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A Theoretically Inspired Q-Methodological Approach for the Evaluation of Public Participation in Environmental Impact Assessment

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Abstract: This article demonstrates the use of a theoretically inspired Q-methodological approach to explore and analyse stakeholders' perspectives of their public participation experience in environmental impact assessment (EIA). Q methodology is a qualitative and quantitative approach designed to explore the breadth of social perspectives on a topic. Two evaluation themes explore the procedure and the skills and capacities necessary for participation. Each theme is elaborated through selected theoretical notions drawn from planning, socio-political, and human development literatures. The methodology was applied to two EIA case studies in South Africa and a selection of consent authorities. The findings indicate a range of participation experiences in the cases which highlight and contextualise procedural and capacity constraints in the South African practice. The research also demonstrates that a theoretically inspired Q-methodological approach can be a flexible, contextually appropriate and expedient research tool for public participation evaluation in environmental planning and monitoring practices.

Keywords: Arnstein, capability approach, environmental impact assessment, ideal speech situation, public participation, theoretically inspired Q-methodological approach

Introduction

Q methodology is a quantitative and qualitative statistical tool that is useful for the generation of social perspectives on a topic (Brown, 1980, 1993). It is particularly suited to the stakeholder engagement process of environmental impact assessment (EIA) as it is able to elicit and compare a diversity of viewpoints, including areas of consensus and disagreement in participant responses to key themes under investigation (Webler, Danielson, & Tuler, 2009). It has been applied, *inter alia*, to the evaluation of stakeholders' opinions of sustainability policies (Curry, Barry, & McClenaghan, 2013; Tuokuu, Idemudia, Gruber, & Kayira, 2019), exploring the value foundations of the public opinion on wind farms (Ellis, Barry, & Robinson, 2007) and

the evaluation of key-actor perspectives and policy directions in EIA public participation (Cotton & Mahroos-Alsaiari, 2015; Danielson, Webler, & Tuler, 2010).

Although many evaluative assessment tools have been developed for EIA public participation (Glucker et al., 2013; for example, Palerm, 2010; Rowe & Frewer, 2000, 2004; Webler, Kastenholz, & Renn, 1995), many of them offer little by the way of significant social science grounding or a strong philosophical rationale (Prophet, 1990). Palerm (2010) identifies Habermas' (1990, 1987, 1996) critical theory as the most popular theoretical approach when considering consensus and normative outcomes in public participation and considers Webler's (1995) model, which is based on Habermas' consensus seeking "ideal speech situation" (ISS), as an exception to the limited evaluative theoretical frameworks available for public participation as it contains implementable and practical guidelines for EIA public participation analysis. Balancing ideal and theoretical notions of participation with the challenges of contextual realities is however problematic. Although it is recognised that "good" public participation needs to go beyond checklist approaches to evaluation (Chanchitpricha & Bond, 2013), there is a dearth of methodologies able to cope with the breadth and depth of evaluative criteria that cater for both generalizable theoretical criteria together with contextually relevant detail. Without a degree of generalizability in selected evaluative criteria, evaluation of public participation cannot rise beyond the parochial and peculiar (for some examples, Cotton & Mahroos-Alsaiari, 2015; Curry et al., 2013; Ellis et al., 2007), with limited value for improving practice. On the other hand, grand theorising of ideal participatory states (Habermas, 1990, 1993), without the detail and nuance of context can likewise be of little use to the challenges of environmental planning and management practices like EIA. This article argues for and demonstrates the use of Q methodology as a means of holding the contextual and theoretical evaluation of public participation in tension with each other, with the aim of not negating the evaluative benefits of either.

This article outlines how a theoretically inspired Q-methodological approach can be a useful research tool for evaluation of stakeholder perspectives in EIA public participation. The selection of appropriate theoretical concepts demonstrates how Q methodology provides pragmatic and modular flexibility to evaluative framing in a way which is tailored to the demands of different contexts. This research advances the use of Q methodology to create a survey that embedded stakeholder statements as well as corresponding theoretically-inspired statements that were selected to provide a more structured insight into the stakeholders' social perspectives regarding participation effectiveness. The perspectives of registered interested and affected parties as well as provincial consent regulators and stakeholders of two contrasting case studies located in the Western Cape of South Africa between 2012 and 2013 are used to demonstrate the contextual application. Contrasting social perspectives uncovered reflect the competence of Q methodology to represent and juxtapose a significant breadth of stakeholder opinion that reflects the disparity and diversity of the stakeholders. Social perspectives derived from Q methodology include points of agreement, points of disagreement, areas of consensus as well as those of ambivalence, which can include confrontational or non-confrontational aspects (Webler et al., 2009). Understanding these social perspectives holds potential to assist in planning and decision making. together with evaluation of associated participatory processes.

This research sets out to explore the social perspectives of two themes relating to effective public participation. It explores participants' opinions of the skills and capacities necessary for effective public participation together with their views of what procedural aspects enhance or curtail such action. Q methodology is not proposed here as a stand-

alone method, but as a tool that can be used for evaluation both in its own capacity as well as in combination with other tools such as the "logic model" proposed by Chanchitpricha and Bond (2013), and the NVivo discourse analysis proposed by Rozema and Bond (2015), amongst others. After a brief overview of the notion of effectiveness in EIA public participation, the article will concentrate on a demonstration of Q methodology as a means of exploring aspects of effectiveness in accord with a selected theme of enquiry.

Public Participation and Environmental Impact Assessment

Challenges in defining "effective" participation for evaluation

The inclusion of public participation in EIA has been widely considered to play an important role in environmental governance and contribute towards better and more sustainable decisions (Glucker et al., 2013), yet is rarely considered adequate (Palerm, 2010). There are significant challenges facing participation effectiveness such as procedural efficiency, fairness considerations, interpersonal power dynamics, and stakeholder capacity for participation, to name a few. These challenges are more acute where inequality is associated with unequal participation arrangements. Rozema and Bond (2015) consider effectiveness of EIA to be able to accommodate the diversity of civil society discourse, yet they found that decision making was not able to incorporate discourses outside of ecological modernisation in the cases they reviewed.

A generally agreed upon standard for effectiveness centres on the rather vague notion that better decisions were made if environmental objectives were realised (Sandham, Moloto, & Retief, 2008) However, there is little empirical evidence for how "effective" participation is in fact instrumentally met or evaluated. Chanchitpricha and Bond (2013, p. 66) have identified "effectiveness" as a "troublesome term" which seems to have many different meanings in impact assessment processes. They have therefore categorized four categories for "effectiveness" as: procedural, substantive, transactive and normative and used these categories to develop criteria for effectiveness. Likewise, authors have sought to outline what "good" participation looks like through proposal performance indicators (Enserink, Witteveen, & Lie, 2009) and extensive lists (Rowe & Frewer, 2004). Evaluating effectiveness in environmental assessment is faced with the dual challenge of selecting adequate criteria for evaluation as well as methods to quantify and measure performance according to that criterion. However, the diversity of contextual peculiarities makes the establishment of a set of generalizable criteria problematic. Not all effectiveness criteria are equally valid for all contexts which has led Marsden (1998) to suggests that context specific criteria should be used to determine what criteria, principles and objectives are identified and required. However, such a context specific focus can lose sight of fundamental and generally agreed upon principles in the practice of public participation. Bond et al. (2004, pp. 621–623) outline a review of public participation best practice, suggesting the following principles as foundational:

- Public participation must take place early in the decision-making process.
- Public participation must be inclusive.
- Public participation must be a two-way communication affair.
- Public participation must be accompanied by real opportunities of access of information as well as provision of key information.
- Effective public participation should empower stakeholders.
- Public participation should take into account the values of stakeholders and not be limited to the discussion of factual evidence.

- EIA processes must be transparent and decisions accountable.

Sandham et al. (2008) point out however that despite the intentions inherent in these principles, empirical research has disproved the assumed positive correlation between input quality and output effectiveness. Richardson (2005) further highlights how flaws inherent in the socio-political context within which decisions are made can constrain or possibly determine decision-making outcomes, even if the process is considered procedurally fair, and subordinate them to the powerful political and economic external forces which set the decision-making agenda.

This contested yet valued notion of effective public participation necessitates the development and calibration of appropriate evaluative methodologies. Q methodology provides one such example of a procedure which enables the integration of general principles and performance criteria with contextually appropriate metrics for effectiveness.

The Design of Theoretically Inspired Q Statements

One means proposed as a way to evaluate public participation in EIA is through Q methodology (Simpson, 2016, 2018; Webler & Tuler, 2006). With good reason, public participation evaluation has often emphasized participation outcomes (for some examples, Bryson, Quick, Slotterback, & Crosby, 2012; Renn, Webler, & Wiedemann, 1995; Sánchez & Mitchell, 2017). Although some outcomes are targeted, this research rather concentrated on input, procedural and experiential evaluative criteria as they were deemed important to the cases and the developing practice within the South African EIA context (Sandham et al., 2008).

Q methodology has recently been applied to the environmental and geographical fields (for some examples, Addams & Proops, 2000; Frantzi, Carter, & Lovett, 2009; Robbins & Krueger, 2000). It has also been applied with specific application to forms of environmental assessment that involve aspects of public participation (for example, Ellis et al., 2007; Glucker et al., 2013; Nijnik & Mather, 2008). In its original conception, Q methodology was seen to adequately remove and distance the epistemological concern of undue researcher bias (Stephenson, 1953). Some scholars rejected the empiricism of Stephenson (1953), arguing for a more self-critical stance that considers the relationship between the statements as infinitely-loaded knowledge constructs in the form of language and the theories from which they are drawn or reflect upon (Danielson, Tuler, Santos, Webler, & Chess, 2012). In contrast, the emergence of the "British dialect" within Q scholarship endorses the ideas of Q studies being understood reflectively within the context of discourse analysis (Rogers, 1997). Every interpretation of another person's subjectivity is consciously or unconsciously value- and theory-laden, yet Toukuu et al. (2019) argue that policy makers should appreciate the value of understanding patterned viewpoints that are shared across populations and the role Q methodology can play in eliciting such viewpoints. With this in mind, Q methodology can be seen as a useful tool that makes possible an otherwise impenetrable access into a research field of the complexity of subjectivity and social perspectives (Brown, 1980, 1993, 2006). It enables identification of how individuals think about environmental issues by revealing patterns within and across individuals rather than traditional traits or categories (Tuokuu et al., 2019). Ontologically, Q methodology assumes subjectivity has an internal structure that is to a certain degree discoverable and measurable (Robbins & Krueger, 2000). As such, Q methodology has been considered a useful quantitative technique to evaluate and

compare human subjectivity in the way it is able to reveal social perspectives that are held regarding a topic of interest.

A social perspective, within Q-methodology terminology, is a coherent structure of opinions about a topic (Stephenson, 1953; Webler et al., 2009). Q methodology allows for coherent subject positions but in certain cases also allows for contradictions of opinion in the positions held by an individual or group of like-minded people, allowing it to embrace complexity (Gibson-Graham, 1996). It is therefore more appropriate to evaluative needs of understanding subjectivity in a diverse and pluralistic society, particularly as they relate to the environment (Wilkins, 2003). Robbins and Krueger (2000, p. 644) demonstrate this in showing how a Q study in Iowa in the United States of America revealed that the combination of two, at face value, seemingly contradictory statements, when considered together revealed the "complex assembly of constructions that make up the point of view - and political subjectivity - of many farmers in late capitalism". Variance or similarity between Q sorts reflects stakeholders' agreement or disagreement with each statement, and if significantly correlated, will be reflected in the social perspectives generated by the factor analysis (Robbins & Krueger, 2000).

Table 1: Categories of effectiveness criteria under two themes, 1) procedural aspects, and 2) the skills and capacities necessary for effective participation

THEME 1 **"Process" best practice procedural aspects**	THEME 2 **"Skills and capacities" necessary for effective participation**
A. Atmosphere of interaction. (W) B. Deliberation substance. (W) C. Generality in deliberation. (*) D. Autonomy in deliberation. (*) E. Power neutrality in deliberation. (*) F. Ideal role taking in deliberation. (*) G. Quality of analysis. (W) H. Role of the assessment practitioner. (W) I. Citizen power. (Fc) J. Tokenism of citizen power. (Ar) K. Centralised control. (Ar)	A. Generality in deliberation. (*) B. Autonomy in deliberation. (*) C. Power neutrality in deliberation. (*) D. Ideal role taking in deliberation. (*) E. Transparency in deliberation. (*) F. Sustainability conscientization in public participation. (N) G. Democratic conscientization in public participation. (N)
Key: In addition to being constructed through a discourse analysis of stakeholder input in the public participation processes: • (Ar) indicated category of statements informed by Arnstein's (1969) notions of tokenism and centralized power. • (*) indicates category of statements informed by Habermas' (1990, 1993) Ideal Speech Situation. • (Fc) indicated category of statements informed by the Foucauldian (1980, 1984) notions of governmentality. • (N) indicated category of statements informed by Nussbaum's (2003) notion of "control of one's environment". • (W) indicated category of statements informed by Webler's (2009) Q-method criteria for effective public participation.	

This research generated statements that indicate and reflect the experience of the participants, EIA public participation procedural standards, as well as particular theoretically inspired evaluative statements operationalized as Q statements. The Q statements were drawn from the EIA case studies' issues and responses reports, peer-reviewed public participation Q-methodology articles, and the theoretical frameworks used to evaluate public participation effectiveness. The application of "crafted" Q statements that blend both the statements of stakeholders with those that are selected by the researcher from literature which focuses on a particular theme, is advocated for and operationalized by current Q methodology research in a range of fields of application and particularly in environmental field (for some examples, see those by Bischof, 2009; Kvakkestad et al., 2007; Bumbudsanpharoke et al., 2010). This research therefore extends notions of context and outcomes in public participation that were explored by Tuler and Webler (2010). Demonstrating a theoretical structuring of a scoped evaluation,

the aim of this research was to investigate social perspectives of "effectiveness" directed by two themes, 1) procedural aspects, and 2) the skills and capacities necessary for effective participation.

Theme 1 concerns the best practice procedural aspects of participation that consider EIA public participation effectiveness. Eleven "procedure" categories were created for the 51 Q statements employed in the study. These explored participation conditions such as, *inter alia*, the atmosphere of interaction, power in deliberation, the role of the facilitator and role taking (1A-1K in Appendix A7). Theme 2 concerns statements that reflect the "skills and capacities" that the stakeholders consider necessary for effective participation. Seven categories for the 36 Q statements employed focussed on what the stakeholders consider the "skills and capacities" necessary to realize effective participation (2A-2G in Appendix A8). Theoretical notions selected to elaborate these two overarching themes are pragmatic evaluative tools. They do not necessarily reflect the epistemological or ideological position of the research. In a modular fashion they could be "swapped out" for other concepts, notions or schema as the field of enquiry demands.

There is a degree of overlap between these two research themes in that certain concepts relate to both. As Table 1 displays, Habermas' ISS applies in both themes with the application structured according to the overriding theme. Other concepts such as "manipulation" can be manifest in a social opinion, both in terms of control of the process as well as in terms of the skills and capacities (such as knowledge) necessary for participation. Such statements were therefore phrased appropriately for their category and applied in each theme where necessary. However, there are some aspects that are more distinctly procedural, and some distinctly related to participant skills and capacities for effective participation that are independent of the procedure. The two themes established for this research, and their associated distinct Q sorts, therefore arrange a useful disaggregation of the public participation results which would otherwise be easily conflated in a conventional interview process and analysis. Inasmuch as it is useful to understand the participation instance where procedural and stakeholder capacity issues are associated; for greater understanding of each in their distinctive conceptualisation it is useful to disaggregate them in this way. It is feasible that other research themes could be constructed as the line of enquiry demands.

Having established the general themes of enquiry and then conducting a preliminary review of the participation characteristics of the two case studies through a discourse analysis of the EIA Issues and Responses reports and participation records of each case study, the research considered a number of appropriate theoretical notions which might probe and elicit aspects of participation effectiveness. Theoretical notions of labour, capital, social learning and collective action were considered, but deemed not relevant to the salient issues presented in the EIA Issues and Responses reports. Themes which emerged prominently indicated the need for theoretical notions which probe power dynamics, the atmosphere and experience of participation and the instrumentality of participation. Four fields of social and political science were therefore drawn on to construct Q statements which might explore these issues in more depth.

Citizen Power in Participation. The eight rungs of Arnstein's (1969) conceptual ladder represent varying degrees of power for citizens in participatory decision-making and have been an established theoretical framework in application to EIA public participation (Collins & Ison, 2006; Tritter Quetzal, McCallum, Tritter, & McCallum, 2006). The model Arnstein proposes assumes that measures of participation are increasingly realised in the increased citizen power to make decisions. According to her model, only the top three ladder rungs reflect genuine

participatory power. Stakeholder "power", and by implication here, a measure of stakeholder effectiveness, needs to be understood in relation to the private interest of the developer, the government official decision taker, as well as the assessment practitioner.

Figure 1: Arnstein's (1969) Eight Ladder Rungs of Citizen Control

8	Citizen control	Citizen power
7	Delegated power	
6	Partnership	
5	Placation	Tokenism
4	Consultation	
3	Informing	
2	Therapy	Non-participation
1	Manipulation	

Despite negative assumptions associated with the lower levels of participation described as forms of tokenism, Sinclair et al. (2008, p. 422) suggest that for developing countries these forms of participation can provide "on-ramps to more deliberative mechanisms". Forester (2006, p. 447) supports this notion and believes that although public participation is fraught with difficulties, he believes that, with skilful mediation, participation can produce the adequate atmosphere for deliberation that can "move beyond dialogue or debate to craft mutually beneficial agreements [even] among contentious stakeholders". The notion of adequate atmosphere for deliberation introduces Habermas' (1993) "ideal speech situation".

Foucauldian notions of power. Cashmore and Richardson (2013, p. 1) contend that "power cannot be removed from environmental assessment policy or practices". Foucault (1980) proposes that, when investigating power, it is important to consider effects, not only intentions. Much of the EIA public participation guideline literature presents the good intentions of the rules of procedure. When considering the involvement of participants and identifying the impact they have had, if any, on the decision-making process, it can be illuminating to compare the "intentions" of regulations and guidelines proposing the valued inclusion of participants when challenged by the outcomes or effects of individual participation experiences.

Foucault's (1979, 1980) work is an established, useful and empowering method for analysis in its own right in that it does not offer a general theory (in contrast with Habermas above), but rather a "set of tools for analysing different instances of participation in their unique specificity" (Gallagher, 2008, p. 396). Foucault's (1979, 1980) concept of "governmentality" is a useful tool for the analysis of power in environmental decision making and has been developed by Flyvbjerg and Richardson (2002) with regard to planning. Leffers and Ballamingie (2013, p. 146) explain that "governmentality" consists of a three-pronged concept focusing on:

1. How institutions exercise power through various political technologies over its target population.
2. The complex knowledge of how to govern which is held by the government.
3. Governmentalization: the tactics government uses to make it possible for the state to perpetuate its existence; the "conduct of conduct".

Foucault drives the research to consider governmentality (Foucault, 1979) in the way it investigates effects, not just intentions (Foucault, 1980), the notion that power is diverse (Foucault, 1984a), that power is dispersed (Foucault, 1984) and that power is government's actions over an individual's or private actions (Foucault, 1984b).

The Ideal Speech Situation. Habermas' (1990) theory of communicative action is foundational to a number of evaluation frameworks for EIA public participation (Renn et al., 1995; Renn, Webler, & Wiedemann, 2011; Webler, 1995). Habermas (1987, p. 294) assumes that for innately "democratic humans", during deliberation, it is possible for "participants [to] overcome their first subjectively biased views in favour of a rationally motivated argument" in the search for common interests. Although criticised for being too naïve (Gallagher, 2008), the ISS presupposes that the power of the better argument can create a valid consensus that overcomes oppressive forms of power. The benefits of such deliberation are contingent on the effective operation of five requirements Habermas identified for the ISS.

1. Generality: No party should be excluded.
2. Autonomy: All participants should have equal possibility to present and criticise validity claims.
3. Ideal role taking: Participants must be willing and able to empathise with each other's validity claims.
4. Power neutrality: Existing power differences between participants must be neutralized such that these differences have no effect on the creation of consensus.
5. Transparency: Participants must openly explain their goals and intentions and in this connection, desist from strategic action (Habermas, 1993, p. 31, quoted in Flyvbjerg, 1998, p. 213).

The ISS preconditions are supposed to:

> … insulate the communicative process from coercion and inequality and specifies that nobody with the competence to speak and act should be excluded from discourse, that anyone is allowed to question or introduce any assertion and to express his/her needs, beliefs, and wants, and that nobody should be prevented by or internal coercion from exercising these rights (Habermas, 1990, p. 88, quoted in Wiklund, 2013, p. 285).

The preconditions of the ISS are intended to insulate the deliberation to reach the best possible decisions and, normatively speaking, the ISS has been widely adopted as a model for public decision making fora. However, the consensus seeking ideal of the ISS can be criticised for assuming too much regarding the context and the capacity of the stakeholders. It must be considered that there are limitations to the degree of "autonomy" that can be allowed by conventional participation tools such as public hearings and comment periods. Further, EIA participants may not necessarily have the "competence to speak and act" in ways that provide for a forceful and persuasive argument. The value in applying the deliberative politics, exemplified in Habermas' ISS can be seen when considering that EIA public participation usually involves a one-way information flow from the developer to the citizen (O'Faircheallaigh, 2007). Although not well exhibited in practice, the discursive requirement of the ISS communicative process better reflects the normative supposition assumed within institutionalised and regulated guidelines for "good" public participation.

The Capability to influence one's environment. Sen (2001, p. 3) draws our attention to people's capabilities which are the opportunities or freedoms a person has "to achieve what that individual reflectively considers valuable". Concerned with the realization of agency and freedoms, Nussbaum (2003) has proposed a central human capability as "control over one's environment"; from both material and political points of view. Drawing on the "capability approach" this research considers a participant's instrumental control over their environment through engaging in participation structures. Central to this freedom is the internalisation (or conscientization) of participants' who act within democratic participatory structures in order to influence what they consider valuable.

The pragmatic selection of these four theoretical framings of participation have been selected on grounds of appropriateness to the case context. They are not proposed as a general framework, rather as exemplars of theoretical notions which can be operationalized and applied within Q methodology as the theme of enquiry demands. Although the combined use, and potential triangulation of these four theoretical frameworks, is not widely established, proposals for their potential evaluative use have been made individually (for example, Webler, 1995) as well as in some limited form of combination (Gallagher, 2008; Richardson, 2005; Wiklund, 2005). There are intentional epistemological contrasts between the four theoretical frameworks yet similar evaluation objectives regarding the effectiveness of participation. The methodological triangulation applied here is not a precise comparison or contrasting of the implications of each theoretical position as they relate to the evaluative strengths or weaknesses of the others. Nor is it an exhaustive investigation of all the potential synergies between the four approaches, as beneficial as this might be. Rather, what is proposed here is the use of each as an angle of analysis where and when relevant to the project, practice and contextual demands of the case studies.

Q Methodology Steps Followed

Case study application and stakeholder selection

The steps of the Q methodology analysis undertaken in this research closely followed the clear methodological instruction of Brown (1993), Robbins and Krueger (2000), and Webler et al. (2009). They included a pilot study, the selection of Q statements and statement categories, sampling of participants, conducting participant Q sorts and interviews, data analysis using PQMethod software, the generation of social perspectives through factor analyses, followed by interpretation of the meaning of factors and the comparing and contrasting of the social perspectives (Webler et al., 2009). Each case study was primarily considered for the generation of social perspectives in its own right and not necessarily for comparison with the other, making each case study a context-specific investigation of social perspectives of effectiveness of public participation in EIA.

The two public participation case studies chosen for this research reflect significantly different geospatial contexts at the local level with contrasting social, economic, political, demographic and environmental considerations. The first case is the rehabilitation of the Main Road between Muizenberg and Clovelly Road, Cape Town, and the second is the proposed re-commissioning of a fishmeal plant in the Western Cape coastal town of Saldanha. Both EIAs affect local populations of between 90,000 and 100,000 people and were triggered by activities identified as "listed activities" which required environmental assessment public participation procedures according to the EIA regulations under the

South African National Environmental Management Act, (NEMA) Section 24(4) (RSA, Act No. 107 of 1998). The same Q interview process was also applied to interviews with staff of the provincial government consent approval authorities at the "Development Facilitation" unit of the Western Cape Department of Environmental Affairs and the Department of Planning (DEA&DP) in order to consider the generated social perspectives from the decision takers' more general perspective of EIA public participation in the Western Cape of South Africa. A high official unemployment rate of approximately 24%, combined with low education levels and low average household income in Saldanha presented an interesting participatory atmosphere when considering stakeholder knowledge of the participation process and the skills and capacities necessary for participation. In contrast, the relatively highly educated, largely employed (or retired) and affluent population making up the Muizenberg stakeholders presented a population that would engage in the participation process with potentially different characteristics, objectives and purposes.

According to Webler et al. (2009), identifying the appropriate number of participants requires the researcher balancing two rules of thumb. Firstly, this requires establishing a certain amount of redundancy among the participants: recognising that a Q study normally results in two to five social perspectives and since it is sufficient to have four to six people to define a perspective, about 30 people could be sufficient. Secondly, it is important to have an estimated ratio of statements to participants of 3:1; where, for example, 30 Q statements would require 10 participants (Webler et al., 2009). For both case studies 17 participants were selected giving a ratio of 2.12:1 for the 36 "Skills and Capacities" Q statements and 3:1 for the 51 "Process" Q statements. For the additional Q sorts done with 9 DEA&DP staff the ratios were 4:1 and 5.6:1 respectively. Whereas the Q statements and Q sorts cannot claim to reflect all the perspectives held by the participants on a topic, the Q statements were considered carefully to try and include statements that allowed for positions held by the plurality of the publics involved in the case studies. In total, 17 participants were selected from the Main Road EIA, 17 participants were selected from the Saldanha EIA, and 9 participants were selected from the DEA&DP Staff.

Since the inception of the democratic elections and the promulgation of the South African Constitution in 1996 (RSA, Act No. 108 of 1996), South Africa now has a more robust public participation policy based on international best practice and a broad interpretation of *locus standi*. The NEMA can be seen as an attempt to redress the apartheid planning legacy by establishing best practice regulatory norms. However, reflecting international trends, the role of public participation in EIA has generally been considered deficient or as "too late in the decision making process to affect decisions regarding alternatives or key project variables" (Shepherd & Bowler, 2010, p. 727). The NEMA demands not just the involvement of all interested parties, but that the disparity of capacities of such stakeholders be considered and accounted for.

> The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured (RSA, Act N. 107 of 1998 Section 2 (iv) f).

For this regulatory reason and the environmental justice imperatives therein, it was considered imperative that insight into the effectiveness of public participation in South

Africa needed to consider the extent to which the practice fulfilled both the procedural and normative requirements for "effectiveness". For both case studies, participation took various forms such as public meetings and public comment on the relevant scoping reports.

Participants were selected from the Registered Interested and Affected Parties (RI&APs) data bases for both EIAs. The selection of participants aimed to gain representatives from the target population that showed breadth of opinion. Although breadth of opinion is sometimes not helpful for decision-making purposes as it does not represent concentrations of opinion as modal or median representative evaluations can provide, it is potentially more helpful when considering the differentiated experience of public participation, particularly for those from marginal groups (Brown, 2006). A diverse and categorised selection of participants was therefore established to reflect the characteristics of social differentiation amongst the RI&APs. Many of the participants were selected due to their contributions of written comments as recorded in the Issues and Responses Report and clearly had different and well-formed opinions. In agreement with Webler et al. (2009), the research found that those with well-formed opinions were able to produce a more robust sort within a shorter time frame. This selection process had a number of limitations. Not all the people who attended public meetings in both EIAs, and who considered themselves affected parties, necessarily enrolled as RI&APs and were therefore not on the database. Further, it is not possible to accurately identify exactly how representative RI&APs were of a target population due to the nature of a broad conceptualisation of *locus standi* in the NEMA regulations. Whether there was an exclusionary element involved on the part of the assessment practitioner in drawing up the list of RI&APs or whether such persons excluded themselves is difficult to identify and involves an amount of conjecture and therefore a limitation of the methodology which reflects more general limitations to conducting research in the public participation field. As a consequence, discussions regarding the representation of those who were involved are limited to only those who already have the standing of being a RI&AP and not the powerless and voiceless parties who were potential affected parties but, for whatever reason were not included in the RI&APs data base. Whereas the Q statements and Q sorts of a theoretically inspired Q sort cannot claim to reflect all the perspectives held by the participants on a topic, the Q statements were considered carefully to try and include statements that allowed for positions held by the plurality of the publics involved in the case studies as they were recorded by the EIA process or investigated in the interview process.

The Q-sort and interview process

Q sort instructions were given to the Q participants beforehand in order to "focalize attention" (Stephenson, 1978, p. 28) and an opportunity was given for them to raise questions about the procedures before the sort was done in order to clarify their understanding of what was required of them. Each participant did two Q sorts of 51 and 36 statements respectively (see Appendices A and B). A sort frame was provided for each column together with the visual example of the recording sheet with instructions to aid in the sorting exercise. This was done to help reduce frustration levels of the participant when making adjustments to achieve the forced distribution. Participants took between twenty minutes and an hour to do each Q sort which, when combined with the follow up interview, amounted to about 120 hours of interviews for both case studies and the DEA&DP staff. Once the Q sort was recorded, a semi-structured, voice-recorded interview followed where the participant was queried about their statement selection focusing on

the statements they most agreed or disagreed with, or others that had been mentioned as significant by the participant during the sort. Participants were given the chance to relate the statements to anecdotal evidence from the EIA public participation to justify the reasons for their choice. They were also given the chance to add anything else they felt strongly about regarding the methodology and research aims and objectives.

Q Methodology analysis

The Q statements and Q sorts were entered into an open source software package PQMethod (Schmolk, 2014). The Q sorts reflect each respondent's perspective of the relevant case study public participation they have in mind. Once all Q sorts were entered for each case study and each theme being investigated, a Principal Component Analysis was run followed by Varimax rotation. The program computed the correlation of each sort with every other sort and extracted a number of unrotated factors each of which represented a shared social perspective. Following the guidelines of Webler et al. (2009), the final set of factors was decided on the basis of four main criteria: simplicity, clarity, distinctiveness and stability, and also informed by the statement Z-scores.

Results

It is conventional when presenting Q methodology results to display the Factor Matrix of the Factor Analysis.[1] Tables 2 and 3 provide the Factor Matrices for the two case studies and the consent regulators. In each table, an "X" indicates stakeholders that load significantly on each factor (p < .01).

Table 2: "Skills and Capacities" Factor Matrices for both case studies and consent regulators

"Skills and Capacities"										
Case Study 1: Main Road Factor Matrix				**Case Study 2: Saldanha Factor Matrix**				**Consent Regulator Factor Matrix**		
Factor Loadings				**Factor Loadings**				**Factor Loadings**		
QSORT	**1**	**2**	**3**	QSORT	**1**	**2**	**3**	QSORT	1	
1. MRBV	-0.0666	0.2689	0.2346	1. SACMSC1	0.5810**X**	-0.1949	0.2912	1. DEDPTCsc	**0.8814X**	
2. MRBS	-0.2722	0.2465	0.0629	2. SACSC1	0.5519	0.1607	0.4272	2. DEDPKRsc	0.5721	
3. MRDD	0.2735	0.1579	0.5001	3. MRATPr1	0.2587	-0.0644	0.0855	3. DEDPGGsc	0.7730**X**	
4. MRDSF	-0.2711	0.2473	0.5770**X**	4. SCOSC1	-0.0666	0.1469	0.6492**X**	4. DEDPAAsc	0.6948**X**	
5. MRFP	**0.7735X**	0.0552	0.1016	5. MRDDPr1	0.4951	-0.2186	0.6577**X**	5. DEDPHJsc	0.5266	
6. MRGM	-0.6329**X**	0.3904	0.1618	6. MRDOPr1	0.6298**X**	-0.2541	0.3326	6. DEDPMHsc	-0.0037	
7. MRHM	0.0667	0.2192	0.2093	7. SDKSC1	0.1382	0.6280**X**	0.3725	7. DEDPAMsc	0.7140**X**	
8. MRIM	0.1456	0.2052	**0.8197X**	8. SHWMSC1	0.5611**X**	-0.3450	0.0859	8. DEDPAGsc	0.6916**X**	
9. MRJH	-0.0861	0.6889**X**	0.3062	9. SMRSC1	0.1775	0.3818	0.4250	9. DEDPWAsc	0.5911**X**	
10. MRJC	0.1510	0.4105	0.4659	10. SNNSC1	0.1310	0.3264	0.3242	% expl.Var.	42	
11. MRLA	0.1052	0.5353	0.0611	11. SBCSC1	0.0072	0.0210	**0.8400X**			
12. MRM	-0.0799	0.7448**X**	0.1716	12. SBNSC1	**0.7237X**	0.2125	0.0004			
13. MRMB	-0.1991	0.4999	0.6755**X**	13. SJWSC1	0.0077	**-0.7688X**	0.1853			
14. MRPD	-0.2061	0.6880**X**	-0.3131	14. SSRSC1	0.2912	0.1446	0.2321			
15. SLCMRS	-0.0875	0.6305	0.2421	15. SSBSC1	0.4614	0.0305	0.6868X			
16. MRTT	0.0951	0.6533	0.0305	16. SSVSC1	0.2577	-0.3931	0.6334X			
17. MRVM	-0.2077	**0.7388X**	0.2566	17. SVMSC1	0.1223	0.0132	0.7350X			
% expl.Var.	8	24	14	% expl.Var.	16	10	23			

Factor loadings in bold indicate p < .01

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[1] For a more detailed presentation of the Factor Analysis, please refer to the following online database DOI: 10.17632/rpg527czjy.1

Table 3: "Procedure" Factor Matrices for both case studies and consent regulators

"Process"												
Case Study 1: Main Road "Process" Factor Matrix			**Case Study 2: Saldanha Factor Matrix**					**Consent Regulator Factor Matrix**			
Factor Loadings			**Factor Loadings**					**Factor Loadings**			
QSORT	1		QSORT	1	2	3		QSORT	1	2	
1. MRBVPr	0.6845**X**		1. SACMPr1	-0.1719	0.0941	**0.8234X**		1. DEDPTCsc	0.3147	**0.6786X**	
2. MRBSPr	0.6694**X**		2. SACPr1	-0.2910	0.0698	**0.8376X**		2. DEDPKRsc	**0.8028X**	0.0026	
3. MRDDPr	**0.8330X**		3. SATPr1	-0.3393	0.4764	0.0472		3. DEDPGGsc	0.5993**X**	-0.0280	
4. MRDSFPr	0.7857**X**		4. SCOPr1	-0.1930	0.5202	0.5342		4. DEDPAAsc	0.5276	0.1545	
5. MRFPPr	0.5388		5. SDDPr1	0.5779**X**	0.4367	0.3696		5. DEDPHJsc	0.5174	-0.1686	
6. MRGMPr	-0.1916		6. SDDOPr1	-0.0577	0.1201	0.7377**X**		6. DEDPMHsc	0.5760**X**	-0.0167	
7. MRHMPr	0.7601**X**		7. SDKPr1	0.1856	0.3282	0.0077		7. DEDPAMsc	0.5064	0.5442**X**	
8. MRIMPr	0.3281		8. SHWMPr1	-0.3273	0.3423	0.5409		8. DEDPAGsc	0.4150	0.3917	
9. MRJHPr	0.7499**X**		9. SMRPr1	-0.4722	0.5915**X**	0.2859		9. DEDPWAsc	0.6626**X**	0.2245	
10. MRJCPr	0.8006**X**		10. SDNNPr1	0.0821	**0.8011X**	0.0272		% expl.Var.	32	11	
11. MRLAPr	0.6615**X**		11. SBCPr1	0.6548**X**	0.2501	0.1066					
12. MRMJPr	0.7027**X**		12. SBNPr1	0.0610	0.3573	0.7947**X**					
13. MRMBPr	0.8032**X**		13. SJWPr1	-0.1649	0.3714	0.1426					
14. MRPDPr	0.1027		14. SSRPr1	**0.7825X**	0.2977	0.0571					
15. MRSLCP	0.7099**X**		15. SSBPr1	-0.0364	0.4036	0.6584**X**					
16. MRTTPr	0.6843**X**		16. SSFPr1	0.2464	0.2581	0.5835**X**					
17. MRVMPr	0.8215**X**		17. SVMPr1	0.1128	0.3776	0.1164					
% expl.Var.	45		% expl.Var.	12	16	25					

Factor loadings in bold indicate p < .01

Case study 1 (Main Road) yielded three factors on the skills and capacities for participation and one factor on participation procedure. Case study 2 (Saldanha) yielded three factors on the skills and capacities for participation and three social factors on participation procedure. The nine consent regulator staff at the DEA&DP yielded one factor on the skills and capacities for participation and one factor on participation procedure.

Factor Interpretation

The following section will present how factors established in the previous section were then interpreted to derive a rich diversity of social perspectives.

The researcher interpreted the quantitative data to produce qualitative factor descriptions as displayed in Table 4. The interpretation of the meaning of social perspectives is a process that involves the qualitative description of a factor based on the most salient and statistically valid statements for that factor. In the usual way, high and low scoring statements for each factor were scrutinized. Additionally, the list of distinguishing statements generated by PQMethod was a useful tool for considering the statistically significant contrasts between factors. This interpretation of factor meanings followed a concurrent process of factor analysis combined with continued reference back to the participant interviews and the comments they made regarding the statements they felts strongly about during their individual sorts (Webler et al., 2009)

Table 4: Example of Interpretation of factor meanings into a Core Belief and Secondary Beliefs for the Skills and Capacities necessary for participation

No.	Factor 1 Statements (Saldanha: Skills and Capacities)	Column
4	The developer needs to have reasonable expectations of stakeholder input	+4
5	It is difficult to build trust among the different participants	+4
17	Participation from different stakeholders increases as the final decision gets closer	-4
25	The only valid decision is that which is democratically agreed upon	-4
29	Mainly the environmental needs of present and future generations are considered by the participants	-5
35	Public participation better enables me to influence what I consider valuable/important	+5
No.	**Factor 1 Statistically Significant Distinguishing Statements**	
29	Mainly the environmental needs of present and future generations are considered by the participants	-5

1. Core Belief:
    a. Public participation does provide a potential platform for the freedom of environmental decision making [35], yet most participants do not consider the composite nor intergenerational aspects of the environment [29].

2. Secondary Belief:
    a. Transparency, trust [5] and ideal role taking [4] did not occur.
    b. Democratic decision making is not always appropriate [25].
    c. Participation decreased with time [17].

The results presented in Table 5 display the social perspectives which were interpreted from the factor analyses and consolidated from the participant interviews and comments.

Table 5: Social perspectives on the effectiveness of EIA public participation generated from the Factor Analysis

"PROCEDURAL" ASPECTS	"SKILLS AND CAPACITIES" FOR EFFECTIVE PARTICIPATION
Case Study 1: Main Road Rehabilitation 1) Generality, Power Neutrality and Autonomy in deliberation occurred without instances of manipulation or placation of the participants. 2) Time extensions allowed for citizen acceptance of developer solutions. 3) Unbiased and independent facilitation is imperative to providing the ideal atmosphere, administrative support and substance of deliberation. 4) Unbiased and independent facilitation enabled generality and autonomy despite the absence of clear ground rules that govern how people interact.	**Case Study 1: Main Road Rehabilitation** 1) Inclusive participation is considered as valid with general representation. 2) Knowledge can be manipulated and used to control discussions and/or the process. 3) Constructive collaboration and collaborative learning within shared power moments that allowed for improved understanding of others' beliefs and values promoted a sense of accountability and sincerity. 4) Despite valid group representation irregular attendance of individual participants is coupled with the exclusion of those less able to articulate their opinions. 5) Discussions were not controlled by those who understood the process best yet more capacitating could have been done to develop participants understanding of the project and to be able to deal with complex and technical issues.

Case Study 2: Saldanha Fish Meal Plant
 	
1) Unbiased and independent facilitation aided the quality of analysis and the substance of deliberation.
2) Unbiased and independent facilitation is imperative to providing the ideal atmosphere and enabled superficial generality qualified by in deliberation.
3) Public participation is a top down initiative with placative feedback and negotiation restricted by limited generality ownership and token citizen power.
	Case Study 2: Saldanha Fish Meal Plant
	
	1) Public participation does provide a potential platform for the freedom of environmental decision making, yet most participants do not consider the composite nor intergenerational aspects of the environment.
	2) Ideal role taking is hampered by participants not seeing beyond their individual (environmental) interests to understand the social needs of the community.
	3) The economic concerns of the developer did not allow for transparency nor for the ideal role taking accommodation of stakeholder interests.
	4) The sustainability of democratic control of the environment is restricted by:
	    a. The difficulty in building trust amongst participants.
	    b. Educated participants' manipulation of knowledge.

4) Citizen power considered as Consultation and Placation. 5) Developer accountability is of paramount importance.	c. Participants not considering the composite and intergenerational aspects of the environment. 5) The economic considerations did not allow for some participants to see beyond their individual interests to the social needs of the community.
Western Cape DEA&DP Consent Regulator staff general perspectives 1) The process requires unbiased and independent facilitation and participants should feel comfortable and safe at the meetings. 2) Although an outcome of the process is a plan to ensure that the developer is accountable for their promises, the costs, remedies and benefits of the development are not distributed equitably.	**Western Cape DEA&DP Consent Regulator staff general perspectives** 1) The process is controlled and manipulated by those with process knowledge and higher education levels and excludes those unable to articulate their opinion. 2) Public participation is a sustainable way to democratically share control of the environment, however it is difficult to build trust among the different participants and the social and economic needs are often not considered.

For each case study, the Factor description, points of agreement and points of disagreement are presented in the Appendices. A key part of factor interpretation is through a second round of validation with Q participants. This is preferably done face-to-face. However, time and travel constraints meant that the researcher conducted this validation through email and telephonic confirmation. No participant indicated that their Q sort had been misrepresented and all indicated great interest in the other social perspectives. In general, the social perspectives did not yield any radically unexpected characteristics. However, they provide structure and contrast to participation characteristics, contextualising certain positions of effectiveness within the broader context of each case.

At face value, the similarities between the case characteristics of Case Study 2 and those of the DEA&DP consent authorities indicates that Case Study 2 reveals a closer reflection of the EIA participation experience in South Africa. This suggests that, in general, processes are controlled and manipulated by those with process knowledge and higher education levels and excludes those less able to articulate their opinion (DEA&DP "Procedure" social perspective 1). It also indicates that despite such short comings, there is a broadly held belief that public participation is a sustainable way to democratically share control of the environment. Nonetheless, it is difficult to build trust among the different participants and the social and economic needs are often not considered (DEA&DP '"Procedure" social perspective 2). Elements of these two perspectives are elaborated in more detail in both case studies with strong alignment with Case Study 2. The consent authorities have little to say about the skills and capacities necessary for participation with their social perspectives, reflecting normative provisions outlining the instrumentality of good procedure as an enabling condition for participation. As consent authorities, this could reflect their preoccupation with participation procedure and, unlike the case respondents, that they lacked the challenging experience of being participants. In contrast, both cases provide social perspectives which indicate stakeholders who faced challenging participation conditions and who identify the importance of participation support provisions for those lacking in experience, skills and capacities. They also reflect the normative ideal that, under ideal arrangements, good procedure and facilitation can scaffold deficits in participant skills and capacities suggesting that internal capacities can be enabled or constrained through procedural aspects.

In order to elaborate the value of a theoretically inspired Q methodology as an alternative to more traditional checklist approaches to effectiveness-evaluation methods,

the discussion of the results is structured according to the four theoretical frameworks. Focusing on each theoretical perspective, the discussion will cut across the social perspectives to represent the analysis of that particular theoretical framework. The contextual application to the social perspectives presented here is a summary discussion but is intended to show how useful triangulating the multiple theoretical frameworks can be in investigating participation effectiveness once their individual evaluation has been established.

Discussion

Social perspectives on participation effectiveness

There was a strongly shared social perspective between the DEA&DP consent authorities and those of Case Study 2 regarding citizen power in participation. Both presented the notion that respondents' participation experiences accord with Arnstein's lower ladder rungs indicating meagre participation, particularly her characterisation of "placation" which suggests token participation conditions where stakeholders were given the opportunity to voice their concern, but genuine decision-making power was withheld. Although it is not possible to make sweeping generalizations using case-study research, it is possible to infer from these findings that, in terms of citizen power, the Saldanha case study reflects the consent regulators' view of the status quo for EIA public participation. This corroborates other longstanding empirical research that the influence of EIA in decision making is generally more moderate than substantial (Cashmore, Gwilliam, Morgan, Cobb, & Bond, 2004; Simpson & Basta, 2018a). In contrast, the Main Road case study stakeholders expressed an exceptionally high degree of satisfaction with citizen influence during the participation process, indicating notions of partnership in participation.

Power is considered by the social perspectives in two main ways. Firstly, and most commonly, there is a view that those with higher education levels and knowledge of the procedural aspects of participation are able to direct public participation in their favour. This reflects social perspectives based on the modernist maxim that "knowledge is power" echoing an established discourse in the environmental assessment literature (Cashmore, 2011; Cashmore, Bond, & Cobb, 2008). Both case studies and the DEA&DP social perspectives contained elements of this belief with varying degrees of emphasis on participant contextual, procedural and capacity constraints. Secondly, and to a lesser extent, manipulation of knowledge by government in the form of masked governmentality (Jessop, 2005) was only considered by one participant who defined the social perspective and who believed that "knowledge can be manipulated and used to control discussions and/or the process". This social perspective was well formed, logically argued and coherent, yet also isolated.

In general, the Main Road social perspectives reflect stakeholders' opinions that the ISS preconditions were present in many cases. When coupled with this case study's high degree of satisfaction with the EIA, such results could be expected. In contrast, "autonomy" is the only ISS precondition that one Saldanha social perspective considers present and that the preconditions were questionable or absent in many cases. The consent regulator (DEA&DP) social perspectives reflect a considerable scepticism regarding the presence of ISS preconditions in EIA public participation in general. They have convincing reservations about the possibility of "power neutrality" in participation. This is also the precondition believed to not have been achieved in practice by at least

one social perspective in the Main Road EIA and further emphasised by all of the Saldanha EIA social perspectives. Like the social perspectives of the Saldanha and Main Road case studies, "power neutrality" is identified by the DEA&DP factors as instrumentally linked with the skills and capacities of the participants, namely education levels and knowledge of the participation process.

There was shared disagreement across all social perspectives over the instrumental nature of participation as a means to the freedom of control of one's environment. The capabilities orientated "Skills and Capacities" statement 35, "Public participation better enables me to influence what I consider valuable/important", was the single most disagreed upon (not necessarily disagreed with) statement across the five Main Road social perspectives and it is not considered as a "core belief" by any social perspective in the factor analysis. Similarly, the capabilities orientated "Skills and Capacities" statement 34, "Public participation is a sustainable way to democratically share control of the environment" is the single most disagreed upon statement across the Saldanha social perspectives. The Saldanha case study showed that many of the stakeholders do not necessarily desire to have more influence in the participation process for ecologically orientated environmental outcomes. They expressed human development values which desired access to decision making that would support the environmental authorisation for the socio-economic imperative of job creation. In general, if the contextual and capacity constraints were considered favourable, the normative purpose and instrumentality of "the freedom" was agreed with strongly. The opposite is reflected to be true in the case study social perspectives for participants under unfavourable contextual and capacity constraints.

A theoretically inspired approach to Q methodology

The results indicate that a theoretically inspired approach to Q methodology is well suited to handle environmental truth-claims that are contextually grounded and subjective in nature yet, for research and better practice purposes, need to be analysed according to a replicable and theoretically grounded structure (Bischof, 2009, p. 157). Out of the infinite possibility of Q sorts, the correlations shown in the factor analysis here and confirmed by follow up interviews, the coherence and consistency displayed in the social perspectives reflect Stephenson's (1953) and Brown's (1993) ontological positions that subjectivity has an internal structure that is, to a certain degree, discoverable and measurable. Confirming the recommendations of Danielson et al. (2010), the research process proved to be very efficient as it relied on just a small sample of participants. This Q-methodology application has shown that the procedure holds the potential to not only discover social perspectives in their diversity (Webler & Tuler, 2006) and procedural imperatives (Renn et al., 1995), but also, using adequate theoretical criteria, it shows potential to go beyond the parochial and contextual issues to the more substantive and generalizable outcomes which can address challenging issues of power, autonomy and influence in participation. These findings therefore extend those of Webler, Tuler and Krueger (2001) and Webler and Tuler (2006) who suggest evaluation of public participation process in environmental decision making requires attention to how to tackle issues of power and trust.

Social perspectives generated through factor analysis within these two EIAs were found to include a significant diversity of opinion within each case. Analysis of public participation needs to go beyond conventional approaches to explore differentiation and disparity of opinion inherent in the diversity society (Brown, 2006). The robust establishment of the salient social perspectives can significantly assist in the structuring

and selection of appropriate participation mechanisms and types. If conducted early in the procedure, it can also inform the relevance of agenda setting for discussion and the deliberation process. Similarly, Toukuu et al. (2019) have recently demonstrated the utility of Q methodology for early-stage agenda setting in environmental policy development. What is "measured" by Q methodology is not necessarily objective, permanent or consistent. A Q sort is a snapshot and reflects a stakeholder's opinion at a particular time and place. A particular stakeholder may produce a variety of different Q sorts over the course of their involvement in an EIA public participation. It is therefore important to choose the right time to conduct Q research such that it would reflect the objectives of the enquiry as well as be appropriate to the participant's state of mind. The cases presented here required the stakeholder to reflect on their experience of that particular case study. However, Q methodology research that looks at the longitudinal view of how social perspectives of individual stakeholders are formed, change or adapt through time would provide an interesting contrast to this hindsight-orientated "snap-shot'" of reflective perspectives generated at the end of the processes.

Tuler and Webler (2010) have suggested that Q methodology can provide guidance for process design. If a Q study were to be carried out at the scoping phase of an EIA, the identification of the uncovered social perspectives could be very useful to the practitioner in understanding the perspectives of the stakeholders. They would include points of agreement, points of disagreement, areas of consensus as well as those of ambivalence, which can include confrontational or non-confrontational aspects. If that information is then shared with the appropriate stakeholders, it might greatly assist them on the issues and means they choose to follow through with in the next stage of the process. Stakeholders who recognise that their perspective is an isolated one might be able to see how their perspective contrasts with that of others. Similarly, those with significant consensus correlations can identify which areas they should put their energy into and identify like-minded stakeholders for mobilization and the formation of action groups. Following the scoping phase Q study, subsequent Q sorts at later stages in the process could show how stakeholder opinions and perspectives change and respond to the problem-solving endeavours of the impact assessment process. Q methodology has the ability to provide understanding of social perspectives that involve feedback systems and changes in participants' attitudes. Social perspectives could become better formed and more reflective of the outcomes of the participation process. Such a reflective process could in itself contribute towards more substantive outcomes of EIA public participation such as social learning, community cohesion or cooperation (Renn et al., 1995), and improved environmental and sustainability awareness (Sánchez & Mitchell, 2017). These findings concur with Webler and Tuler (2006) and others (for example, Simpson & Basta, 2018b), that good processes are only part of what meaningful participation entails and therefore evaluation needs to consider substantive outcomes wherever possible.

The social perspectives hold potential for practice when considering how a participation facilitator responds to comments provided by the publics. The practitioner needs to consider the decision-making validity of participant input and values, which are often expressed by the participants in the form of subjective desires. These desires may or may not be articulated with direct reference to the technical information in the project proposal, nor contain regulatory reference. It could prove useful for the decision-making process to consider the normative foundations of such values that may not necessarily be linked to technical or regulatory relevance on the basis of the characteristics of the perspective; rather than dismiss it outright. Characteristics of a social perspective could be considered amongst other types as being a shared or isolated perspective, correlated

to a particular socio-economic group, reflecting a particular development discourse, a marginalised or vulnerable person's perspective (Brown, 2006), or perhaps conversely, that of a dominant or powerful participant cluster.

Further, for quality control purposes, the consent regulator may use such a Q-methodology analysis to independently assess the effectiveness of the participatory process. It is clear that social perspectives provide information which goes beyond individual case particularities to indicate broader practice characteristics which policy and EIA system design decision making can benefit from. It would be beneficial for participation practice development for a standardized monitoring tool to be put in place to consider the breath and longitudinal view of the "effectiveness" of participation practices such as that of EIA displayed here. Depending on the monitoring and evaluative theme of enquiry, a modular set of theoretical frameworks can be established and pragmatically drawn upon in a way similar to what has been displayed here.

Conclusion

Building on the work of Webler et al. (2009), this article has proposed the use of a theoretically inspired approach to Q methodology as a useful and appropriate operationalization platform for investigating stakeholder's perspectives regarding the "effectiveness" of EIA public participation. Four theoretical frameworks were drawn upon and used to develop criteria for evaluating stakeholders' perspectives of the effectiveness of EIA public participation, focusing on two general themes of participation procedure and the skills and capacities for effective participation. Analytical notions were drawn from planning, politics, human development and environmental decision-making theories to provide the foundation of response statements that indicated participation effectiveness. Q methodology has been shown to be an appropriate tool in identifying the valid and variable social perspectives of affected populations regarding EIA public participation. The findings of this research clearly indicate that a theoretically inspired Q methodology has potential application for research, practice and monitoring in that it can assist in uncovering the relevant stakeholders' social perspectives on proposals and assist in the process of public participation. This research has also demonstrated that the robust establishment of the salient social perspectives can assist in the structuring and selection of appropriate participation types and, as such, hold potential for broader application as an evaluative tool for consideration by researchers, practitioners and regulators.

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Appendices

Appendix A: "Process" Q statements operationalized and categorized

Category	"Process" Q statements operationalized and categorized. (Best Practice Procedural Aspects)	Relevant Literature
1.A. **Atmosphere of interaction**	Participants should feel comfortable and safe at the meetings. Participation was difficult and tiresome. Everyone had an equal chance to voice their concerns.	(Webler et al., 2009)
1.B. **Deliberation** (Substance)	Process did not unnecessarily slow down the development plan. Uncertainties were acknowledged and explored. The process gives recommendations to the developer who then makes the final decisions. An outcome of the process is a plan to ensure that the developer is accountable for their promises. Citizens were delegated decision making power that was above what the developer liked. There is a clear plan for how to implement the outcomes.	(Webler et al., 2009; DEA&DP, 2011)
1.C. **Generality in Deliberation**	Participants have equal access to information. There was inadequate administrative support (e.g., funding, staffing). Meetings were held at appropriate times and places. Participation has to be restricted in some way. All important stakeholders are taking part in the process. The broader public was informed about what decisions are being considered and made.	(Habermas, 1990; Wiklund, 2005; DEA&DP, 2011)
1.D. **Autonomy in Deliberation**	There are clear ground rules that govern how people should interact. The discussion format allowed for inclusive participation. The process taps the knowledge and experiences of local people. The outcomes are personally desirable to me (or whom I am representing).	(Habermas 1990; Wiklund, 2005; Webler et al., 2009; DEA&DP, 2011)
1.E. **Power Neutrality in Deliberation**	The process has to be able to limit topics of discussion. The purposes and goals of the process are clear to all involved. Financial resources were provided to enable people to participate effectively. Outcomes have broad-based support within the community. Negotiations and trade-offs were not possible for all stakeholders. Participants are involved in deciding what studies should be done. Participants are involved in deciding how studies should be done.	(Habermas, 1990; Wiklund, 2005; Webler et al., 2009)
1.F. **Ideal Role Taking in Deliberation**	People's values and opinions were discussed. All important decisions are made according to consensus. Consensus is used to decide what rule is used to make decisions. Participants feel a sense of ownership of the outcomes.	(Habermas, 1990; Wiklund, 2005; Webler et al., 2009)
1.G. **Quality of analysis**	Time was allowed to re-visit issues and decisions, even if it meant extending the timetable. The best available science was not used in the analysis. Every recommendation is justified with evidence. Costs (e.g., pollution), remedies (e.g., clean up) and benefits of the development (employment etc.) were distributed equitably.	(Webler et al., 2009; DEA&DP, 2011)
1.H. **Role of the Assessment Practitioner (EAP)**	The process requires unbiased and independent facilitation. There was inadequate notification of meetings, comment periods, etc. The developer (& EAP) responds in a timely way to all questions, comments, and requests.	(Webler et al., 2009; DEA&DP, 2011)
1.I. **Citizen Power** Citizen control Delegated Power Partnership	Citizens made decisions with more influence than the developer. Citizens influenced the decision taking process effectively determining the Record of Decision. The process devises solutions that are eventually authorized by the participants. Participants shared planning and decision making responsibilities with the developer. Participants had genuine and specific powers of formal decision making.	(Arnstein, 1969; Webler et al., 2009)
1.J. **Token Citizen Power** *Placation Consultation Informing*	Public participation is a top down initiative but allows for feedback or negotiation. Although all had the chance to discuss and argue their point, there was no assurance that their views will be listened to. Meetings are just to rubber-stamp public approval.	(Arnstein, 1969; Choguill, 1996; Webler et al., 2009)
1.K. **Centralised Control** *Therapy Manipulation Bullying Zero Participation*	The process served to bully the public into accepting a project that was already going ahead. The process served to manipulate the public into accepting a project that was already going ahead. Although all had the chance to be heard, there was no assurance that their views would be listened to. No participation is allowed in the formal decision-making process or even considered. Public participation is a top down initiative with no allowance for feedback or negotiation. Participants are manipulated into thinking their opinions count towards the decision-making.	(Arnstein, 1969; Choguill, 1996; Webler et al., 2009; DEA&DP, 2011)

Appendix B: Q statements on "Skills and Capacities" necessary for effective participation

Category	"Skills and Capacities" necessary for effective participation Q-statements operationalized and categorized.	Relevant Literature
2.A. **Generality in Deliberation**	Participants who represent groups check in with their memberships regularly to ensure that they represent their views accurately. Some affected parties could not participate for reasons that could have been overcome. Understanding of democratic rights is not essential to EIA public participation.	(Habermas, 1990; Flyvbjerg, 1998; Wiklund, 2005; DEA&DP, 2011)
2.B. **Autonomy in Deliberation**	The developer needs to have reasonable expectations regarding stakeholder input on their design. Participants did not attend meetings regularly. Participants should be able to deal with complex technical issues. Participation from different stakeholders increases as the final decision gets closer.	(Habermas, 1990; Flyvbjerg, 1998; Wiklund, 2005; DEA&DP, 2011)
2.C. **Power Neutrality in Deliberation**	Participation builds the confidence and self-esteem of the participants. Inadequate opportunity was given to develop the participant's understanding of the project. Adequate opportunity was given to develop the participants skills and capacity necessary for achieving equal participation. Adequate assistance was provided to vulnerable and disadvantaged persons to enable them to participate effectively. Those with higher education levels are able to manipulate knowledge to suit their agenda. The process did not exclude those less able to articulate their opinion. The process required literacy levels that were not appropriate to certain stakeholders.	(Habermas, 1990; Flyvbjerg, 1998; Wiklund, 2005; Webler et al., 2009)
2.D. **Ideal Role Taking in Deliberation**	Participants were courteous and respectful of other stakeholder's perspectives. Constructive collaboration among participants was established. Participants were good listeners and open minded to consider all possibilities. Some participants do not see beyond their individual interests to what is good for the larger community. Discussions were controlled by those who understood the procedure and process best. To take part effectively participants need skills like problems solving & conflict resolution. Expert knowledge is valued more than stakeholder's knowledge. The process does not improve participants' understandings of others' beliefs, values, and perspectives.	(Habermas, 1990; Flyvbjerg, 1998; Wiklund, 2005; Webler et al., 2009)
2.E. **Transparency in Deliberation**	The stakeholder's interactions promoted a sense of accountability and sincerity. It is difficult to build trust among the different participants during the process. Participation does not make any pre-existing community conflicts worse. Participants had reasonable expectations about what the developer is able to do. Collaborative learning is only possible when power is willingly shared. Participation helps create new and lasting interest groups that can continue to work on the issues.	(Habermas, 1990; Flyvbjerg, 1998; Webler et al., 2009)
2.F. **Sustainability conscientization in public participation**	Mainly the social needs are considered by the participants. Mainly the economic needs are considered by the participants. Mainly the ecological needs of present and future generations are considered by the participants. The social, economic and ecological needs of present and future generations are considered.	(Sen, 2001; Nussbaum, 2003; DEA&DP, 2011)
2.G. **Democratic conscientization in public participation**	Participation builds people's faith in government and strengthens democracy. The only valid decision is that which is democratically agreed upon by the stakeholders. Public participation is a sustainable way to democratically share control of the environment. Public participation better enables me to influence what I consider valuable/important.	(Sen, 2001; Nussbaum, 2003, Habermas, 1990, Webler et al., 2009)

Appendix C: Factor interpretation for Main Road "Skills and Capacities" Social Perspectives.

Main Road "Skills and Capacities" Social Perspectives		
Factor Description	**Points of Agreement**	**Points of Disagreement**

Factor 1:
Core Belief
    Inclusive participation [S&C:S31] is considered as valid [S&C:S16] with general representation [S&C:S32].
 	
Secondary Belief
    Public participation does not necessarily require consensus made decisions [S&C:S25].
	Consensus Statements across factors:
	
	[S&C:S21] Adequate assistance was provided to vulnerable and disadvantaged persons to enable them to
	
	participate effectively.
	[F1 0; F2 0; F3 -1]
		Contrasting [+5, +4, -5, & -4] statistically significant statements across factors - statements sorted by variance of Consensus vs. Disagreement:
		
		Top 5 Statements of greatest disagreement
		1. [S&C:S35] Public participation better enables me to influence what I consider valuable/important – i.e. what I
		2. am able to do to influence and control my environment.
		3. [S&C:S13] Participants did not attend meetings regularly.
		4. [S&C:S2] Constructive collaboration among participants was established.
		5. [S&C:S26] Those with higher education levels are able to manipulate knowledge to suit their agenda.
		6. [S&C:S30] The social, economic and environmental needs of present and future generations are considered by all the participants.

Factor 2:
Core Belief
    Knowledge can be manipulated [S&C:S26] and used to control discussions and/or the process [S&C:S15].
 	
Secondary Belief
    Economic concerns [S&C: S28] override environmental intergenerational agendas [S&C:S30].		

Factor 3:
Core Belief
    Constructive collaboration [S&C:S2] and collaborative learning [S&C:S23] within shared power moments [S&C:S23] that allowed for improved understanding of others beliefs and values [S&C: S22] promoted a sense of accountability and sincerity [S&C:S3].
 	
Secondary Belief
    Consistently high participant turn out [S&C: S13].
    Participants trust the technical teams decisions and solutions [S&C:S14].
		Statements of significant disagreement (listed in order of progressive difference between factors)
		1. [S&C:S32] Some affected parties could not participate for reasons that could have been overcome.
		2. [S&C:S14] Participants should be able to deal with complex technical issues.
		3. [S&C:S15] Discussions were controlled by those who understood the procedure and process best.
		4. [S&C:S31] The process did not exclude those less able to articulate their opinion.

Factor interpretation of Case Study 1: Main Road Main Road "Skills and Capacities" factor analysis indicates the following social perspectives:

1. Inclusive participation is considered as valid with general representation.
2. Knowledge can be manipulated and used to control discussions and/or the process.
3. Constructive collaboration and collaborative learning within shared power moments that allowed for improved understanding of others' beliefs and values promoted a sense of accountability and sincerity.

Appendix D: Factor interpretation for Saldanha "Skills and Capacities" Social Perspectives.

Saldanha "Skills and Capacities" Social Perspectives		
Factor Description	Points of Agreement	Points of disagreement

Factor 1:
 Core Belief:
     Public participation does provide a potential platform for the freedom of environmental decision making [S&C:S35], yet most participants do not consider the composite nor intergenerational aspects of the environment [S&C:S29].
 	
 Secondary Belief:
     Transparency, trust [S&C:S5] and ideal role taking [S&C:S4] did not occur. Democratic decision making is not always appropriate [S&C:S25]. Participation decreased with time [S&C:S17].
	Consensus Statements across factors:
	
	 [S&C:S20] Adequate opportunity was given to develop the participants' skills and capacity necessary for achieving equal participation.
	 [F1 -3; F2 -2; F3 -2]
		Contrasting [+5, +4, -5, & -4] statistically significant statements across factors - statements sorted by variance of Consensus vs. Disagreement:
		
		 Top 5 Statements of greatest disagreement
		 1. [S&C:S34] Public participation is a sustainable way to democratically share control of the environment.
		 2. [S&C:S11] Some participants do not see beyond their individual interests to what is good for the larger community.
		 3. [S&C:S27] Mainly the social needs are considered by the participants.
		 4. [S&C:S29] Mainly the environmental needs of present and future generations are considered by the participants.
		 5. [S&C:S17] Participation from different stakeholders increases as the final decision gets closer.

Factor 2:
 Core Belief:
     Ideal role taking is hampered by participants not seeing beyond their individual (environmental [S&C:S29]) interests to understand the social needs [S&C:S27] of the community [S&C:S11].
 	
 Secondary Belief:
     A disconnect between the substantive outcomes of public participation [S&C:S19; S&C:S6; S&C:S7] and the agendas of the conflicting stakeholder agendas [S&C:S11].
		Statements of significant disagreement (listed in order of progressive difference between factors)
		 1. [S&C:S35] Public participation better enables me to influence what I consider valuable/important – i.e. what I am able to do to influence and control my environment.
		 2. [S&C:S5]It is difficult to build trust among the different participants during the process.
		 3. [S&C:S30] The social, economic and environmental needs of present and future generations are considered by all the participants.
		 4. [S&C:S28] Mainly the economic issues are considered by the participants.

Factor 3:
 Core Belief:
     The economic concerns of the developer [S&C:S11; S&C:S4; S&C:S3] did not allow for transparency [S&C:S15] and the ideal role taking accommodation of stakeholder interests [S&C:S28; S&C:S4; S&C:S3].
 	
 Secondary Belief:
     Lack of power neutrality [S&C:S11; S&C:S4; S&C:S3; S&C:S28] hindered the understanding others beliefs and values [S&C:S22]. Participation decreased with time [S&C:S17].		

Factor interpretation of Saldanha "Skills and Capacities" factor analysis indicates the following three social perspectives:

1. Public participation does provide a potential platform for the freedom of environmental decision making, yet most participants do not consider the composite nor intergenerational aspects of the environment.
2. Ideal role taking is hampered by participants not seeing beyond their individual (environmental) interests to understand the social needs of the community.
3. The economic concerns of the developer did not allow for transparency nor for the ideal role taking accommodation of stakeholder interests.

Appendix E: Factor interpretation for DEA&DP staff "Skills and Capacities" Social Perspectives.

DEA&DP staff "Skills and Capacities" Social Perspectives		
Factor Description	**Points of Agreement**	**Points of disagreement**

Factor 1:
Core Belief:
    The process is controlled [S&C:S15] and manipulated [S&C:S26] by those with process knowledge [S&C:S15] and higher education levels [S&C:S26] and excludes those unable to articulate their opinion [S&C:S31].
 	
Secondary Belief:
    The social, economic and environmental needs of present and future generations are not considered by all the participants [S&C:S30].
	Consensus Statements across factors:
	
	[S&C:S29] Mainly the environmental needs of present and future generations are considered by the participants.
	[F1 -3]
	
	[S&C:S35] Public participation better enables me to influence what I consider valuable/important – i.e. what I am able to do to influence and control my environment.
	[F1 1]
		Contrasting [+5, +4, -5, & -4] statistically significant statements across factors - statements sorted by variance of Consensus vs. Disagreement:
		
		<u>Top 5 Statements of greatest disagreement</u>
		1. [S&C:S15] Discussions were controlled by those who understood the procedure and process best.
		2. [S&C:S27] Mainly the social needs are considered by the participants.
		3. [S&C:S30] The social, economic and environmental needs of present and future generations are considered by all the participants.
		4. [S&C:S24] Expert knowledge is valued more than stakeholders' knowledge.
		5. [S&C:S22] The process does not improve participants' understandings of others' beliefs, values, and perspectives.
		
		<u>Statements of significant disagreement (listed in order of progressive difference between factors)</u>
		1. [S&C:S11] Some participants do not see beyond their individual interests to what is good for the larger community.
		2. [S&C:S34] Public participation is a sustainable way to democratically share control of the environment.
		3. [S&C:S26] Those with higher education levels are able to manipulate knowledge to suit their agenda.
		4. [S&C:S28] Mainly the economic are considered by the participants.

Factor interpretation of the consent regulator's "Skills and Capacities" factor analysis indicates the following social perspective:

1. Public participation does provide a potential platform for the freedom of environmental decision making, yet most participants do not consider the composite nor intergenerational aspects of the environment.

Appendix F: Factor interpretation for Main Road "Process" Social Perspectives.

Main Road "Process" Social Perspectives		
Factor Description (Social Perspectives)	**Points of Agreement**	**Points of disagreement**

Factor 1:
Core Belief:
  Generality [Pr:S23], Power Neutrality [Pr:S6] and Autonomy [Pr:S3] in deliberation occurred without instances of manipulation [Pr:S37] or placation [Pr:S48] of the participants.
 	
Secondary Belief:
  The best available science [Pr:S18] was used.
  Although tiresome [Pr:S4] the process did not unnecessarily slow down the development [Pr:S13].
	Consensus Statements across factors:
	
	[Pr:S19] Uncertainties were acknowledged and explored.
	[F1 +1]
	
	[Pr:S41] Negotiation and trade-offs were not possible for all stakeholders.
	[F1 -3]
	
	[Pr:S43] Citizens made decisions with more influence than the developer.
	[F1 0]
		Contrasting [+5, +4, -5, & -4] statistically significant statements across factors - statements sorted by variance of Consensus vs. Disagreement:
		
		Top 5 Statements of greatest disagreement
		1. [Pr:S45] No participation is allowed in the formal decision-making process or even considered.
		2. [Pr:S8] The process requires unbiased and independent facilitation.
		3. [Pr:S11] The process taps the knowledge and experiences of local people.
		4. [Pr:S2] There are clear ground rules that govern how people should interact.
		5. [Pr:S36] The process served to bully the public into accepting a project that was already going ahead regardless of participant responses/input.
		
		Statements of significant disagreement (listed in order of progressive difference between factors)
		1. [Pr:S37] The process served to manipulate the public into accepting a project that was already going ahead regardless of participant responses/input.
		2. [Pr:S33] The outcomes are personally desirable to me (...or my organization or the interest group I am representing).
		3. [Pr:S23] All important stakeholders are taking part in the process.
		4. [Pr:S31] One outcome of the process is a plan to ensure that the developer is accountable for their promise.

Factor interpretation of the Main Road "Process" factor analysis indicates the following social perspective:

1. Generality, Power Neutrality and Autonomy in deliberation occurred without instances of manipulation or placation of the participants.

Appendix G: Factor Interpretation for Saldanha "Process" Social Perspectives.

Saldanha "Process" Social Perspectives		
Factor Description (Social Perspectives)	**Points of Agreement**	**Points of disagreement**

Factor 1:
Core Belief:
    Unbiased and independent facilitation [Pr:S8] aided the quality of analysis [Pr:S27; Pr:S5] and the substance of deliberation [Pr:S31].
 	
Secondary Belief:
    Citizen power is considered to be no lower than consultation [Pr:S24; Pr:S36; Pr:S37; Pr:S45].
 	
Factor 2:
Core Belief:
    Unbiased and independent facilitation [Pr:S8] is imperative to providing the ideal atmosphere [Pr:S1] and enabled superficial generality [Pr:S6 qualified by Pr:S21] in deliberation.
 	
Secondary Belief:
    Citizen power is considered to be reduced to tokenism [Pr:S48] and manipulation [Pr:S47], limited generality [Pr:S21] with a lack of both power neutrality in deliberation [Pr:S22] and support from the community [Pr:S34].
Factor 3:
Core Belief:
    Public participation is a top down initiative [Pr:S38] with placative feedback and negotiation [Pr:S34; Pr:S35] restricted by limited generality [Pr:S6] ownership [Pr:S35] and token citizen power [Pr:S38].
 	
Secondary Belief:
    Citizen power is restricted but not considered to be manipulative [Pr:S47].
	Consensus Statements across factors:
	
	[Pr:S3] The discussion format allowed inclusive participation. [F1 0; F2 0; F3 +1]
	
	[Pr:S28] The developer responds in a timely way to all questions, comments, and requests. [F1 -1; F2 +1; F3 +1]
	
	[Pr:S50] Participants shared planning and decision making responsibilities with the developer. [F1 -2; F2 -3; F3 -1]
		Contrasting [+5, +4, -5, & -4] statistically significant statements across factors - statements sorted by variance of Consensus vs. Disagreement:
		
		Top 5 Statements of greatest disagreement
		1.
		
		2. [Pr:S8] The process requires unbiased and independent facilitation.
		3. [Pr:S27] Every recommendation is justified with evidence.
		4. [Pr:S46] Public participation is a top down initiative with no allowance for feedback or negotiation.
		5. [Pr:S1] Participants should feel comfortable and safe at the meetings.
		6. [Pr:S22] The process cannot be open to just anyone who wants to participate, participation has to be restricted in some way.
		
		Statements of significant disagreement (listed in order of progressive difference between factors)
		1. [Pr:S48] Public meetings are just to rubber-stamp public approval.
		2. [Pr:S24] The process gives recommendations to the developer who then makes the final decision.
		3. [Pr:S32] Costs (pollution), remedies (clean up) and benefits of the development (employment etc.) are distributed equitably.
		4. [Pr:S33] The outcomes are personally desirable to me (…or my organization or the interest group I am representing).
		5. [Pr:S36] The process served to bully the public into accepting a project that was already going ahead regardless of participant responses/input.

Factor interpretation of the Saldanha "Process" factor analysis indicates the following social perspective:

1. Unbiased and independent facilitation aided the quality of analysis and the substance of deliberation.
2. Unbiased and independent facilitation is imperative to providing the ideal atmosphere and enabled superficial generality qualified by in deliberation.
3. Public participation is a top down initiative with placative feedback and negotiation restricted by limited generality ownership and token citizen power.

Appendix H: Factor interpretation for DEA & DP Process

DEA&DP Staff: Process		
Factor Description (Social Perspectives)	**Points of Agreement**	**Points of disagreement**
Factor 1: Core Belief: The process requires unbiased and independent facilitation [Pr:S8] and participants should feel comfortable and safe at the meetings [Pr:S1]. Although an outcome of the process is a plan to ensure that the developer is accountable for their promises [Pr:S31], the cost, remedies and benefits of the development are not distributed equitably [Pr:S32]. Secondary Belief: Generality must not be limited [Pr:S22] but the topics of discussion must be limited [Pr:S7]. Citizen power in decision making above non-participation [Pr:S48] and manipulation [Pr:S36] but below delegated power [Pr:S51].	Consensus Statements across factors: [Pr:S1] Participants should feel comfortable and safe at the meetings. [F1 +5; F2 +5] [Pr:S7] The process has to be able to limit topics of discussion in order to avoid getting too bogged down. [F1 +4; F2 +3] [Pr:S8] The process requires unbiased and independent facilitation. [F1 +5; F2 +5] [Pr:S31] One outcome of the process is a plan to ensure that the developer is accountable for their promises. [F1 +4; F2 +3] [Pr:S32] Costs (pollution), remedies (clean up) and benefits of the development (employment etc.) are distributed equitably. [F1 -5; F2 -5] [Pr:S50] Participants shared planning and decision making responsibilities with the developer. [F1 -2; F2 -4] [Pr:S51] Participants had genuine and specific powers of formal decision making. [F1 -4; F2 -4]	Contrasting [+5, +4, -5, & -4] statistically significant statements across factors - statements sorted by variance of Consensus vs. Disagreement: Top 5 Statements of greatest disagreement 1. [Pr:S22] The process cannot be open to just anyone who wants to participate, participation has to be restricted in some way. 2. [Pr:S16] Participants are involved in deciding what studies should be done. 3. [Pr:S17] Participants are involved in deciding how studies should be done. 4. [Pr:S48] Public meetings are just to rubber-stamp public approval. 5. [Pr:S24] The process gives recommendations to the developer who then makes the final decisions. Statements of significant disagreement (listed in order of progressive difference between factors) 1. [Pr:S40] Although all had the chance to discuss and argue their point, there was no assurance that their views will be listened to. 2. [Pr:S39] Although all had the chance to be heard, there was no assurance that their views will be listened to. 3. [Pr:S42] Citizens were delegated decision making power above what the developer liked.
Factor 2: Core Belief: The process requires unbiased and independent facilitation [Pr:S8] and participants should feel comfortable and safe at the meetings [Pr:S1].		

Factor interpretation of the consent regulators "Process" factor analysis indicates the following social perspective:

1. The process requires unbiased and independent facilitation and participants should feel comfortable and safe at the meetings.
2. Although an outcome of the process is a plan to ensure that the developer is accountable for their promises, the costs, remedies and benefits of the development are not distributed equitably.