphlet and the survey; and to further develop the Q methodology
3	Local Indigenous Elders Consultation	An indigenous research group carried out independent research with the local elders to determine the issues important to the local indigenous people regarding the future of the Bridge
4	Broad community survey	Includes invitation to random sample of recipients to participate in the Deliberative Survey
5	Distribution of information pamphlet	To random sample mail out accepters (participating in deliberative survey)
6	Follow-up invitations and active recruitment	To better ensure random sample was representative of the population.
7	Training of forum support team	½ day training of facilitators, emergency scribes (if participant volunteers were not available) and theme team members to ensure all viewpoints would be heard
8	Deliberative Survey/Poll	One day deliberative forum
9	Preliminary report	Report of day's proceedings handed to participants at the end of the deliberative survey process
10	Distribution of analysis/comparison	Analysis of survey results send to all participants and the detailed report was placed on web.

The culmination of this process was, a single day deliberative process (herein referred to as the Fremantle Bridge Deliberative Survey Forum) involving approximately 200 residents from the nearby region.

1.2 COMMUNITY SURVEY AND RECRUITMENT FOR THE DELIBERATIVE SURVEY

The recruitment strategy for the Fremantle Bridge Deliberative Survey involved two different approaches.¹ Briefly, the first approach comprised the Community Survey outlined in Table 1 (stage 3), which was mailed to 6000 randomly selected residents together with an invitation to attend the Deliberative Survey Forum. The aim of this recruitment strategy was to fulfil a stratification quota for various demographic

¹ See the consultant's report (Bruce 2006a).

categories. The second approach involved supplementing the numbers recruited from the Community Survey via random dialling to make up the democratic quotas as part of an overall random stratification strategy. This strategy was further supplemented by a second approach that involved actively recruiting at target locations where unfilled demographic categories were likely to be found. (see description of Stage 5 of the Engagement Process below).

1.2.1 Provision of Information

Stage 4 of the Engagement Process involved the provision of information to survey recipients via the survey itself, which incorporated an explanation of the issues and various options. The information booklet provided tables presenting the advantages and disadvantages of each option in terms of environment/heritage, social and economic impacts and the estimated costs of construction (MainRoads WA 2006). It also included the pictures of what each option would look like.

The booklet had been developed by an independent research consultant in collaboration with the Main Roads project team and a Steering Team (of key stakeholders, with the task of overseeing the whole process). Both the questionnaire and information booklet were examined and amended at a one day Community/Industry Stakeholder Workshop, and, through an interactive process, were further amended and finally approved for use by the Steering Team (Bruce 2006b).

Respondents to the Community Survey who agreed to attend the Deliberative Survey forum received an information booklet with the mail out survey. By contrast, deliberative participants who were recruited through the supplemental process received their first formal information in the form of the survey and information booklets when they were distributed to all participants at the commencement of the one-day forum.

It was initially envisaged that all participants in the Deliberative Survey would receive the information booklet prior to the forum. However, given the demographic gaps in participation, active recruitment took place right up to the day before the forum. The Steering Team decided because of this, all those actively recruited — who didn't do the initial survey — would not receive the information booklet prior to the forum.

Instead, the same booklet was handed out on the day of the forum to all attending participants.

Separate consultation was carried out with the local indigenous elders to determine the indigenous issues regarding the future of the Bridge. To achieve this, Main Roads contracted an independent Aboriginal research group to hold a forum with the local elders and then write a report to be the foundation of the panel presentation from the Indigenous elder. This included a powerpoint presentation for the panellist elder. On the day, however, the elder largely extemporised rather than staying with the content of the powerpoint.

1.2.2 Six Options Considered by the Community Consultation Process

A preference survey was administered at Stage 3 (as part of the Community Survey) and immediately before *and* after the Deliberative Survey at Stage 6. The main component of the survey involved rating six options regarding the future of the bridge that were developed by the Main Roads Western Australia. The options range from minimalist (repairing the existing bridge), the major construction of a new 'statement' bridge, to both a new bridge and retention of the old (see Table 2).

Table 2. Six Options Presented to the Community Engagement Process

<i>Options</i>		
Option 1	Repair	Retain existing bridge, but replace the navigation spans and deteriorated components
Option 2	Repair and widen	Retain existing bridge, but replace the navigation spans and deteriorated components and incorporate bridge widening
Option 3	New bridge, retain section	Construct a new standard bridge next to the current bridge, leaving a section of the existing bridge as a heritage and recreation site
Option 4	New statement bridge, retain section	Construct a new bridge that is a major entry statements for Fremantle, leaving a section of the existing bridge as a heritage recreation site
Option 5	New bridge plus old cyclist bridge	Construct a new standard bridge and retain the existing bridge as a pedestrian/cyclist facility
Option 6	New bridge, retain old	Construct a new two lane standard bridge and retain the existing bridge as a 2 lane bridge with improved pedestrian/cyclist facilities

1.2.3 Deliberative Survey

The culmination the Community Engagement Process (stage 6, Deliberative Survey) involved a one-day deliberative forum involving approximately 200 residents drawn from Fremantle and the wider city of Perth. A total of 165 forum participants completed the surveys with all necessary data to be included in the analysis. The forum was held over a whole day on 28 October 2006 at the Fremantle Passenger

Terminal in Fremantle. Participants were charged with considering their preferred options among those presented in Table 2 and the issues surrounding those options.

The design of the process was overseen by a Steering Team, chaired by a representative from the Department of Planning and Infrastructure and comprised of seven further members; two representatives of the Fremantle community, one representative each from the Heritage Council, City of Fremantle, Department of Indigenous Affairs, Main Roads and an engineering consultant (MainRoads WA 2006).

The venue for the deliberative process was a large conference room within the Fremantle Passenger Terminal. The layout comprised a main stage and 25 round tables with approximately 8-10 participants per table. Each table was assigned a facilitator. Participants at each table were asked to volunteer to be a scribe at their table, submitting the team's views to their computer. Each computer was connected to a Theme Team of six members (from Main Roads, the community and industry) who worked in pairs as 'themers'. The output from the theme team was broadcast onto a large screen behind the stage.

Participants learnt about different viewpoints through a series of 'expert' panels, consisting of representatives from the community, industry and government (selected by the Steering Team). Following panellists' short presentations, participants were asked to express their collective concerns and questions as a table, having considered their position as a group. One of the main outputs provided to the larger group was in the form of questions or concerns to be put to the panels for their response.

The small groups at each table constituted the main deliberation units within the wider forum. Networked computers enabled small group discussion to be taken to scale. Each table's individual, team and strongly held minority views were submitted to their computer. All table inputs were examined by a Theme Team of six representatives from Main Roads, the community and industry, working in pairs, virtually in 'real time' to identify emerging themes from the room, together with specific examples from tables. The themed questions were given to panellists a few minutes before they were due to respond publicly. The themed questions, together with their specific examples, were then displayed on the large screens for all

participants to see. To encourage panellist/participant interaction, following panellist responses to these questions, additional questions or concerns were taken from the floor.

The aim was to provide participants with opportunities to consider information provided by the panel, deliberate in small groups to determine outstanding issues and questions, listen to responses and thus to increase their understanding of the different viewpoints. There was no attempt to try to reach participant consensus on any of the bridge options. No, the 'themed' ideas submitted were not on the options per se, but rather issues for the panellists to respond to, eg issues not understood/needing clarification, questions, ideas to test out -

The format of the Deliberative Survey forum began with a welcome and overview of the day, following which all participants were asked to fill out the deliberative survey (the same as the Community Survey disseminated three weeks earlier). When all surveys had been completed and handed in, the first of the deliberative sessions began, with the small table groups discussing what was most important to them about this issue. Each person's viewpoint was submitted to the computer.

The first of the three panels then addressed the bridge conditions/shortcomings and potential options with short presentations including videos (see Table 3). The two panellists for this session were from the research consultancy that had done earlier work on the Bridge. Participants were asked to use their information pamphlets to deliberate in small groups to outline their collective questions and issues concerning the Fremantle Bridge. Following their presentations, the small groups deliberated, their issues were themed and broadcast to the room, the panellists responded, and there were follow-up questions from the floor. The second panel, consisting of 3 representatives, one each from the community, industry and government, focused on safety. The third and last panel of the day, with 4 representatives, one each from heritage, indigenous interests, the local community and local industry, focused on likely impacts. With each panel, the process was repeated, of short presentations, small group deliberation, theming of questions and concerns, responses from the panel and follow-up questions from the floor. The panellists' responses were summarised by a small support team (who had also supported the Steering Team)

and these summaries were included in the final report of the day. The table below includes the list of presenters and the topics presented and discussed in each panel.

Table 3. Topics presented and discussed during the deliberative process

Topic		Presentations	
What is most important to you? (Participant collective responses)			
1 st Panel	Bridge conditions and options	John Pressley (Maunsell Australia Pty Ltd)-	Bridge conditions/weaknesses
		Michael Kakulas (Maunsell Australia Pty Ltd)	Six bridge options
Participant Collective Concerns (Clarifications, Views to Test)			
2 nd Panel	Marine and Road Safety, Cycling Interests	David Harrod (DPI Marine Safety)	Marine Safety
		David Moir (RAC)	Road Safety
		Hilary Johnston (Fremantle Bicycle Users Group)	Cyclist interests
Participant Collective Concerns (Clarifications, Views to Test)			
3 rd Panel	Heritage, Indigenous and Nearby Community Issues, and Construction Impacts	Nicolas Gurr (Heritage representative)	Heritage
		Len Collard (Indigenous representative)	Aboriginal heritage
		Anne Forma (local resident)	Community views
		John Longley (Fremantle Chamber of Commerce)	Construction impact
Participant Collective Concerns (Clarifications, Views to Test)			

At the conclusion of the Forum, participants were asked to fill out the survey for the last time, again containing identical questions to the first survey. Before leaving, participants completed evaluation forms and received a hard copy of the report from the day.

That such a relatively large-scale deliberative process appears to have produced good quality outcomes (the definition of which is provided later) is the subject of discussion in section 4.

1.3 OUTCOMES AND ROLE IN DECISION MAKING

As the Deliberative Survey Forum ended, each participant received a hard copy report outlining what had occurred during the day, including the themed and specific questions and concerns put to the panels, as well as an overview of their responses (stage 7). (As panellists responded to questions, their comments were summarised by two members of the Steering Team support group, and immediately submitted to the report) Approximately one month later, participants received a synopsis of the findings from the survey analysis, and the full survey report was placed on the web (stage 8), referred herein as the consultant's report (Bruce 2006).

The results and analysis of the Fremantle Community Engagement Process were consolidated into a more comprehensive report by the Dept Main Roads. The Minister submitted to Cabinet the report and deliberative recommendation to build the icon bridge. Consideration by Cabinet was needed since the icon bridge option was significantly more expensive than the others. The final decision has not yet been made public, in part because of a late submission from the Fremantle Council to not only build the icon bridge but to refurbish the existing bridge as well as a cycling/walking bridge. Given the significant additional cost this would entail, the issue is still being considered by Government. The situation is unfortunate. At the Steering Team debrief following the deliberation process, all parties, including the Council, expressed satisfaction with both the deliberation process and the outcome, seeing it as 'fair and reasonable'. However, given the considerable time lapse between the deliberation and announcement of the decision by Government, the momentum of the process of all parties working together to achieve a 'fair outcome' was lost, and the results are being revisited. The WA cabinet is currently in negotiations with the Fremantle Local council over implementation.

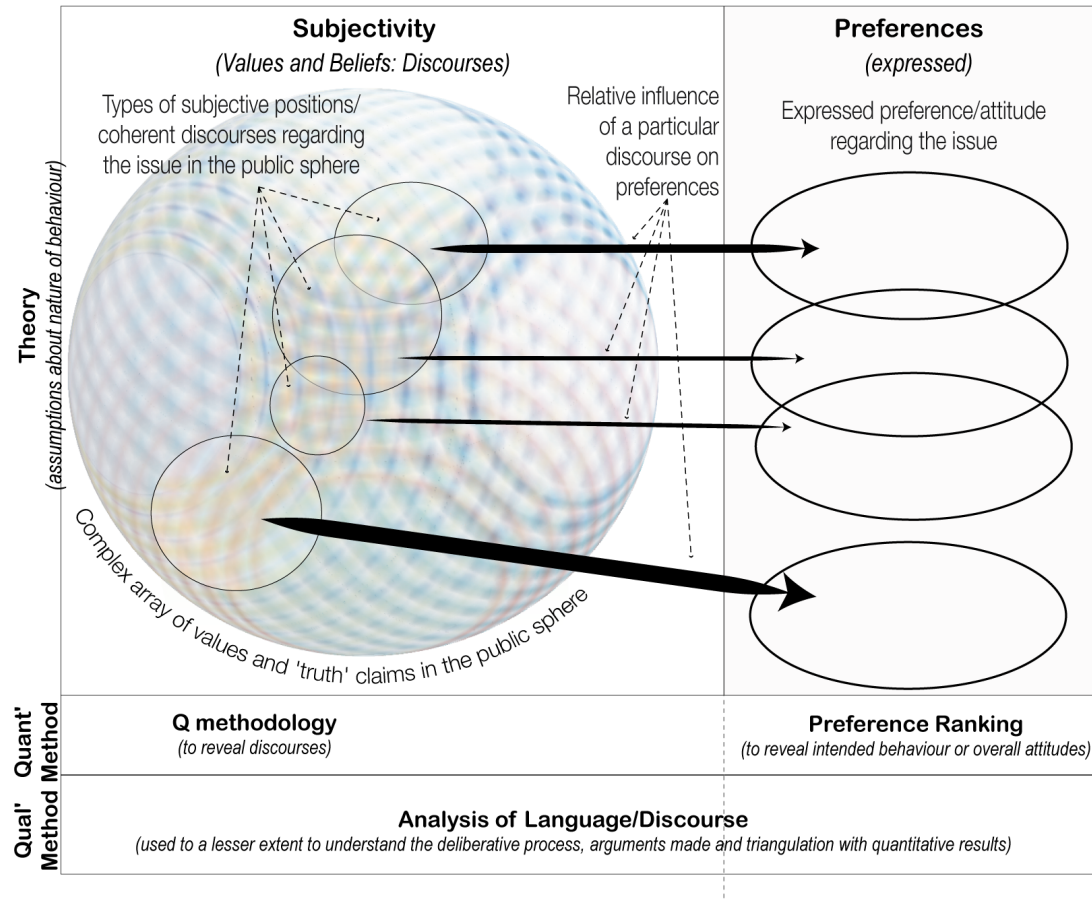
2 Q STUDY RATIONALE AND DESIGN

The Q study that was administered to the community consultation process as part of the Micropolitics of Deliberation project. The rationale behind the survey is to provide insights into reasons why participants might have changed their minds in relation to the options presented to them regarding the Fremantle bridge, the extent to which these final positions might better reflect the underlying 'will' of the public concerned and the role of the deliberative process in shaping these positions.

2.1 THE USE OF Q METHODOLOGY

To briefly explain why Q method is used here, within the field of deliberative democracy, public involvement in decisions is supposed to not only involve processes that are characterised by inclusion and fairness, they are also supposed to result in better outcomes in the form of transformed preferences (Manin 1987). One way in which the quality of an outcome of deliberation can be measured is to compare the extent to which the choices made at the end of the process reflect the underlying reasons for which that choice is made. To this end, the objective of the analysis here is to connect the choices that are ultimately made by individuals regarding the Fremantle Bridge (in the form of expressed preferences) with the reasons for these choices, which is referred to here as the realm of subjectivity.

The conceptual framework for this analysis and the methods used can be summarised in reference to Figure 1 below. The figure shows the connection between subjective reasons on the LHS of the figure and preferences on the right. The subjective reasons regarding what should be done with the bridge comprise various values and beliefs that form coherent arguments, or 'discourses' in relation to the issue. Each one of these discourses is associated with a particular preference position, or choice with respect to the bridge's future.

Figure 1. Conceptual Model for analysing impact of deliberation

Following this rationale, the objective of the analysis is to discover these subjective positions and the preferred type of outcome that is associated with them as well as how these have changed during the deliberative process. The analysis does not presuppose that there is a 'right' outcome in absolute terms, only that a good outcome is desirable in the sense that it reflects the underlying subjective will of participants. The way in which this is performed will be explained in more detail later. What is important for now is that the analysis requires that we find out what the relevant underlying positions are, as well as the corresponding positions in relation to preferences and how these have changed during deliberation.

To explore underlying subjectivity we have used Q methodology in conjunction with analysis of preferences that have been used in the original consultants report. Q methodology, which has been demonstrated as a powerful tool for analysis of behavior (Stephenson 1953; Brown 1980; Dryzek 1990), enabling an exploration of subjectivity that maintains robustness and external validity, particularly with small

participant samples.² Q methodology can be used as a form of discourse analysis; to both identify the predominant discourses (in the form of factors) that related to the future of the Fremantle Bridge, as well as the extent to which particular discourses influenced subjectivity under different climate change scenarios

Once the statements are selected, the Q study follows four separate steps:

- Step 1: obtaining Q sorts from each participant
- Step 2: extracting factors from the raw data;
- Step 3: applying judgmental rotation to the initial factors; and
- Step 4: interpreting and describing the resulting factors.

Step 1 resulted in 'sorts' provided by each of the participants. The resulting Q sorts are represented as the inverted pyramids in the figure. The top row of a 'Q sort' represents the score that is allocated to a statement under that category. Step 2, the extraction of the initial subjective factors. Step 3 (judgmental rotation) involves plotting participants according to their affinities with the factors and rotating the axes according to a pre-specified criteria. Here the main criteria is to maximise the relationship between resulting factors and the positions resulting from the preference survey. The final step of factor interpretation (Step 4) involves translating the results into factor scores. These comprise an array of scores for the Q statements typical for that factor — that is, the Q sort of an individual in perfect agreement.

Although changes to factor loadings (denoting the rise or fall in the influence of particular factors) provide the main indicator of what is going on with respect to subjectivity, a good deal of qualitative data is also used, in the form of transcripts from the discursive process and follow-up interviews. This information is used to 'triangulate' the Q results and build up a coherent picture of the relevant positions.

2.1.1 Method

Each participant was asked to order 36 statements into eleven piles both before and after the deliberative process. Table 4 shows the statements used in the Q study. The statements cover safety issues, environmental issues, indigenous issues, cost and aesthetic issues regarding the current situation and the future of the Fremantle Bridge. The statements were collected during the Stakeholders meeting in Fremantle in August 2006 and partly from the local newspapers. The statements

² It is also one of the few methodologies (particularly among those that are quantitative in nature) that is consistent with discourse theory (Blaug 1997).

were piloted at a subsequent stakeholders meeting to test how well they could be used to identify the existing views on Fremantle Bridge. Using the pilot analysis and participants' feedback a number of statements were modified and others added. The local nature of the issue meant that it was important that the survey be developed in close cooperation with the research partners on the ground in WA.

Table 4. List of Statements

No	Statement
1	Replacing timber elements with steel components would destroy the authentic appearance of the bridge.
2	Alterations will lead to nothing but the uglification of the bridge.
3	The bridge has stood the test of time for the past 67 years; there's no need for major changes to it.
4	The safety of the bridge is more important than its appearance.
5	The main concern is to have a bridge that underpins the economic activities in the region.
6	The function of the Fremantle Bridge as a transport gateway is more important than its heritage.
7	There are no specific economic benefits for the Fremantle from the bridge.
8	The problem is not the vulnerable structure of the bridge but excessive traffic, which should be reduced.
9	As long as there is a bridge that I can cross, I don't care about its structure.
10	We should definitely preserve the heritage value of the bridge, but only if it is financially viable.
11	Tax payers' money should be spent on services that are more essential than upgrading the bridge.
12	It is worth spending money to retain the iconic status of the bridge.
13	We shouldn't stick to the past when deciding about the future of the bridge; we should be open for modern design options.
14	The bridge is certainly an attractive entry statement to Fremantle and without doubt far more important than trucks.
15	The Fremantle Bridge is irreplaceable. It is a strong, enduring part of our history.
16	Reducing the risk of vessel collision on the Swan River should be the main consideration when deciding about the future of the bridge.
17	It is most important that the solution is a long term one.
18	River craft deserve better traffic conditions on the Swan River.
19	Altering or replacing the existing Fremantle Bridge means diminishing Fremantle.
20	Whatever works are undertaken; the heritage value of the old bridge will be affected.
21	The old bridge provides a scenic entrance to Fremantle that attracts tourists.
22	The cost of maintaining the old timber structure is too high.
23	Providing a better pedestrian and cycle traffic should be the main consideration when deciding about the future of the bridge.
24	The old bridge will never be able to handle vehicles, bike and pedestrians at the same time.
25	The most important thing is that access to Fremantle from its north is maintained in the most undisturbed manner as possible.
26	The most important issue for cyclists is safety, which means they need access across the bridge which has a good surface.
27	Since the traffic bridge has important heritage significance, the only grounds for its removal should be on the grounds of serious safety issues and verified by heritage engineers.
28	The existing bridge is too low; archways too narrow and do not line up with the railway bridge making navigation dangerous.
29	The critical infrastructure of the bridge raises serious safety concerns.
30	Safe and efficient movement of all road and river users across and under the bridge should be the main considerations.
31	Any changes to the bridge should give right consideration to the environment.
32	We just got traffic calming in Town Centre after 25 years effort. I don't want bridge to be built bigger, better faster to reverse the gains of the last 25 years.
33	This magnificent timber bridge is a rare and beautiful sight in today's world, it should be preserved.
34	When deciding about the future of the bridge, indigenous concerns should be given adequate consideration.
35	The Fremantle Traffic Bridge is the most iconic landmark and the main tourist attraction in Fremantle.
36	Indigenous people would want to minimize impact on the Swan River, a registered site that is of importance and significance to them.

As previously mentioned, the Q survey was administered to a sample of participants in the community consultation immediately before and after the one day deliberative process. The following sections discuss the results of the analysis that was performed on the data. This begins with a straightforward analysis of changes in

responses to individual statements during the deliberative process, followed by factor analysis of the survey data to pick out the main themes (factors, discourses) that influenced the positions taken in regard to the future of the bridge. This analysis will also tease out the changes to these perspectives as well as the way in which differences in the way in which individuals were engaged in the community process as well as their residential proximity to the bridge impacted on both their pre-deliberative positions and the impact of the deliberative process.

3 ASSESSING THE FREMANTLE BRIDGE DELIBERATIVE SURVEY

3.1 Q RESULTS: SUBJECTIVE FACTORS

As previously discussed, the goal of the factor analysis was to produce a series of factors (reflecting the major positions among participants) that correlate to different preference positions. The actual analytical process is not described in detail here³, but in short involved extracting an initial set of factors using standard factor techniques (principal components extraction followed by Varimax rotation). In addition to this, a series of ‘manual’ rotations were performed to maximise as far as possible the relationship between subjective factors and preferences and the results checked.

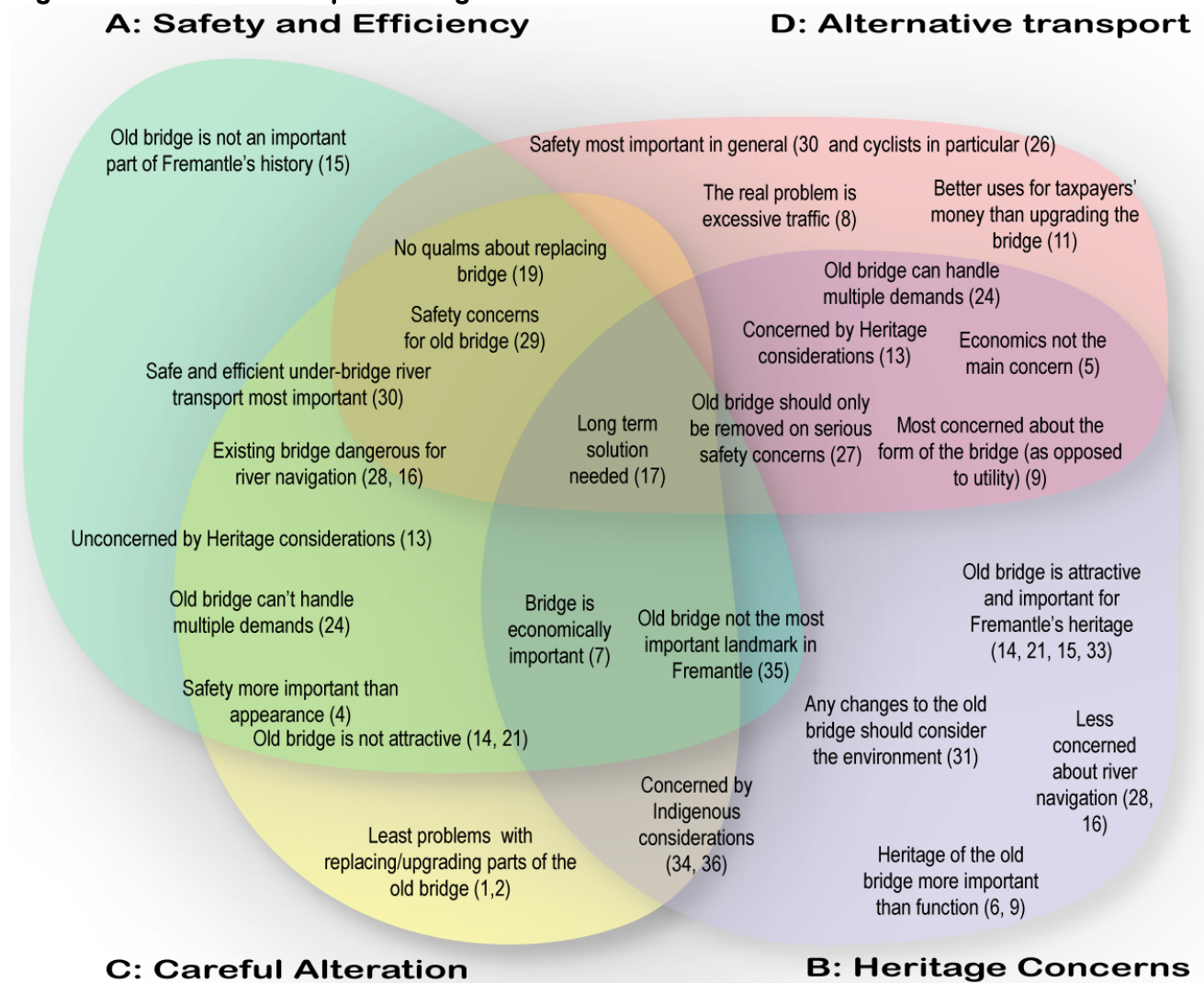
The analysis produced four factors that are useful for the interpretation of the main positions observed during the deliberation process. In brief, these factors are:

- | | |
|---------------------------------|---|
| A Safety and Efficiency: | <i>focussed on the development of a safe, efficient, modern and long-lasting bridge</i> |
| B Heritage Concerns: | <i>focussed on heritage issues with an emphasis on indigenous heritage</i> |
| C Careful Attention: | <i>Interested in possible alteration after adequate consideration of the issues</i> |
| D Alternative Transport: | <i>Concerned with issues such as cyclists safety with an emphasis on economically feasible solution</i> |

The factors themselves are schematically represented in Figure 2 where the factors are represented by spheres that contain representative statements paraphrased from the Q survey (with the corresponding number shown in brackets). Taken together these statements characterise the discourse or ‘story’ told by that particular factor. The overlap between the spheres in the figure represent the correlation between each of the factors, the actual numbers for which can be found in Appendix D, which provides details for the factors, in Table 13. Most of these statements are not unique to any particular factor; in some cases different factors yield similar factor scores. Where this is the case, the statement is located in the overlap between spheres.

³ A more detailed explanation of how this analysis is performed can be found in Appendix B as well as <http://deliberativedemocracy.anu.edu.au/Micropoliticsb.php>

Figure 2. Factor Description Diagram
A: Safety and Efficiency



Although Figure 2 provides a useful snapshot of the main features of each factor, it is worth describing each in some detail.

3.1.1 Factor Description

The following provides a description of each factor as well as information about the factor scores in comparison to the other factors.

a) Factor A –Safe, efficient, modern and long-lasting bridge

Factor A is most strongly associated with emphasis on safety of the bridge and necessity of a long-term solution (see factor scores for the statements 30, 29 and 4). The main concern for this factor is the critical infrastructure of the bridge which should be fixed in a way that lasts long.

Compared to other factors, Factor A suggests, next to Factor C, a strong position that is open for modern design options when deciding about the future of the bridge.

(Statement 13)

As the high negative factor scores for this factor reveal, Factor A perceives the bridge neither as the most iconic landmark in Fremantle nor as a scenic entrance to Fremantle. The Fremantle Bridge is replaceable (Statement 15). It should be upgraded or replaced in a way that enables safe and efficient movement of all road and river users. Heritage related issues are not top priorities for this factor.

On the issue of safety there is a significant overlap between Factors A and D. However, whereas Factor A is more concerned about the safety of all road and river users across and under the bridge on broader terms (Statement 30), Factor D is particularly concerned about the safety of cyclists and pedestrians (Statement 26). Another significant difference between Factors A and D is that Factor A is more open for the modern design options (Statement 13). However this should not mean that Factor D presents a heritage position. As the factor scores for the statement 19 shows both factors agree on the alteration of the bridge. Compared to Factor A, Factor D is more concerned about the money spent to spent for upgrading the old bridge (Statement 11).

The high factor scores for the statements on safety and long-term solution show that those who are highly loaded on Factor A tend to go for Option 3 or 4. [Option 1 and 2 address issues related with safety concerns too, however they do not offer a long-term solution.] Both options 3 and 4 ensure a long-term solution with a minimum of 100 years bridge life. Both options are about constructing a new bridge and leaving a section of the existing bridge as a heritage recreation site. The main difference between these two options is that Option 4 emphasizes that appearance and making a statement are important considerations. Given this and the high factor score for statement 13 (being open for modern design options) it is possible to conclude that those who are highly loaded on this factor tend to go for Option 4.

This factor increases as a result of the deliberation. High factor loadings are mostly for the post-deliberation stage.

Table 5. Statements associated with Factor A

No.	Statements	A	B	C	D
30	Safe and efficient movement of all road and river users across and under the bridge should be the main considerations.	5	2	1	4
17	It is most important that the solution is a long term one.	4	3	3	2
29	The critical infrastructure of the bridge raises serious safety concerns.	4	2	1	0
4	The safety of the bridge is more important than its appearance.	3	0	4	2
13	We shouldn't stick to the past when deciding about the future of the bridge; we should be open for modern design options.	3	-2	4	-3
28	The existing bridge is too low; archways too narrow and do not line up with the railway bridge making navigation dangerous.	3	0	3	3
16	Reducing the risk of vessel collision on the Swan River should be the main consideration when deciding about the future of the bridge.	2	-2	3	1
24	The old bridge will never be able to handle vehicles, bike and pedestrians at the same time.	2	-1	2	-2
26	The most important issue for cyclists is safety, which means they need access across the bridge which has a good surface.	2	1	-1	5
7	There are no specific economic benefits for the Fremantle from the bridge.	-1	-3	-2	0
27	Since the traffic bridge has important heritage significance, the only grounds for its removal should be on the grounds of serious safety issues and verified by heritage engineers.	-1	5	2	2
11	Tax payers' money should be spent on services that are more essential than upgrading the bridge.	-2	-2	-1	3
14	The bridge is certainly an attractive entry statement to Fremantle and without doubt far more important than trucks.	-2	1	-4	0
15	The Fremantle Bridge is irreplaceable. It is a strong, enduring part of our history.	-3	3	-1	-1
21	The old bridge provides a scenic entrance to Fremantle that attracts tourists.	-3	1	-1	1
33	This magnificent timber bridge is a rare and beautiful sight in today's world, it should be preserved.	-3	2	-3	-1
3	The bridge has stood the test of time for the past 67 years; there's no need for major changes to it.	-4	-2	-3	-2
35	The Fremantle Traffic Bridge is the most iconic landmark and the main tourist attraction in Fremantle.	-4	-4	1	0
19	Altering or replacing the existing Fremantle Bridge means diminishing Fremantle.	-5	-1	-3	-5

b) Factor B – Moderate heritage position with strong emphasis on indigenous concerns

This factor represents a moderate heritage position. It places an emphasis on the heritage significance of the bridge with respect to its historical structure and its meaning for indigenous people. According to this position, when deciding about the future of the bridge, the grounds for its removal should be verified by heritage engineers (Statement 27) and indigenous concerns should be given adequate consideration (Statement 34). As Swan River is a place of value to Noongar people with respect to its association with their mythological and spiritual beliefs, indigenous people would want to minimize impact on Swan River. Factor B shows strong sensitivity about the significance of the bridge for indigenous people. This factor declines during the deliberation. Similar to Factor A, Factor B favours a long-term

solution which should be developed after adequate consideration of environment and heritage issues.

Factor B is not a radical heritage position, rather a moderate one. As the negative factor score for the statement 35 shows, the Fremantle Traffic Bridge is not regarded as the most iconic landmark in Fremantle. But, unlike Factor A, Factor B considers the Fremantle Bridge as a strong, enduring part of the history (Statement 15).

The appearance of the bridge is also important for the Factor B (Statement 9). Yet, unlike Factor A, this position does not seem to be open for modern design options; it rather tends to favour a bridge with a heritage outlook.

Those who are highly loaded on Factor B tend to prefer an option emphasizing the heritage significance of the bridge. They are more likely to feel that retaining the old bridge is important. When it comes to the indigenous issues which are strongly emphasized by this factor, among the 6 possible options developed by the Main Roads WA, there is no single option addressing the inclusion of indigenous concerns as an advantage. I think such an option would have been a perfect fit for Factor B.

Factor B seems to have high factor scores for the pre-deliberation stage. It decreases as a result of deliberation.

Table 6. Statements associated with Factor B

No	Statements	A	B	C	D
27	Since the traffic bridge has important heritage significance, the only grounds for its removal should be on the grounds of serious safety issues and verified by heritage engineers.	-1	5	2	2
31	Any changes to the bridge should give right consideration to the environment.	1	4	1	1
34	When deciding about the future of the bridge, indigenous concerns should be given adequate consideration.	0	4	5	0
17	It is most important that the solution is a long term one.	4	3	3	2
36	Indigenous people would want to minimize impact on the Swan River, a registered site, that is of importance and significance to them.	0	3	0	1
15	The Fremantle Bridge is irreplaceable. It is a strong, enduring part of our history.	-3	3	-1	-1
30	Safe and efficient movement of all road and river users across and under the bridge should be the main considerations	5	2	1	4
29	The critical infrastructure of the bridge raises serious safety concerns.	4	2	1	0
25	The most important thing is that access to Fremantle from its north is maintained in the most undisturbed manner as possible.	1	1	0	-1
14	The bridge is certainly an attractive entry statement to Fremantle and without doubt far more important than trucks.	-2	1	-4	0
4	The safety of the bridge is more important than its appearance.	3	0	4	2
1	Replacing timber elements with steel components would destroy the authentic appearance of the bridge.	0	0	-5	1
4	The safety of the bridge is more important than its appearance.	3	0	4	2
1	Replacing timber elements with steel components would destroy the authentic appearance of the bridge.	0	0	-5	1
8	The problem is not the vulnerable structure of the bridge but excessive traffic, which should be reduced.	-2	0	0	4
19	Altering or replacing the existing Fremantle Bridge means diminishing Fremantle.	-5	-1	-3	-5
13	We shouldn't stick to the past when deciding about the future of the bridge, we should be open for modern design options.	3	-2	4	-3
11	Tax payers money should be spent on services that are more essential than upgrading the bridge.	-2	-2	-1	3
5	The main concern is to have a bridge that underpins the economic activities in the region.	1	-3	2	-3
2	Alterations will lead to nothing but the uglification of the bridge.	-1	-3	-4	-2
7	There are no specific economic benefits for the Fremantle from the bridge.	-1	-3	-2	0
6	The function of the Fremantle Bridge as a transport gateway is more important than its heritage.	1	-4	-1	-1
35	The Fremantle Traffic Bridge is the most iconic landmark and the main tourist attraction in Fremantle.	-4	-4	1	0
9	As long as there is a bridge that I can cross, I don't care about its structure.	-2	-5	-2	-4

c) Factor C – Alteration after adequate consideration of all the issues at stake

Factor C is very similar to Factor A in many respects. C is also concerned about the safety of the bridge but rather on general terms. For instance, compared to A, C is not strongly concerned about cyclists' safety. Here the safety issue is addressed mainly in connection and comparison with the appearance of the bridge. This factor emphasizes that the safety of the bridge is more important than its appearance. However, it should not mean that Factor C is indifferent with respect to the appearance of the bridge. As the high factor score for statement 13 reveals, Factor C

is open for modern design options. In this sense, it is to expect that the preferred option associated with Factor C is similar to that of Factor A (Option 4 or 5). Indeed, as the high factor loadings for this Factor show that those who are highly loaded on Factor C have tended to choose Option 4 or 5.

The other similarity between Factors A and C is that both factors prefer to have a bridge that underpins the economic activities in the region. Note that all other Factors have negative factor scores for the statement (Statement 5) on the role of the bridge in boosting economic activities.

One of the main differences between Factors A and C is that C has the highest factor score (+5) for the statement emphasising that indigenous concerns should be given adequate consideration when deciding about the future of the bridge (Statement 34). Again compared to Factor A, Factor C seems to be more sensitive regarding the heritage significance of the bridge (see factor scores of both Factors for statement 27, 35).

Given the main issues addressed by Factor C, it seems like this factor covers the basic issues raised by Factor A and Factor B. Similar to Factor B, Factor C is concerned about the heritage significance of the bridge particularly for indigenous people, and like Factor A, Factor C is strongly driven by a conviction that alterations are both necessary and desirable. As such, Factor C can be seen as a synthesis factor.

Here it is important to note that Factor C has increased as a result of deliberation. It is assumable that those who were highly loaded on Factor B in the pre-deliberation stage went to Factor C during the deliberation. Some might have gone to Factor A, but it is important to note that Factor A would mean a radical departure for those highly loaded on Factor B and represented strong concerns for the issues with regards to indigenous people. Factor C still covers those issues at least in part.

Table 7. Statements associated with Factor C

N o	Statements	A	B	C	D
34	When deciding about the future of the bridge, indigenous concerns should be given adequate consideration.	0	4	5	0
4	The safety of the bridge is more important than its appearance.	3	0	4	2
13	We shouldn't stick to the past when deciding about the future of the bridge, we should be open for modern design options.	3	-2	4	-3
17	It is most important that the solution is a long term one.	4	3	3	2
28	The existing bridge is too low; archways too narrow and do not line up with the railway bridge making navigation dangerous.	3	0	3	3
16	Reducing the risk of vessel collision on the Swan River should be the main consideration when deciding about the future of the bridge.	2	-2	3	1
27	Since the traffic bridge has important heritage significance, the only grounds for its removal should be on the grounds of serious safety issues and verified by heritage engineers.	-1	5	2	2
24	The old bridge will never be able to handle vehicles, bike and pedestrians at the same time.	2	-1	2	-2
31	Any changes to the bridge should give right consideration to the environment.	1	4	1	1
30	Safe and efficient movement of all road and river users across and under the bridge should be the main considerations.	5	2	1	4
29	The critical infrastructure of the bridge raises serious safety concerns.	4	2	1	0
35	The Fremantle Traffic Bridge is the most iconic landmark and the main tourist attraction in Fremantle.	-4	-4	1	0
25	The most important thing is that access to Fremantle from its north is maintained in the most undisturbed manner as possible.	1	1	0	-1
32	We just got traffic calming in Town Centre after 25 years effort. I don't want bridge to be build bigger, better faster to reverse the gains of the last 25 years.	-1	0	0	-1
15	The Fremantle Bridge is irreplaceable. It is a strong, enduring part of our history.	-3	3	-1	-1
26	The most important issue for cyclists is safety, which means they need access across the bridge which has a good surface.	2	1	-1	5
11	Tax payers money should be spent on services that are more essential than upgrading the bridge.	-2	-2	-1	3
6	The function of the Fremantle Bridge as a transport gateway is more important than its heritage.	1	-4	-1	-1
20	Whatever works are undertaken; the heritage value of the old bridge will be affected.	0	1	-2	-4
7	There are no specific economic benefits for the Fremantle from the bridge.	-1	-3	-2	0
9	As long as there is a bridge that I can cross, I don't care about its structure.	-2	-5	-2	-4
33	This magnificent timber bridge is a rare and beautiful sight in today's world, it should be preserved.	-3	2	-3	-1
19	Altering or replacing the existing Fremantle Bridge means diminishing Fremantle.	-5	-1	-3	-5
3	The bridge has stood the test of time for the past 67 years; there's no need for major changes to it.	-4	-2	-3	-2
14	The bridge is certainly an attractive entry statement to Fremantle and without doubt far more important than trucks.	-2	1	-4	0
2	Alterations will lead to nothing but the uglification of the bridge.	-1	-3	-4	-2
1	Replacing timber elements with steel components would destroy the authentic appearance of the bridge.	0	0	-5	1

d) Factor D– Cyclists' Safety with an emphasis on economically feasible solution

Similar to Factor A, Factor D is also concerned about safety issues, however here the main focus is cyclists' safety. According to this factor, the problem current bridge

facing is less related to the vulnerable structure of the bridge. It is rather associated with the excessive traffic which should be reduced. This solution is considered as an economically feasible one. Factor D is concerned about the costs associated with preserving or upgrading the old bridge (Statement 10, 11). According to this factor the heritage value of the bridge is important and should be preserved but only if it is financially viable (Statement 10).

Factor D thinks that alteration of the old bridge does not mean diminishing Fremantle, alteration is necessary. Yet, while altering the bridge, the appearance of the bridge should also be given enough consideration (Statement 9). Here it is important to note that Factor D is not open for modern design options. This is also what differentiates this factor from other factors with respect to the appearance of the bridge. Factor D wants neither a bridge with modern design (Statement 13) nor does it want to spend money to keep the “iconic status” of the current bridge (Statement 12). The preferred option for Factor D might be those with low construction costs and promising better conditions for cyclists’ safety. Option 5 or Option 6 might be possibly preferred options. Although they are not the cheapest options in terms of construction costs, they promise better conditions for the cyclists.

While upgrading the old bridge in a way that improves cyclists’ safety, it is important for Factor D to keep construction costs low. Factor D thinks that tax payers’ money should be spent on services that are more essential than upgrading the old bridge. Factor D is sceptical towards any kind of alteration and therefore reluctant to spend for alteration purposes.

The preferred options for Factor D might be those with low construction costs and promising better conditions for cyclists’ safety. It is important to note that Factor D has diminished in size during the deliberation. High factor loadings are mainly for the pre-deliberation stage.

Similar to other factors, having a bridge that underpins the economic activities in the region is not the main concern for this position (Statement 5)

Table 8. Statements associated with Factor D

No	Statements	A	B	C	D
26	The most important issue for cyclists is safety, which means they need access across the bridge which has a good surface	2	1	-1	5
8	The problem is not the vulnerable structure of the bridge but excessive traffic, which should be reduced	-2	0	0	4
30	Safe and efficient movement of all road and river users across and under the bridge should be the main considerations	5	2	1	4
28	The existing bridge is too low; archways too narrow and do not line up with the railway bridge making navigation dangerous	3	0	3	3
10	We should definitely preserve the heritage value of the bridge, but only if it is financially viable	0	-1	0	3
11	Tax payers money should be spent on services that are more essential than upgrading the bridge	-2	-2	-1	3
31	Any changes to the bridge should give right consideration to the environment.	1	4	1	1
34	When deciding about the future of the bridge, indigenous concerns should be given adequate consideration	0	4	5	0
7	There are no specific economic benefits for the Fremantle from the bridge	-1	-3	-2	0
12	It is worth spending money to retain the iconic status of the bridge	-1	2	-2	-3
13	We shouldn't stick to the past when deciding about the future of the bridge, we should be open for modern design options	3	-2	4	-3
5	The main concern is to have a bridge that underpins the economic activities in the region	1	-3	2	-3
20	Whatever works are undertaken, the heritage value of the old bridge will be affected	0	1	-2	-4
9	As long as there is a bridge that I can cross, I don't care about its structure	-2	-5	-2	-4
19	Altering or replacing the existing Fremantle Bridge means diminishing Fremantle	-5	-1	-3	-5

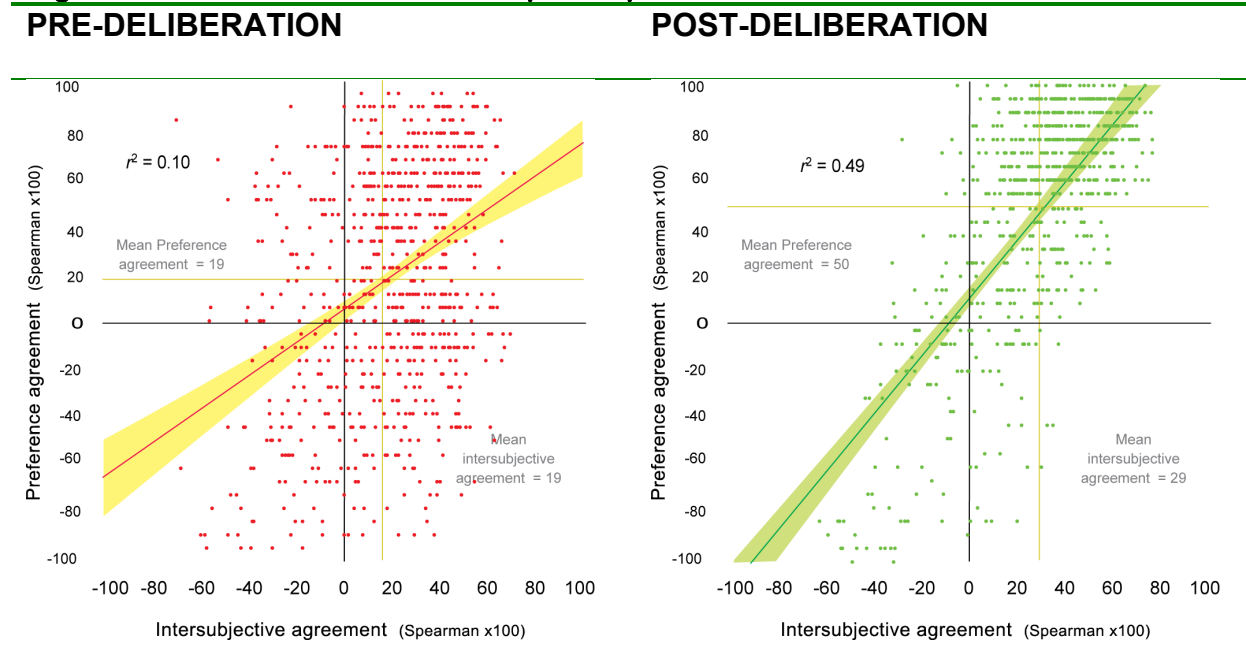
3.2 INTERSUBJECTIVE CONSISTENCY

The results of the IC analysis for the Fremantle Bridge Deliberative Survey are shown below in Figure 3. The left-hand and right-hand figures show the plots for all pairs of individuals ($41 \times 40/2 = 820$ points) pre- and post-deliberation respectively. The x-axis plots the correlation between pairs of individuals based on their responses provided in the Q sort, the y-axis their preference orderings that were elicited at the same time. The figures also show how the overall level of consensus has changed during deliberation — which is crudely measured as average correlation among all pairs individuals — represented by the lines parallel to the y-axis and x-axis indicated subjective and preference consensus respectively (actual figures also shown as average correlate x100).

It can be seen from Figure 3 that there has been an improvement in intersubjective consistency during the deliberative process. This is measured here in the form of the r^2 of the regression, which has improved from 0.10 before deliberation to 0.49 after deliberation. This means that prior to deliberation 10% of variation in preferences can be explained by variation in subjectivity. Following deliberation this has increased to

almost 50%. Moreover, there has been a substantial increase in consensus at the preference level (average correlation increasing from 0.19 to 0.50); less so in the case of subjective positions (0.19 to 0.29).

Figure 3. Pre and Post ICs for all participants



It can be seen from this animation that most of the transformations are similar to those described in relation to the example of individual E above, where there has been little subjective transformation, but a considerable change in consistency of preference positions as a result of deliberation — although in many cases subjective positions have changed in ways that have influenced preferences and improved the IC relationship as well. The pair represented by the outlying point at the outermost northwest of the pre-deliberative plot in Figure 3 provides a good case in point, moving as they do to end up very near the origin in the post-deliberative plot.

We can interpret from this that the deliberative process had a positive effect on the extent to which participants have developed their positions based on all the information at hand deemed relevant by metaconsensus. Prior to deliberation there is a modest intersubjective consistency among the positions of individuals.

That there is a large improvement in IC during the deliberative process appears to result in no small part from both preference construction (from a pre-deliberative situation described by non-attitudes) and reconstruction (of narrow or symbolic pre-

deliberative preferences). There has also been some learning during the process, mainly involving adjustment of beliefs among participants in light of the evidence presented to them, but also involving some questions of basic priorities such as concern for heritage relative to other considerations.

4 DISCUSSION: DELIBERATIVE SUCCESS?

On the face of it, the Deliberative Survey covering the future of the Fremantle Bridge appears to have successfully gathered a reasonably large group of citizens to consider the information put to them, the arguments put forward by individual presenters and co-participants and to formulate a final position regarding what should be done.

The Fremantle Bridge deliberative process is notable because it involves both a relatively large number of participants (almost 200) over a relatively short period of time (one day). Many exponents of formal deliberative processes, such as citizens' juries (Crosby 1995) and deliberative polls (Fishkin 1995) advocate multi-day events to permit sufficient time to digest information and consider the issues.

In practice, however, trade-offs need to be made. Goodin (2000) notes the impossibility of having all possible individuals with an interest in an issue present at the deliberative table. There are also important practical difficulties associated with gathering members of the public to deliberate an issue, least of which includes the considerable cost. It is important, therefore, that deliberative designs are scrutinised for their effectiveness.

Preference transformation is something that deliberation is supposed to do. However, in the case of preferences the changes for this case study are not particularly dramatic. Although an important product of the deliberative process, it should be noted that merely changing the minds of individuals is not the *raison d'être* for deliberative democracy. Some existing research does imply this to be the case, particularly where there has been an attempt to measure the impact of different stages of deliberation (Goodin and Niemeyer 2003; Muhlberger and Weber 2006).

There may be good deliberative reasons for preferences to change. It may be that in pre-deliberative preferences result from non-attitudes (Converse 1970), or need to be reconstructed, being they are the product of a debased public sphere (Niemeyer 2004). Or, positions may justifiably not need to change at all: the *in situ* preferences being the product of a pre-existing deliberation or intrapersonal 'deliberation within' based on all the relevant arguments (Goodin 2000).

This begs the question: if the magnitude of changing positions is not an appropriate measure of deliberative success, what is?. The quality indicators for deliberation suggested by Carson and HartzKarp (2005) reflect some of the criteria that are considered elsewhere in the literature. Here we group these kinds of deliberative quality into two types: procedural and substantive (Parkinson 2003). For many deliberative democrats, deliberation acquires its legitimacy primarily in procedural form, most commonly viewed through the prism of Habermas' ideal speech situation (ISS) — which resonates to some extent with the open dialogue and respect criteria identified by Carson and Hartz-Karp (2005). More recently, empirical methods have been developed in an attempt to capture this procedural quality in the form of a 'discourse quality index' (DQI) (Steenbergen, Bächtiger et al. 2003) and applied to various deliberative contexts.

In addition to procedure, there is also a substantive dimension to deliberative legitimacy concerning the kinds of ends that it ought to produce. Even those deliberative democrats concerned primarily with procedure recognise the importance of outcomes as an important independent variable related the quality of deliberative process (Spörndli 2002) — in this case in the form of consensus. That deliberative procedure is empty if it fails to produce good outcomes is most forcefully expressed by the 'truth tracking' quality of deliberation advocated by Estlund (1997). This raises the question as to whether there is indeed a 'right' answer, or if deliberative outcomes should be measured against standards that are exogenous to the normative foundations of deliberative democracy, which has been argued elsewhere as responsible for the procedural-substantive collision course that Bohman (1998, p.403) identifies (Niemeyer and Dryzek 2007).

Despite the theoretical sophistication of normative deliberative democracy, definitive benchmarks for deliberative success are relatively scarce. To date, the ends that deliberation ought be associated with has been the subject of confusion and contestation. The most widely recognised benchmark, proposed by Habermas in the form of rational consensus, has been met with rebuttals from critics as unrealistic and fraught, yielding undesirable side-effects. Perhaps more problematic from an empirical perspective is that, the Habermasian example aside, deliberative theory is

vague about deliberative ends, making it difficult to assess the quality of outcomes (Burkhalter, Gastil et al. 2002).

Thus, in seeking a measure of deliberative success, as well as dispensing with measures of change in position, we bypass other approaches that do not draw their foundations from within normative deliberative theory. As well as the aforementioned epistemic approach, this includes such social choice (increases in preference structuration McLean, List et al. 1999; Dryzek and List 2003) and the much criticised benchmark of consensus.

Here we adopt a different approach to deliberative quality in which the most important substantive outcome is that it reflects a 'deliberate' position, or a genuine will of the participants that has been formed on an intersubjective basis involving mutual understanding in light of all the relevant information and perspectives that should come to bear on the issue. The principal metric used to achieve this draws from the ideal of intersubjective consistency in the form of intersubjective consistency (referred to herein as IC), which has been developed as a measure of substantive deliberative success based on basic normative principles widely attributed to deliberative democracy (Niemeyer 2007a; Niemeyer and Dryzek 2007).

Using the IC approach, in this section we evaluate the overall 'success' of the deliberative component of the Fremantle Bridge Deliberative Survey. The following discussion outlines principles of intersubjective consistency and the methodology used to measure IC. This approach is then applied to the WA Fremantle Bridge consultation process. The reasons for success of the process based on this measure are then discussed, including consideration of the implications for deliberative design.

5 FACTORS CONTRIBUTING TO SUCCESS

Democratically proper if based on reasons and if those reasons are understandable/not unreasonable - (questions and discussion around the Indigenous and heritage issues as a case in point)

‘Scaling out’, ie including larger numbers of participants added to its legitimacy (Gastil and Levine),

The organization invested considerable resources to the deliberation process - correlating with sustained deliberative success - ie commitment of elected and agency officials to bridge the gap between technical issues and public understanding, to keeping participants updated and to pursuing the issues through to Cabinet. Unlike the MR of the past, they were not devising options and then trying to ‘sell’ them; tried to remove themselves from the usual ‘bargaining’ between conflicting issues (though the local Council brought that back in with a bigger claim after the issue had gone to Cabinet)

There are a number of specific features of the Fremantle Bridge Deliberative Survey process that, we argue, contributed achieving a mini-public sphere reflecting the sorts of ideals attributed to deliberative democracy. These can be grouped into four different components specific to the case study:

1. **Sampling:** the methods used to constitute the deliberative chamber
2. **Information:** the development of appropriate information and the way in which it was provided to participants
3. **The issue:** features specific to the issue that made it conducive to a short, large-scale deliberative process
4. **Process design:** specific features of the deliberative design that helped to overcome problems usually associated with large numbers of participants/short process
5. **Political impact:** relationship of the deliberative process to a policy decision

We will now discuss each of these design features in turn.

5.1 SAMPLING

The sampling methods used to recruit the participants for the Fremantle Bridge Deliberative Survey have been summarised in section 1.2. In short, the methodology was intended to randomly select a cross section of participants from different walks of life, ages etc from within the study area. One of the intended implications of this recruitment strategy was to fill the deliberative forum with different perspectives from

a relatively 'disinterested' group of participants, rather than an 'irate few' who might be sufficiently motivated to self-select based on their particular interests in the issue. Having 'ordinary' people involved in the political process is critical to the health of democratic governance, ie govt officials are asking people to take responsibility for resolving potentially contentious issues and by asking difficult questions, citizens can improve govt policies/decisions

The implication of this is that the deliberative chamber more likely to achieve 'discursive representativeness' (Dryzek and Niemeyer 2007) of the variety of views beyond those that are self-interest and entrenched . It is also more likely that participants were more willing to engage in a communicative process rather than merely attempt to sway others to their point of view, act strategically to manipulate the process to achieve their desired result, or act disruptively.

The implication here is that the sampling and recruitment method is not only a critical factor in achieving a legitimately representative sample. It is also an important factor in achieving good quality deliberative process and outcomes.⁴

5.2 INFORMATION

The content and presentation of the information provided to participants in the Deliberative Survey was also an important factor in achieving deliberative success. It appears certain that the conduct and outcome of the deliberative process is closely tied to the provision of information.

This intra-process information effect, however, should be viewed through the lens of an overall successful process of providing adequate information to the deliberative participants.

The provision of information was greatly simplified by employing the Pareto principle, or the 80-20 rule — more commonly applied in management settings (Juran 1944) — which states that for many events, 80% of the effects (here, decisions) can be traced to 20% of the causes (information). By focussing on 20% of the factual material relating to Fremantle Bridge, considered by the Steering Team to be the critical few issues, it was hoped to cover 80% of the effects. This innovation also played in

⁴ For more detailed argumentation in favour of random selection for deliberative forums, see Carson and Martin (1999).

important part in the conduct of the deliberative process itself by reducing the potential for cognitive overload and permitting participants to deal with the main issues.

Another feature of the information provided was that of balance of arguments. The development of information and selection of presenters to the deliberative process was done in consultation with a wide variety of stakeholders. The input of these different points of view to the information provision helped to ensure that the information provided reflected the various perspectives in relation to the wider Fremantle Bridge issue. In this sense the information provided was also 'discursively' representative (Dryzek and Niemeyer 2007). And, because this information was provided to participants prior to the deliberative process, participants were aware that there were a wide variety of perspectives that came to bear on the issue. They were thus primed to consider these perspectives, regardless of whether they agreed with them or not. (The deliberative process itself also helped to achieve this, which we consider below.)

The presentations given as part of the deliberative process were intended to build on the basic information provided to participants, rather than to 'throw a spanner into the works' and lead participants into what would likely be unproductive discursive dead ends. This was facilitated by a condition of instruction provided to presenters that their arguments should be made regarding issues that needed to be considered, rather than an appeal to a particular kind of outcome regarding the bridge. This approach helped to conserve the 'deliberative resources' of participants, where they would have had to tease out the reasons for a particular position if they were to avoid merely agreeing with presenters without proper reflection — a situation that has been described elsewhere in terms of symbolic politics, which good quality deliberation ought to reverse (Niemeyer 2004). Participants were thus better placed to continue the process of reflection on the issues and construction of their positions in light of the arguments in favour of particular considerations put to them.

5.3 NATURE OF THE ISSUE

An important factor contributing to the success of deliberation was the nature of the Fremantle Bridge issue. The task of coming to grips with the issue was facilitated to the extent that it was:

1. Local: the issue was geographically bounded and the main focus – the bridge itself — was familiar to participants prior to the deliberative event, from personal experience
2. Tractable: the issue involved easily identifiable considerations that were readily accessible to the average resident
3. Salient: the issue had already been the subject of interest within the wider public sphere, including media reports

Because of these three factors, the participants in the deliberative process were able to relatively quickly get to the ‘crux’ of the issue at hand, familiarise themselves with arguments that they may not have been previously privy to, and synthesis it into an intersubjectively consistent position. This contrasts with a very complex issue, with numerous and highly technical considerations, that has not been salient in the public sphere, such as the collection of genetic material for medical research. For example, a recent case study concerning a multi-day deliberative process in British Columbia, Canada did not achieve anything near the same improvement in IC as the Fremantle Bridge case study. In that case the reasons appear to mainly lie with the highly multidimensional nature and complexity of the issue, such that participants needed to take cognitive short cuts and focus on particular facets of the issue as part of their group deliberations (Niemeyer 2007b).

5.4 PROCESS

The design of the process of deliberation itself was an important contributor to deliberative success. The process itself was structured around a ‘learning day’ concept in which the knowledge of participants was tested and built upon. The flow of the process was also important, where the design was intended to avoid ‘blind alleys’ in which participants got stuck on unproductive or irrelevant points.

Moreover, the process did not require consensus per se, only that they take into account the relevant perspectives coming to bear on the issue. It has been argued on numerous occasions that the requirement of consensus is often unrealistic and has a distorting effect on the deliberative process, resulting in perverse outcomes such as ‘group think’ (Janis 1972) and insincere deliberation (Kuran 1998), as well as marginalizing many perspectives (see also Connolly 1991; Mackie 1992; Mouffe 1993; Femia 1996; Mouffe 1999).

Another important feature of the design of the deliberative process was the use of computers to coordinate the perspectives and input from different groups (on separate tables) within the wider deliberative forum (see description of the

deliberative design in section 1.1). This feature reduced the time usually taken for separate 'break-out' sessions and then plenary feedback, typical of the deliberative poll. Participants were able to get immediate feedback on their questions and arguments as part of the deliberative forum. The networked computers enabled the questions fielded to panellists to be those most common to the room, rather than from those from the vocal few

Having trained table facilitators at each table, and trained substitute scribes (to fill in if participant volunteers were not available or were ineptly submitting the ideas of the team) ensured that each person's voice was heard and the key ideas were recorded. In addition, if the table needed assistance with specific questions, by raising a green card, a content expert became available to the table. This enabled a free-flow of discussion, supported by information when needed.

Creating a positive deliberative environment from the outset was also an important design feature, and part of the many under theorised (and in many cases, untheorisable) aspects of deliberative design, such as quality of facilitation. Experience with deliberative processes suggests that seemingly small matters count, such as the way in which participants are first engaged as part of their experience with the process. Another consideration is the manner in which participants are briefed at the beginning of the process, so that the expectations of them are entirely clear, understood and agreed upon by all. The net result of these design features is that participants are able to constructively engage in the deliberative process along the lines of theoretical ideals from the outset of the process.

5.5 INFLUENCE

There is a reasonably well established link between the

From outset, participants in the Deliberative Survey were informed of the part their contribution would play in making a final decision. (The same applies to the Steering Team, Community/Industry Stakeholder Workshop, Indigenous consultation, and recipients of the survey who did not participate in the deliberative forum.) Each participant received the written output of their work, and feedback from the broader process. The Department of Main Roads clarified at the outset, that the outcomes of the deliberative survey would be submitted to the Minister for her consideration.

In short, there was a formal relationship between the work done by the participants in the deliberative process and the decision-making process. There is some evidence that participants are more willing to 'invest' in the deliberative process if they think that their effort will come to something in terms of the decision.⁵ This did indeed appear to be the case for the Deliberative Survey.

There is a counter to this general point in the case where participants in deliberation have a strong and direct interest in the outcome. In such cases it may well be likely that the high stakes will increase the chances of strategic behaviour among participants to elicit specific responses that breach normative deliberative ideals. However, the example of stakeholder deliberation is antithetical to the imperative of random selection made above, whereby the deliberative chamber is constituted largely by disinterested individuals. It is unfortunate that where this does not occur, and the results are manifesting non-deliberative, they are used as an argument against the tenets of deliberative democracy (e.g. Skillington 1997).

⁵ Although there is also some evidence that participants are also willing to constructively engage in deliberation, even if the impact on the decision is unclear, or even out of the question. See for example Niemeyer (2002).

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APPENDIX A. DETAILED DESCRIPTION OF THE 6 OPTIONS FOR THE FREMANTLE BRIDGE⁶

The following figures include pictures developed by MainRoads WA for each of the options that were considered by the Community Dialogue process.

Option 1: Retain the existing bridge, but replace the navigation spans and deteriorated components

Figure 4. Option 1



Option 2: Retain the existing bridge, but replace navigation spans and deteriorated components and incorporate bridge widening

Figure 5. Option 2



⁶ All pictures are taken from the information booklet 'Future of Fremantle Bridge. Community Engagement Process' (MainRoads WA 2006).

Option 3: Construct a new standard bridge next to the current bridge, leaving a section of the existing bridge as a heritage and recreation site

Figure 6. Option 3



Option 4: Construct a new bridge that is major entry statement for Fremantle, leaving a section of the existing bridge as a heritage recreation site

Figure 7. Option 4



Option 5: Construct a new standard bridge and retain the existing bridge as a pedestrian/cyclist facility

Figure 8. Option 5



Figure 9. Option 6

Option 6: Construct a new two lane standard bridge and retain the existing bridge as a 2 lane bridge with improved pedestrian/cyclist facilities



APPENDIX B. RECRUITMENT METHOD

The community engagement process was designed as a part of the broader community survey, which was undertaken in the weeks before the forum. For the community engagement process a calibrated deliberative survey (CDS) was used. This method requires conducting a large-scale community survey prior to deliberative survey in order to ensure that participant sample for the deliberative survey is representative of the total population.

According to the report prepared for Main Roads WA (Bruce 2006a), the community survey was sent to 6,000 recipients chosen randomly from the WA Electoral Commission's Electoral Roll. These people were also sent an invitation to attend the forum.

Three areas are defined as the population of interest for the issue at stake:

- Inner Fremantle (30% of the sample),
- adjacent areas for which the bridge might be expected to be a major river crossing (30%)
- the rest of the city (40%)

According to the report on survey results, overall 17% of the survey participants responded to the Community Survey resulting in 990 surveys being available for analysis in the consultants report (Bruce 2006a).

Participants for the one-day **community forum** were recruited using different methods. Three quarters of the deliberative sample participants were obtained from the aforementioned community survey. The remaining participants were recruited by random phone calls and random intercept recruiting in the defined areas. A total number of **165 participants** (out of 189) at the forum completed both surveys conducted prior and after the community engagement process⁷.

This report draws in part from the results of these 165 participants. Its main focus, however, is on the sub-sample of these who completed both the community survey

⁷ Note that the report on Calibrated Deliberative Survey Results (Bruce 2006a) refers to 184 as the number of participants who fully completed the surveys both prior and after the deliberative process. Since we are particularly interested in the changes in ranking data, I did not include those whose ranking data were missing either at pre or post stages of the deliberative process.

(including ranking of the options presented for the replacement/repair of the bridge) and an additional survey (referred to herein as a Q sort) that was completed by a group of volunteers immediately before and after the deliberative process. The sampling and design of the Q study is described in detail in the following section.

Appendix A. Sample Participating in the Q Study

Overall 55 people participated in the Q study conducted before and after the one-day community engagement process. Among them a total number of 41 fully and correctly completed the both stages of the Q study. The data for the Q analysis is drawn from the pre and post Q sorts of those 41 participants.

Participation in the Q study was on voluntary basis. Those participants who were recruited for the community engagement process by random phone calls or intercept were invited to participate in the Q study. Each participant is paid \$50 for their participation.

B.1. SAMPLING FROM AMONG PARTICIPANT TYPE

The participants of the Q study include a mixture of participants randomly selected for and invited to the deliberative forum. As noted earlier, three different recruitment types were used to select the participants:

via community survey,

random phone calls and

random intercepts.

Those who were sent the community survey ahead of the deliberative forum were also sent some information on the current situation of the Fremantle Bridge⁸.

Answers given to the question 28 of the deliberative survey identify those three different group of people participated in the deliberative survey and Q study.

It is important to note that those who were recruited through community survey have also received information in mail. Among 41 Q study participants, 14 received information in mail as part of the community survey and the remaining 27 people did not receive any sort of information prior to the deliberative forum. Among 14 participants, 12 completed the survey and sent back. The table below shows the number of participants according to the recruitment type.

⁸ The recruitment methods were identified by looking at the answers the Question 28 of the deliberative survey.

Table 9. Sample details according to recruitment methods

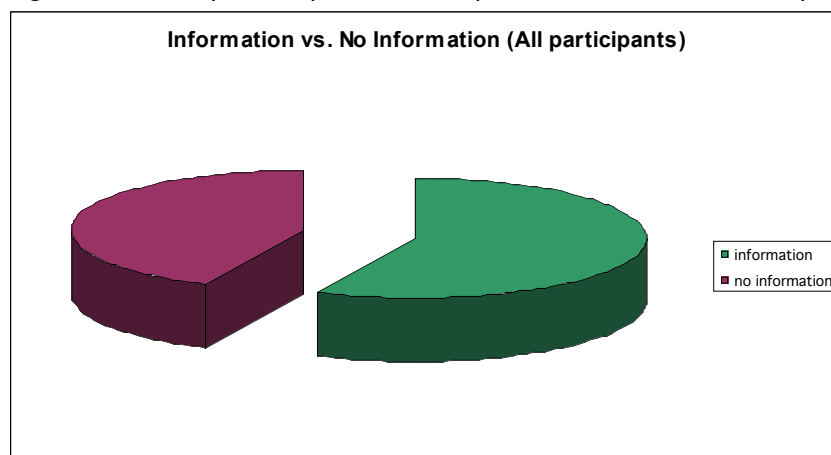
	Community Survey	Random phone calls	Random intercepts	Total
All participants	123	14	28	165
Q Study participants	14	7	20	41

Those participants who were recruited via community survey (overall 123) received also information about the issue at stake ahead of the forum. Among them 94 (76 %) participants completed the Community Survey and sent back, whereas 29 (24%) of them did not do the survey. The table below presents and compares the number of participants who received information and completed the survey with the rest of the sample.

Table 10. Number of participants who received information ahead deliberative forum

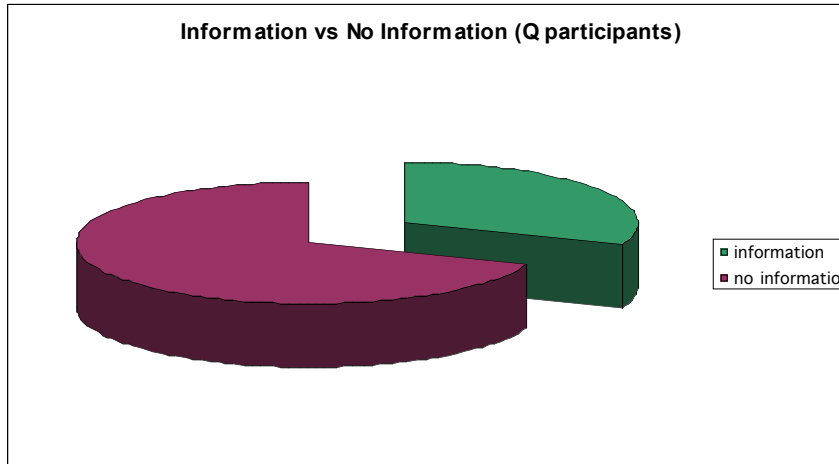
	Received information and survey and completed the survey	Received information and survey but did not complete the survey	Received neither information nor the survey	Total
All participants	94	29	42	165
Q Study participants	12	2	27	41

We assume that only those who completed the Community Survey have read the information material sent. The shaded area in the table above illustrates the number of participants who have read the information sent.

Figure 10. All participants with previous information (57%)

12 of 41 Q study participants (29%) received information and completed the community survey. The figure below show the portion of Q study participants with previous information.

Figure 11. Q Study participants with previous information (29%)



Number of participants according to areas

The participants of the deliberative forum came from three different areas: Inner Fremantle, adjacent areas for which the bridge might be expected to be a major river crossing and from the rest of the city. For the purposes of the Q study the first two areas were combined and named as Area 1 and the rest of the city as Area 2. The table below shows the number of participants living in Area 1 and Area 2.

Table 11. Number of participants according to areas

	Area 1 (inner Fremantle and adjacent areas)	Area 2 (the rest of the city)
All participants	119	46
Q study participants	22	19

APPENDIX C. Q- Methodology

The following is a detailed explanation of the method used to develop the Q survey and analyse the data from the Fremantle bridge Community consultation process. The text itself is a condensed extract taken from Niemeyer (2002).

C.1. Q METHODOLOGY AND THE ANALYSIS OF DISCOURSE

This section briefly describes Q methodology and its role in exploring subjectivity. This is followed by a description of the process used to obtain and analyse the Q data from the Fremantle Bridge case study. The aim is to provide sufficient information to comprehend the analysis that has been used in this report.⁹

Q methodology is a particularly promising approach for the exploration of subjectivity in relation to a particular phenomenon. It is well suited to the broad, intensive and exploratory approach of this research, not least because it involves in an intensive analysis potentially incorporating complementary methods.

Q methodology was devised by William Stephenson and first introduced in a letter to *Nature* in 1935. Brown (1993, pp.3-4) describes the approach as follows:

Q methodology provides a foundation for the systematic study of subjectivity.... Most typically in Q, a person is presented with a set of statements about some topic, and is asked to rank-order them (usually for 'agree' to 'disagree'); an operation referred to as *Q sorting*. The statements are a matter of opinion only (not fact), and the fact that the Q sorter is ranking the statements from his or her own point of view is what brings subjectivity into the picture.

What is of interest in Q methodology is the subjectively assigned relative importance of statements relevant to the Fremantle Bridge case study. In short, Q methodology is used here as a form of discourse analysis to identify the predominant subjective groupings discussed above as far as they are constructed into policy preferences. The relationship between these discourses and preferences has been depicted in the conceptual model shown in Figure 1.

As used in this report, a factor can be said to relate to a particular discourse, which is the manifestation of underlying subjectivity. The identification of the discourse to be

⁹ For a more thoroughgoing description of Q methodology, see Brown (1993). Dryzek (Dryzek 1990, ch.9) gives a concise argument for using Q methodology in political science. The definitive modern volume is Brown (1980), which is the major source informing the use of Q methodology herein. One of the original sources on Q methodology is Stephenson (1953).

analysed is dependent on the phenomenon under study. From the discourse, a series of statements, or ‘concourse’ to use the term applied by Q-methodologists, associated with a particular issue are selected. The parallels between the use of the terms ‘discourse’ and ‘concourse’ can be evidenced by the following quote:

Concourse is the very stuff of life, from playful banter of lovers or chums to the heady discussions of philosophers and scientists to the private thoughts found in dreams and diaries. From concourse, new meanings arise, bright ideas are hatched, and discoveries are made: it is the wellspring of creativity and identity formation in individuals, groups, organizations, and nations. (Brown, 1993, p.5)

As used in this research, Q methodology provides a mechanism for the ‘codification of discourses’ pertaining to the various policy positions adopted by deliberators. Using the concourse as the basic tool, Q methodology assisted with the identification of coherent structures amidst the entangled ‘mess’ of discourses that may come into play over the environmental policy issue adopted as the case study. As Brown (2001) states:

Q methodology provides the means, via Q technique and method, for finding the global structure (as manifested in a factor, or set of factors) that is inherent in a discussion.

In summary, Q sort has been used to ‘reveal the inherent structure of a concourse’ and the ‘vectors of thought’ associated with it (Brown, 1993, p.5), which take the form of factors. When extracted from the Q data in, these factors represent intersubjectively shared discourses that tend to be constructed into policy preferences in the manner depicted in Figure 1.

C.2. Q METHODOLOGY AS THE SEARCH FOR SUBJECTIVE SPECIES

The conceptual outlined in Figure 1 considered the role of subjectivity in the formation of policy preferences. These manifest as discourses within the discursive sphere, which in turn reflect particular subjective groupings that can be observed among a population sample. Although we are interested in these groupings, we have not attempted to predefine them. Rather, the approach here is to ‘discover’ them by exploration of the data.

An important strength of Q analysis for the purposes here is that it is driven by operant subjectivity, which the observer must seek to understand. This contrasts with the observer imposing *a priori* associations between variables and then seeking to

explore strength of these using statistical methods, which is the domain of so-called 'R' methodology.¹⁰ We are in a sense surveying the discursive sphere to discover subjective factors (or 'species') that embody the various discourses¹¹ that give rise to different kinds of policy preferences.

C.3. THE APPLICATION OF Q METHODOLOGY IN THIS RESEARCH: OBJECTIVES AND POINTS OF CLARIFICATION

Before proceeding with a description of Q methodology, we should first clear up some points relating to the way it is used in this research. Firstly, although we have stressed that we do not wish to pre-define any subjective types, there is an important assumption driving the analysis of subjectivity. This follows the discursive preference model outlined in Figure 1, which posits that there is a relationship between subjectivity and policy preferences such that similar preference types will cluster together with similar subjective types. This does not mean that I assume that preference-subjectivity is the only relationship to be discovered. The factors that result from the analysis will be but one type of codification, for which many variations exist.¹²

There is another point I should clear up. Contrary to what the ecology analogue discussed above might suggest,¹³ individuals do not represent subjective factors (or discourses) *per se*. Rather, they are loci of discursive interaction within a broader communicative 'landscape'.¹⁴ The subjective factors discussed in this chapter represent ideals or 'archetypes' that have been elucidated from the Q sorts of deliberators. Thus, when we refer individuals as corresponding to a subjective factor we do not wish to imply that their subjectivity is *defined* by that factor. Individual

¹⁰ In describing a particular species, the observer does not measure correlates between characteristics of randomly selected plants that may or may not belong to the same species, but groupings of individuals that appear similar. She then explores and describes those characteristics that are common to that species.

¹¹ Or 'concourse', to employ the language of Q (Stephenson 1953).

¹² Brown (Brown 1980, p.34) draws a comparison between Q methodology and Weber's ideal type (1947) as 'an abstraction, a new understanding of social reality reached by the observer and based on a raw data base [the ordering of Q statements] composed of the conceptions of persons being observed'.

¹³ That exploring the discursive terrain is not unlike exploring ecological terrain to discover the resident species.

¹⁴ Perhaps in this sense individuals might be better thought of as local 'ecosystems' in which subjective species interact.

subjectivity is surely far more complex than could possibly be represented by a small number of factors. Rather, I am simply referring to the extent to which they agree with the discourse associated with that factor.

The final point pertains to the way in which Q method is applied here. That is, for a dynamic analysis of subjectivity. Consequently, we will not merely be surveying the extent to which individuals concur with subjective factors (and their relationship with preferences). Of primary focus is the transformation of subjectivity, or specifically:

- 1) the change in the discursive landscape due to deliberation;
- 2) the change in policy preferences; and
- 3) the change in the relationships between subjectivity and preferences.

The objective of the Q analysis is to achieve first task, to observe and analyse the transformation of subjectivity during the deliberative process. In the following discussion, outlines the process whereby this will be achieved.

C.4. SAMPLING AND Q METHODOLOGY

A feature of this study, shared with all those using Q methodology, is that the intensive nature of the research.¹⁵ Although small sample sizes are often anathema to R studies, Q methodology is able to use them produce meaningful, externally valid and resilient findings.¹⁶ This is because the discovery of 'subjective species' in the discursive terrain can be done more effectively among a small group. Once the sample size reaches a particular threshold the 'marginal benefit', or probability of finding a new subjective type decreases dramatically. Additional subjects produce little new information. The 'representativeness' of Q studies using small numbers of individuals can be explained by again invoking the ecology analogue. When ecologists survey a particular area to identify resident species, rather than investigate the entire area only a small number of select sites are selected. The reason for this is that the probability of finding a new species decreases exponentially with each

¹⁵ Although this is a comparatively large study compared to others that have been analysed as part of the Micropolitics of Deliberation project. See <http://delibdem.anu.edu.au/Micropoliticsb.php>

¹⁶ Where the discursive landscape has not changed, the same Q sort, using similar processes of judgmental rotation but applied to different samples very often reveal similar results (for example Lipgar et al., 2000).

subsequent sample. This is known in ecology as the ‘area-species curve’ (Ricklefs 1990, pp.721-726).¹⁷

C.5. THE DEVELOPMENT OF Q STATEMENTS

The most important consideration for sampling using Q methodology concerns not numbers of individuals, but the selection of statements to be used in the Q sort. In the following, I will briefly discuss the nature of the task.

To use the words of Brown (1980, p.186) the process selecting statements for a Q sort is more an ‘art’ than a science — although this probably understates the systematic nature of the task. Nonetheless, it does involve negotiating the potentially immense complexity of the concourse under study, but there are useful principles that guide the process. The main guiding principle for statement selection concerns the systematic selection of a representative sample of statements based on Fishers’ (Fisher 1960, pp.1721) principle of *randomisation*.¹⁸ To this end, Q methodologists tend to use block or ‘factorial’ designs (Brown 1970). In short, the approach involves establishing the major categories relevant to the phenomenon being surveyed and allocating statements among them. The statements can be devised a number of ways. What is most important is that they grounded in the actual discourse pertaining to the subject at hand (Brown 1993, p.94).

¹⁷ The analogy may to some degree serve to reconcile, rather than highlight differences between Q and R methodologists. Indeed, the approach to ecological surveying described above is in fact a type of R study with a particular sampling regime that involves intensive sampling within a given transect, rather than a less detailed sampling of a larger area. As is the case for transect sampling for species, Q methodology intensively samples small numbers of individuals with a comparatively large number of statements (Brown 1993). The most important condition is that each sample is intensively explored so that nothing is missed. Thus, sample size is secondary to the choice of statements to ensure a good representation of all aspects of subjectivity from which factors are extracted.

¹⁸ Cited in Brown (1980, p.61).

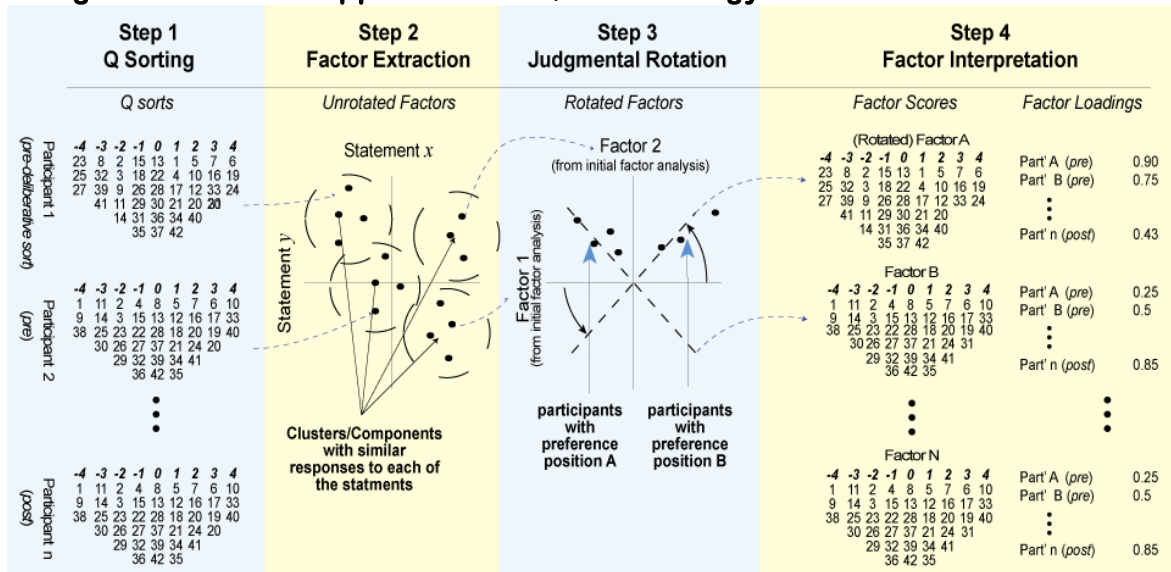
C.6. ANALYSIS OF Q SORTS

Turning attention from design to analysis, the basic process of obtaining and analysing the Q data for the Fremantle Bridge Community Consultation Process can be described as four separate steps. These are:

- Step 1: obtaining Q sorts from each deliberator at three stages of the deliberative process;
- Step 2: extracting factors from the raw data;
- Step 3: applying judgmental rotation to the initial factors; and
- Step 4: interpreting and describing the resulting factors.

Each of these steps is depicted in Figure 12. Step 1 resulted in two 'sorts' provided by each of 48 participants in the Q study before and after the deliberative process. The resulting Q sorts are represented as the inverted pyramids in Figure 12. The top row of a 'Q sort' represents the score that is allocated to a statement under that category.

Step 2, the extraction of subjective factors, is depicted in Figure 12 as clusters of deliberators with similar Q sorts. Step 3 (judgmental rotation) involves plotting deliberators according to their affinities with the factors and rotating the axes to maximise substantive differences. The final step of factor interpretation (Step 4) involves translating the results into factor scores. These comprise an array of scores for the Q statements typical for that factor.

Figure 12 The Application of Q methodology

Each of these above four steps is described in turn in the following discussion.

C.7. STEP 1: Q SORTING

The actual process of Q sorting entailed deliberators sorting 38 cards, each containing a single statement. In short, the statements were sorted by deliberators into nine categories from ‘-4’ (most disagree) to ‘4’ (most agree). Each category was subjected to a quota, which was set across all categories to approximate a normal distribution;¹⁹ an approach referred to in Q methodology as a ‘forced’ distribution.

The shape of the resulting Q sorts from Fremantle Bridge Community Consultation process deliberators approximates the shape of those shown in the first step of Figure 12, though deliberators were given freedom to depart from the distribution where necessary.

Deliberators were asked to perform Q sorts immediately before and after of the Fremantle Bridge Community Consultation process using the same set of statements each time. To restate, these stages correspond with the three deliberative stages. They are:

- Stage 1: *Pre-deliberation*: immediately before the start of the Fremantle Bridge Community Consultation;

¹⁹ The quotas were {3, 4, 5, 6, 6, 6, 5, 4, 3} for the scores {-4, -3, -2, -1, 0, 1, 2, 3, 4} respectively.

- Stage 2: *Post-deliberation*: immediately after the conclusion of proceedings.

In short, by taking these two subjective snapshots it is hoped to account for the subjective dynamics of deliberators, through the transformation of the results into factors, as far as they relate to changes to preferences.

C.8. STEP 2: FACTOR EXTRACTION

The next step in Q analysis, represented in Step 2 of Figure 12, involves the extraction of the initial factors. In the following discussion WE will outline this process, beginning with a brief description of what constitutes a subjective factor. This is followed by an account of the process of factor extraction, including a justification of the particular approach adopted.

a) What is a factor?

At the beginning of this discussion the subjective factors were conceptually described as ‘the codification of discourses’ running through the Fremantle Bridge issue. The idea of using Q methodology here is to extract various discourses to maximise the ability to account for changes in policy preference.

In Q methodology the technical definition of a factor is simply the clustering of individuals who have ranked the statements in a similar fashion (Brown 1980, p.6). These clusters are conceptually represented in Step 2 of Figure 12 as groupings of closely related Q sorts. In very rough terms, the factor is determined by choosing some point within these clusters using a specific algorithm — although as will be discussed below, the approaches used vary.

b) The rationale for extracting factors from the Q sorts from all three deliberative stages as a group

Before discussing method of factor-extraction, another element to the analysis that needs to be addressed. This concerns that way in which the data sets for each deliberative stage are treated as part of a longitudinal analysis. Because there is not one, but two sets of data there are a number of possible ways in which factors could have been extracted. One approach is that adopted by Pelletier et al. (1999), who analysed the sets of data obtained at different deliberative phases as separate groups. A second approach analyses of all three groups of data together (Lipgar,

Bair et al. 2000). Here the grouping of both sets of data was adopted. This is not least because separately analysing the three sets of Q sorts provides little additional insight

c) The Process of Factor Extraction

The second consideration for the extraction of subjective factors concerns the method of factor extraction. As is the case for most Q studies, We have adopted the Principal Components method. In this case, the explanatory power sought is the ability to account for changes to policy preferences. This is achieved via a process of judgmental rotation, which will be described shortly.

The process of extracting the initial factors for the grouped Q sorts using the centroid method was performed using the statistical package PCQ Method. The first stage of factor extraction entailed correlating all 48 sorts at both deliberative stages (48×2 = 96 sorts in total) with one another to produce a 96×96-correlation matrix. In essence, the process involved plotting all the 96 sorts in 38 dimensional space (the number of statements in the Q sort) and examining groups of closely correlated sorts using a statistical algorithm specific to the centroid method.

Step 2 in Figure 12 illustrates this process, though only in two dimensions. The resulting factors represent modal points within each cluster. Individuals are 'loaded' on that factor depending on how near or far they are from that centre point, reflecting the extent to which they 'agree or disagree' with the archetypal position. These factors now provide the raw ingredients needed to extract the final factors that can be used to account for changes to preferences using a process of judgmental rotation.

C.9. STEP 3: JUDGMENTAL ROTATION

In Q method, analysis does not usually end with the extraction of the initial factors. Rather, these simply provide the raw materials from which the researcher extracts new factors that help to understand subjectivity from a particular perspective. The process is referred to as judgmental rotation. We will now briefly describe the rationale of judgmental rotation and its use in analysing the subjective data. A description of judgmental rotation can also be found in Brown (1993).

Judgmental rotation is grounded in the use of theoretical, rather than statistical criteria, to gain insights into relationships based on the perspective that the

researcher adopts to examine the data (Brown 1980, pp.33, 226-31) (This is not to suggest that the process involves ‘making up’ results to suit a particular hypothesis, as results cannot be extracted that do not already exist in the data (Brown, 1980). Rather, the process effectively entails the observer moving around the data to observe it from the best position for the task at hand, which in this case concerned the ability to account for differences in preferences. The approach concurs with a fact well known in physics that results are contingent upon the observers’ vantage point.²⁰

Judgmental rotation of the Fremantle Bridge Community Consultation Process subjective data involved identifying patterns among participants’ preferences. These were then compared to the initially extracted factors (from Step 2). Where possible these factors were manipulated (rotated) so that they reflected, as far as possible, the various types of preference outputs. To this end, those groups of deliberators with similar preference rankings were manipulated in 2-dimensional space defined by the factor axes of pre-existing subjective factors. The axes were rotated to place preference types along the factor axes.

To illustrate, the graph in Step 3 of Figure 12 depicts an idealised scenario involving two groups with similar preference positions. These groups cluster together within the plane defined by the two factors initially extracted in Step 2. Although these preference types are neatly grouped within this plane, the factors as they stand do not maximise the ability to describe the subjective positions that distinguish these preference types. This can be better achieved by rotating the axes so that the axes of the new factors bisect these groups. The dashed axes in the figure represent these new factors.

The representation of judgmental rotation in Step 3 of Figure 12 has been idealised to assist with the explanation of the process. In reality, deliberators did not fall so neatly into tightly formed groups according to preferences. However, definite trends

20 See for example Stephenson (1983). To use the example of Brown (1980, p.226), different theoretical perspectives applied to the same electoral results (Marxist, psychoanalytic, etc.) will yield different, but no less valid results. These results are no less valid than those that claim to hail from positive accounts of social or natural phenomena. However, their validity is intrinsically tied to parameters of experimental observation, and assertions must be sensitive to this. In the case of the analysis of the subjective data, these parameters are set to maximise the power of the resulting subjective factors in explaining differences among and changes to preferences.

could be detected, particularly with respect to differences between pre and post-deliberative preferences and particular groups of deliberators. These differences were most clearly elucidated in respect to post-deliberative preferences, which is to be expected.

Rotation of the data was performed a number of times using different pairs of subjective factors until the major differences among preferences were reflected in the resulting factors. Four subjective factors resulted. The factors should provide a better account (compared to unrotated factors) of the subjectivity of those deliberators with particular types of preference ranking for options for the Fremantle Bridge. However, they are meaningless unless properly interpreted and described using a process of factor interpretation and description. We will now turn to the description of this task.

C.10. FACTOR DESCRIPTION

The raw outcomes from the process of judgmental rotation just discussed are factor scores and factor loadings. Factor scores consist of an array of typical scores for each statement for a factor, which must be evaluated and described to make sense of it.²¹ Factor loadings reflect individual affiliation with these factors — or in the aggregate sense, the abundance of that discourse within the discursive sphere.

These outputs provide the basic tools for factor descriptions, but more information is used to perform properly the task. Indeed, to appreciate fully the factors and the subjective dynamics a more rounded picture of what each subjective factor represents is required. To this end, factor descriptions have been supported by qualitative observations.

In the following discussion, the main elements of factor description are briefly described. This begins with a more descriptive account of factor scores and factor loadings. The process whereby factor descriptions have been developed is then discussed.

²¹ The array of factor scores for the four factors can be found in **Error! Reference source not found.** on page **Error! Bookmark not defined.** These will be discussed in the next section.

d) Factor Scores

As outlined above, the basic output of factor analysis and judgemental rotation is an assemblage of scores for each of the 38 individual statements that comprise the Q sort. These are known as *factor scores*, which are depicted in step 4 in Figure 12.²² By definition, these scores reflect the archetypal response to a statement for a factor. The factor scores used for factor description can be found in Table 12 in Appendix D. For example, Factor A yielded a very low score for statement 19: “Altering or replacing the existing Fremantle Bridge means diminishing Fremantle”. This implies that individuals loaded on this factor believe that the bridge is important to the identity of Fremantle. Thus, in turn it can be expected that individuals significantly loaded on Factor A will tend to concur with the view, reflected by their responses to statement 19.

e) Factor Loadings

Individual concordance with a particular factor is measured by *factor loadings* (see Step 4 in Figure 12). These are essentially measures of correlation between an individual’s Q sort and the archetype for that factor.

Put another way, factor loadings (with values between –1 and 1) indicate the level to which the subjectivity of individuals resemble a particular subjective archetype. This is much the same way as members of an animal or plant species tend to resemble to a phenotype. A factor loading of ‘1’ denotes perfect concordance with a factor, the individual having exactly the same Q sort as the archetypal representative of that factor. A negative loading indicates disagreement with that factor, with factor loading ‘–1’ denoting perfect disagreement. Values close to zero indicate that there is no significant relationship, or that the factor does not help to describe that individual’s subjectivity. In other words, the subjectivity of the individual cannot be said to correspond with that of that particular factor.

²² The process for deriving factor scores involves the use of a composite of individual factor loadings and the rank for that statement of those individuals significantly loaded on the factor. See Brown (1980) for a description of the process of deriving factor scores. The factor scores for the four Q factors extracted from the Fremantle Bridge data were calculated by PCQ Analysis.

f) Interpretation and Description

Factor interpretation involves building a coherent description capturing the salient features of a factor. For example, a factor may be summarised with a few words, or title, such as 'Safety and Efficiency' for Factor A. However, although descriptive these terms are loaded with particular meanings in different contexts. Therefore, it is important to focus not just on the factor labels, but on the factor description as a whole to which these labels should then come to be associated.

The above discussion about the relationship between Factor A and beliefs about the role of the Fremantle Bridge in defining the character of Fremantle constitutes part of the task of factor interpretation. The primary aim of interpretation is to provide a reasonable insight into subjectivity associated with that factor. A guiding principle provided by Brown (1993, p.33) is as follows:

Just as each Q sort portrays a version of the world 'as I see it,' so does each factor represent a version of the world that is commonly held and which speaks to us through the unison of the factor scores, and factor interpretations cannot stray far from the factors of which they are interpretations if they aspire to descriptive accuracy.

In Q studies, factor interpretation and description tend not to follow strict algorithms. Rather, the details vary according to what the investigator is trying to accomplish (Brown 1980, p.347). However, all share general features. These are the interpretation of raw factor scores into a dialogue describing operant subjectivity.²³

The process primarily draws on factor scores as the raw materials, but often incorporates a wider array of information, such as follow-up in-depth interviews (Brown 1980, pp.234). This is also the case here, where additional information included observations of actual discourses reported in the previous chapter in addition to responses to open-ended surveys filled out by deliberators at the end of the deliberative process. In addition, background material pertaining to the Fremantle Bridge issue is incorporated into the descriptions to help ground the factor in the issue and its context (political, historical, economic, cultural etc.).

²³ Q methodologists often describe factors that result from the approach as operant subjectivity because they result from observation of subjectivity rather than intrinsic to the method of measurement. See for example Stephenson (1977).

An important consideration in interpretation of factors is the selection of the statements that will form the basis of the factor description. Often, statements are preferentially selected based on factor scores that are significantly different from other factors — that is, are distinguishing statements (Brown, 1993, p.31).²⁴ However, simply using distinguishing statements may miss a good part of the story. For example, two factors may share a similar factor score for a statement, which are significantly different from the remaining two factors. Thus, while the statement may not be useful for distinguishing one factor from the rest, by differentiating between groups of factors it can still play an important role in exploring the contours of subjectivity.

In a different approach to factor description, Pelletier et al (1999, p.108) included the ten statements with the highest scores as well as the ten lowest. However, as for the first approach discussed above, this approach may also be excessively arbitrary, leading to exclusion of otherwise important descriptive elements. For example, one factor may yield a score of zero for a statement where the others score highly. Such cases may be significant and worthy of exploration.

The approach adopted for describing the four subjective factors extracted from the Fremantle Bridge Community Consultation Process subjective data did not follow a strict algorithm. Rather, heuristic strategy was adopted. It began with distinguishing statements for each factor. The resulting factor descriptions were then crosschecked with the qualitative data to check consistency. Where necessary, other statements were selected that help to identify similarities and differences between factors. The process was repeated a number of times and the results checked at each stage. The result of this process of factor interpretation is the set of factor descriptions reported in the following section.

²⁴ A statement distinguishes a factor if that factor's score is significantly different to those of the other factors.

APPENDIX D. DETAILS OF THE Q FACTORS

Table 12 below shows the factor scores for all four factors reported in this research.

Table 12. Factor Scores for all Factors

No	Statements	A	B	C	D
1	Replacing timber elements with steel components would destroy the authentic appearance of the bridge.	0	0	-5	1
2	Alterations will lead to nothing but the uglification of the bridge.	-1	-3	-4	-2
3	The bridge has stood the test of time for the past 67 years; there's no need for major changes to it.	-4	-2	-3	-2
4	The safety of the bridge is more important than its appearance.	3	0	4	2
5	The main concern is to have a bridge that underpins the economic activities in the region	1	-3	2	-3
6	The function of the Fremantle Bridge as a transport gateway is more important than its heritage.	1	-4	-1	-1
7	There are no specific economic benefits for the Fremantle from the bridge	-1	-3	-2	0
8	The problem is not the vulnerable structure of the bridge but excessive traffic, which should be reduced.	-2	0	0	4
9	As long as there is a bridge that I can cross, I don't care about its structure.	-2	-5	-2	-4
10	We should definitely preserve the heritage value of the bridge, but only if it is financially viable.	0	-1	0	3
11	Tax payers money should be spent on services that are more essential than upgrading the bridge.	-2	-2	-1	3
12	It is worth spending money to retain the iconic status of the bridge	-1	2	-2	-3
13	We shouldn't stick to the past when deciding about the future of the bridge, we should be open for modern design options.	3	-2	4	-3
14	The bridge is certainly an attractive entry statement to Fremantle and without doubt far more important than trucks.	-2	1	-4	0
15	The Fremantle Bridge is irreplaceable. It is a strong, enduring part of our history.	-3	3	-1	-1
16	Reducing the risk of vessel collision on the Swan River should be the main consideration when deciding about the future of the bridge.	2	-2	3	1
17	It is most important that the solution is a long term one.	4	3	3	2
18	River craft deserve better traffic conditions on the Swan River.	1	-1	1	-2
19	Altering or replacing the existing Fremantle Bridge means diminishing Fremantle.	-5	-1	-3	-5
20	Whatever works are undertaken, the heritage value of the old bridge will be affected.	0	1	-2	-4
21	The old bridge provides a scenic entrance to Fremantle that attracts tourists.	-3	1	-1	1
22	The cost of maintaining the old timber structure is too high.	2	-1	0	0
23	Providing a better pedestrian and cycle traffic should be the main consideration when deciding about the future of the bridge.	0	0	2	2
24	The old bridge will never be able to handle vehicles, bike and pedestrians at the same time.	2	-1	2	-2
25	The most important thing is that access to Fremantle from its north is maintained in the most undisturbed manner as possible.	1	1	0	-1
26	The most important issue for cyclists is safety, which means they need access across the bridge which has a good surface.	2	1	-1	5
27	Since the traffic bridge has important heritage significance, the only grounds for its removal should be on the grounds of serious safety issues and verified by heritage engineers.	-1	5	2	2
28	The existing bridge is too low; archways too narrow and do not line up with the railway bridge making navigation dangerous.	3	0	3	3
29	The critical infrastructure of the bridge raises serious safety concerns.	4	2	1	0
30	Safe and efficient movement of all road and river users across and under the bridge should the main considerations.	5	2	1	4
31	Any changes to the bridge should give right consideration to the environment.	1	4	1	1
32	We just got traffic calming in Town Centre after 25 years effort. I don't want bridge to be built bigger, better faster to reverse the gains of the last 25 years.	-1	0	0	-1
33	This magnificent timber bridge is a rare and beautiful sight in today's world, it should be preserved.	-3	2	-3	-1
34	When deciding about the future of the bridge, indigenous concerns should be given adequate consideration.	0	4	5	0
35	The Fremantle Traffic Bridge is the most iconic landmark and the main tourist attraction in Fremantle.	-4	-4	1	0
36	Indigenous people would want to minimize impact on the Swan River, a registered site, that is of importance and significance to them.	0	3	0	1

Table 13 shows the level of correlation between each of the factors, expressed as a Pearson's correlation. That there is a significant level of overlap between the factors, which is a result of the way in which they were extracted (i.e. to maximise the ability to explain differences). Where Varimax, which is commonly used by Q methodologists, is intended to produce a factor solution where the factors are unrelated, or orthogonal, the method used here prioritises the ability to explain preference positions. This is conceptually consistent with the preference model used for this research (see Figure 1) where one mode of changes to preferences is associated with switching from one factor (or 'discourse') to another. In such cases it is the differences between these factors that are important in deciding the differences in preferences, but it is also reasonable that there exists an overlap, or 'bridge' between these positions representing a stable set of values and beliefs held by the individual as part of an overall changing subjective landscape.

Table 13. Correlation Between Factors*

	A	B	C	D
A		17	58	33
B	17		20	32
C	58	20		27
D	33	32	27	
Average	36	23	35	30

*Figures are shown as Pearson's Correlation x100