Australian National University

Working paper 2010/1

The Analytic and Democratic Models of Environmental Valuation

March, 2010

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Abstract

As a science, aided deliberation helps overcome bounded rationality of individuals. As a political institution, unconstrained dialogue enhances legitimacy and justice. Joint venture to capture their strengths appears attractive. This could explain the proliferation of deliberative monetary valuation (DMV) research in the field of ecological economics. Success of one strategy, however, might go at the expense of the other. There are moral reasons to preclude democratic processes from being professionally 'aided', but analysis could not work without imposing some 'constraints' in the form of decision guidance. A variant of decision analysis, called analytic deliberation, has been used to enhance the democratic prospect of ecosystems valuation processes by incorporating deliberative elements. This paper discusses an analytic-deliberative approach relevant to DMV in the light of a deliberative democracy theory. This approach privileges a particular form of value judgement. Deliberation within individuals is emphasized whereas mutual justification is not a key requirement. The need for actual discussion is then uncertain. Advocacy of value pluralism is circumscribed under an expert culture. Consequently, there is limited potential for respecting reasonable value disagreements, which a deliberative democracy must make room for. Mechanically incorporating democratic procedures into conventional analytic framework does not guarantee a democratic institution. An uncompromising deliberative valuation strategy has to be democratic in its production and not only in its content. Concerned practitioners are reminded of the importance of democratization of scholarly practice when drawing on the democratic theory.

Keywords: deliberative democracy, deliberative monetary valuation, ecosystems valuation, analytic deliberation

INTRODUCTION

Both scientific and democratic approaches are important to engage decision-makers with a wider range of values. Proper use of qualitatively different methods can enhance human's capacity of dealing with ecological complexities and uncertainties and the associated diverse social concerns (Norgaard, 1989; Funtowicz and Ravetz, 1993). Still, unifying methodology appears compelling as a means to raise the prospect for feasible collective actions and knowledge advancement (Baumgärtner et al., 2008; Venkatachalam, 2007). Recent advancements in ecological economics include the study of deliberative methods in economic valuation, namely, deliberative monetary valuation (DMV) (Howarth and Wilson, 2006; Spash, 2007, 2008). Behind this deliberative turn is a clash of democratic and scientific beliefs. Norton and Noonan (2007) contend that, as far as value pluralism is concerned, only self-critical, internally democratic research approaches make sense and a paradigmatic shift to post-positivism is essential. This casts doubt to the conventional practice that associates the quality of ecosystems valuation methods with standard scientific principles.

The emerging approach of ecosystems valuation involves the use of formal group processes for the specific tasks of environmental value assessment, which is traditionally operated as an expert-led, scientific exercise. Participants are confronted various viewpoints from lay knowledge to experts, and discuss as a group prior to stating group or individual willingness-to-pay figures concerning a resource allocation decision. This deliberative turn has been influenced by two currents. Deliberative experiments that are informed by behavioural science and decision analysis focus on human's cognition barriers (McDaniels et al., 1999; Gregory, 2002; Gregory et al., 2005). Philosophical advocates, on the other hand, appeal to democratic theories and accentuate fairness and institutional issues (O'Hara, 1996; Jacobs, 1997; Sagoff, 1998). Their tension raises concern as to the feasibility of merging methods.

Of more importance is that the tension connotes potentially competing hypotheses concerning value pluralism. To decision scientists, it is attainable only through more technocratic means. To post-positivist theorists, it is ultimately sought from democratization of research practice. To capture plural values requires unconstrained and indiscriminative deliberative designs to which actively self-critical scholarly norms are essential. These entail scrutiny and qualification of ideological preconceptions and an extended reconstruction of reality in a non-prejudicial fashion on the part of the involved researchers (Durning, 1999; Norton and Noonan, 2007). In this light, deliberative designs with an otherwise predefined or hierarchical orientation is unlikely to be democratic.

To the extent that the post-positivist concerns are defensible, merging the two approaches seems unpromising. The hybrids risk suffering from hidden preoccupations, which may be intensified when the involved researchers are of a homogenous background. Decision analysts and economists, who are expected by their peers to behave scientific, are tempted to predicate their deliberative innovations on a constrained agenda set according to given decision or economic

principles. The democratic potential and the prospect for a pluralistic state would become questionable if the inquirer applies constrained predispositions, compromising a supposedly fair and equal communicative process. A deliberative approach could be considered democratic if it makes sense of *deliberative* democracy theory. An examination in this light is needed to endorse the analytic-deliberative program.

This paper assesses the democratic potential of an analytic-deliberative model. The inquiry proceeds within the context of ecological economics; it is intended to inform a debate regarding the use of deliberative methods in ecosystems valuation. This paper should be read as an analysis supporting a forthcoming paper on DMV (Lo and Spash, forthcoming). It is to study the theoretical antecedent of a specific analytic DMV approach identified in that paper, which was not exhaustively investigated due to space limit. So the scope of analysis is restricted. More attention is paid to the role of public deliberation in analysis. While few deliberative democrats seek scientification, many decision analysts have proclaimed their democratic commitment (e.g. National Research Council, 1996, 2008; McDaniels et al., 1999; Gregory et al., 2005; Stern, 2005; Failing et al., 2007). As such, the relevant research question is to what extent in which the analytic-deliberative model satisfies the democratic criteria.

In the first section, the ways in which public deliberation is justified by deliberative democracy and decision science theories are elucidated. They are compared to highlight conceptual variations. The challenge of incorporating deliberative elements into decision analysis is discussed. Some broader implications about pluralism conclude the paper.

DELIBERATIVE DEMOCRACY

The case for democratic deliberation is established on the theory of deliberative democracy, which emphasizes political legitimacy and dialectical opportunities. There are several theoretical traditions. For the present discussion, more attention is paid to John Dryzek's (e.g. 1990, 2000) works for his prominence in environmental politics and greater intellectual influence on the latest development of ecological economics.

Pluralistic societies are characterized by the existence of diverse and irreducible values and their conflicts. Conventionally, aggregative institutions are used to settle the conflicts, often unsatisfactorily, by reducing moral choices to a preference calculus. These institutions render priority the needs of the greatest number, irrespective of partial interests. Ascending diversity of values in the society poses challenge to this political norm. Moreover, current preference politics and economics, entrenched on an instrumental rationality, are ill-equipped to deal with ecological uncertainties. Larger ecosystems respond to human activities and intervention in various unpredictable ways. Conservation strategies designated to present ends may turn out to be inadequately adaptive to unforeseeable and unintended subsequent chain effects (Dryzek 1987a, 1987b). Ecological surprises and the ever changing social realities call into doubt the seemingly intelligent

instrumental manipulation invariably constrained by present state of knowledge. Value diversity casts doubt to predispositions and uncertainties limit our ability to predict. More plausible is to begin with a non-discriminative perspective to prepare for all possible implications. Deliberative institutions function to expose the different and conflicting ways of interacting with the world.

The notion of democratic deliberation is linked to the concept of communicative rationality (Dryzek, 1990). An action is communicatively rational to the extent that it is characterized by the reflective and inter-subjective understanding of the deliberating individuals on values, beliefs and preferences (Habermas, 1984). The dialogical communication between subjects must be authentic, and the interaction must be free from deception, strategic behaviours and domination through exercise of power.

The critical elements entail demolition of any hierarchy of values. Displacing private interests is but a highly likely outcome for most if not all debates on public issues. Making it a procedure or precondition is self-contradictory. The concept contributes to the reformulation of environmental valuation theories by re-orienting the relations between competing discourses, not by pushing them to a particular end. This can be explained by its status as a second-order theory.
According to Gutmann and Thompson (2004), first-order theories seek to resolve moral conflicts by rejecting alternatives. Examples include utilitarianism. Each theory claims to be the single theory capable of resolving conflicts, but does so in ways that deny or exclude its rivals from consideration. Moral integration is considered a singular conception. In contrast, deliberative democracy, as a second-order theory, is non-exclusive. Second-order theories are *about* other theories as they provide ways of dealing with the claims of conflicting first-order theories and do not affirm or deny their validity. They make room for moral conflict to be resolved by some predetermined standards and not by rejecting in *a priori* moral principles expressed by first-order theories. First-order theories assume that citizens subscribe to a particular end or require them to change their moral beliefs accordingly. Second-order theories govern their interaction by providing a set of standards and rules of conflict resolution. Citizens are required only to follow these standards and rules, without being prescribed which specific moral end to go. Thus democratic deliberation does not necessarily aim to induce citizens to change their held values; it is rather to encourage diverging value positions to live with each other even if they are mutually incompatible.

Reason-giving is the first and foremost requirement (Cohen, 1989; Dryzek, 1990; Bohman, 1996; Gutmann and Thompson, 1996; Dryzek, 2000). Substantive qualities of a decision are sought in the reasonableness of citizens' validity claims. The mere fact of having a preference does not itself constitute a reason in support of a proposal in relation to a public decision (Cohen, 1989). Collectively binding laws and policies are justified by the adequacy of reasons given to other citizens, and not necessarily by how much preference could be satisfied.
The imperative of mutual justification lies at the core. Public deliberation is mediated through the virtue of reciprocity on the part of deliberating citizens. Reciprocal cooperation requires a citizen who engages in public deliberation give reason that

other free and equal citizens could reasonably accept, and accept others' reasons in the same manner. Reciprocity is a moral basis for taking action under irresolvable disagreement. Deliberating individuals should bring forth and develop a sense of mutuality during the course of deliberation; they are encouraged to exercise mutually, rather than universally, justifiable reasons and respect their counterparts. Success depends on the extent in which they affirm the moral status of their own positions and acknowledge those they oppose for legitimacy (Gutmann and Thompson, 1996). The ideal of mutual respect recognizes the civil demeanour of 'agreeing to disagree'.

Admissible value claims are expressed as reasons assessed in the form of arguments. Multiplicity of arguments is recognized and persuasion attempts are encouraged. Deliberating individuals engage in holistic assessment and determine acceptance on an inter-subjective basis. The basis of action agreement is built upon not as demanding as citizens accepting everything reasonable to one public, but respecting reasonable differences of many.

The primacy of argument-giving necessitates a debate format. Actual dialogue is the core activity for the social construction of *a* common good. A necessary normative precondition is 'to downplay 'centrism' of any kind' (Dryzek, 1995, p. 18) to ensure no single perspective is privileged. An ecologically benign democracy entails citizens testing their proposals concerning the use of natural resources to the acceptance of other citizens who may hold distinct dispositions and preferences. Representation of perspectives is deemed as more important than representation of socioeconomic traits.

Value contestation is implied by the idea of reciprocity. Accepting the idea precludes treating the communicative process as mere inclusion and elicitation of values. Only when preferences and value orientations are to be contested is reciprocity required. If they are otherwise presumed to be universally acceptable, mutual justification would become unnecessary (Gutmann and Thompson, 1996, 2004). Two implications can then be drawn. First, a deliberative democracy is indefinitely critical toward established interests and perspectives; it strongly resists coercive and manipulative forces from elites. Second, the theory confers a new meaning to the concept of 'public opinion' (Dryzek, 2000). Traditionally it is defined as citizens' choices made as a personal affair out of free will. In a deliberative democracy it is an outcome of contestation of discourses. Public opinion is emanated from various forms of response and reaction to alternative viewpoints encountered in an authentic communication; it exists in the social and political interactions among individuals, not within the minds of any one of them in isolation.

There is a widespread belief that public deliberation should promote consensual decision. Deliberative democrats are divided in the basis on which action agreement is reached. Consensus democrats aim for consensus through realizing a comprehensive common good, whereas pluralists seek consensual basis of fair terms of cooperation in the face of persistent value disagreements. To the pluralists, a reasonable diversity of ethical traditions is indispensable for a vibrant society. Value disagreements cannot be overcome without repression and value plurality is a social reality to be respectfully accommodated. The pluralists seek cooperation under value disagreements that cannot be reasonably rejected. 'Reasonable

pluralism' is viewed as a plausible outcome, and not just a precondition (Johnson, 1998).

One ideal deliberative outcome is 'workable agreement' which seeks agreement on a course of action yet for different reasons (Dryzek, 2000). It is advanced as a concept of 'meta-consensus' (Dryzek and Niemeyer, 2006). Meta-consensus embraces value pluralism at simple level and seeks consensus on values, beliefs and preferences at meta-level. Normative meta-consensus requires agreement on the recognition of the *legitimacy* of a value. Citizens are not required to subscribe to others' legitimate values nor agree on the priority of values. The notion seeks social cooperation and a creative search for collective decisions that respect all legitimate basic values. It is associated with the idea of inter-subjective rationality (Niemeyer and Dryzek, 2007). An ideal outcome should reflect the extent in which the individual positions as a result of deliberation reflect the integration of all the concerns present in meta-consensus. According to Niemeyer (2007), if inter-subjective reasoning is in action such that all relevant reasons receive consideration from all members of the deliberative group, it will end up with a situation where those who agree with the same set of reasons also agree at preference level. This inter-subjective consistency is suggested as a benchmark for assessing deliberative quality.

ANALYTIC DELIBERATION

There is a large body of literature about analytic deliberation. Since this paper is intended to discuss a specific approach, I focus on those writers who are involved in monetary valuation research. These include Robin Gregory, a decision scientist, and his associates1. They have contributed to the DMV literature (Gregory et al., 1993; Gregory, 2000; Gregory and Wellman, 2000; McDaniels et al., 2003). These DMV contributions are inherited from their proposals about group assessment of environmental risk, which are therefore relevant to the present purpose. Another reason for this focus is that they illustrate the sharpest contrast to the political approach. Renn's (1999) model, for example, falls between the two extremes even though it is also called 'analytic deliberation'2. Other more balanced views include Burgess et al. (2007) and National Research Council (2008). My analysis is restricted to those deliberative models lying at the very ends of the methodological spectrum to show the widest possible landscape. There is no intention to generalize the following discussion to other analytic-deliberative models.

1 Their works reviewed here include, but not limited to, Gregory et al. (1993), Gregory and Slovic (1997), McDaniels et al. (1999), Gregory (2000), Arvai et al. (2001), Gregory et al. (2001), Gregory (2002), Gregory and Failing (2002), Gregory et al. (2005) and Failing et al. (2007).

2 Renn (1999) understands analytic deliberation somewhat different from Gregory and his associates; he takes social justice more seriously and doubts the domination of expert judgment. In this paper, analytic deliberation mainly refers to Gregory's approach.

Scope

Table 1 presents the features of analytic deliberation and compares with its democratic counterpart. A key assumption is limited cognitive ability of individuals in making complex decisions: 'individuals (either lay or expert) will often not make informed, thoughtful choices about complex issues involving uncertainties and value tradeoffs' (McDaniels et al., 1999, p. 498). People perform poorly in handling unfamiliar choices and technical information, which may create a high level of stress blocking rational routes of decision-making (Arvai et al., 2001). Cognitive difficulties cause failures in expressing and clarifying multiple values. Community-based environmental initiatives fail simply because participating individuals refuse or fail to recognize the complexity of the value dimensions and are not equipped to address the necessary trade-offs (Gregory, 2002).

A utilitarian conception of values is an integral part. Multi-attribute utility theory (MAUT) is applied, which assumes comparability and transitivity of preference relation, and allows complete substitution between subjective states. When explaining the theory Gregory et al. (1993, p. 187) equate values to utilities and advocate utility maximization. Unlike neoclassical economics, the analytic approach goes beyond choice and covers its fundamental structure and motives. Arvai et al. (2001), Gregory et al. (2001) and McDaniels et al. (1999) make specific reference to Keeney's theory of (1992) 'value-focused thinking'. The theory suggests that consideration of values precedes that of available alternatives when individuals make decision. The notion focuses on human's *wants*:

Value-focused thinking essentially consists of two activities: first deciding what you want and then figuring out how to get it……With value-focused thinking, you should end up much closer to getting all of what you want. (Keeney, 1992, p. 4)

Value is understood as a standard of hedonic satisfaction. This model ultimately aims to assist satisfying of personal wants in an instrumental fashion.

Alternatively, value could be construed as a 'judgment' rather than 'interest' (Holland, 1997). Judgment concerns 'what ought to be' whereas interest 'what we want'. An individual could make judgment on something out of her interest, but would only *want* it if it is in her interest. Keeney (1992) is sympathetic to the ideas of ethics and 'value judgments', but the recognition is actually limited to judgment on personal preferences. Preferences do not conflict; only judgments do (Holland, 1997). If 'what you want' included subjective judgment over other people's well-beings, it would be a question of 'what ought to be'. 'Ought' questions entail the virtue of justification to others, whereas 'want' questions do not.

Multidimensional consideration is encouraged. Multi-attribute analysis is used to broaden the scope of discussion on values. There is irresolvable conflict between competing perceptions of reality, so that the conventional focus of agreement on values and consensus-seeking is untenable (Gregory et al., 2001; Failing et al., 2007). Still, a pragmatic treatment appears more compelling. Constructing a common hierarchy where incommensurate values become indirectly comparable is deemed instrumental (Gregory et al., 1993; Gregory, 2000). The basis of

cooperation is premised on an assumption about a state of affair that people *would* accept as universal.

Value disagreements are attributed to the different ways of 'interpretation of information' between individuals, rather than 'differences in underlying values' (Gregory, 2000, p. 157). It is a matter of perception rather than principle. Value integration then becomes possible by making different dimensions 'transparent' and leading individuals to the 'commonality of their beliefs' (Gregory, 2000, p. 157). The key is simplification; a common language of values is used to lessen individuals' cognitive burdens by reducing the dimensionality to a comprehensible summary.

Deliberation plays merely a supplementary role. Communication is circumscribed by and serves science: '*to+ fill the important missing links in individuals' fragmentary scientific understanding' (Gregory et al., 2005, p.9). Democratic imperatives are preceded by decision science standards:

In our view, risk management decision processes can be made more "democratic," as the title of this piece *Democratizing Risk Management+ suggests, but only with a clear structure and a decision framework focusing on values, meaningful technical information, tradeoffs, and insight. (McDaniels et al., 1999, p. 509)

A reason for this view is a strong scepticism to unaided deliberation. The idea of redeeming popular participation by employing group deliberation is ridiculed as a 'naive assumption' (Gregory et al., 2001, p. 418). Unaided group thinking cannot help counter individuals' cognition problems, because it is vulnerable to the tendencies to establish entrenched positions and to adopt common perspectives leading to ignorance of contrary information (McDaniels et al., 1999). Self-designed, autonomous deliberation by lay people about environmental risk is described as 'a recipe for disaster' (ibid, p. 500). There is little room for an autonomous public to challenge and alter the deliberative processes: 'the scope of their role falls well short of a license to redesign the process' (ibid, p. 500).

Group participants are expected to play only a passive role The group is expected 'simply to report to the elected or appointed decisionmakers who are seeking input through the process what alternatives the various stakeholders can support' (ibid, p. 501). More generally, 'the objective of public involvement is to provide insight to decisionmakers, not to resolve a dispute' (ibid, p. 508). Therefore, 'one should never allow public involvement processes to actually set policy. Presumably that role should be reserved for legitimate government agencies or elected representatives' (ibid, p. 499).

Strategy

Value-articulating institutions are formulated as a kind of 'tutorial' (Gregory et al., 1993), where analysts 'look for trouble' such as 'false fluency' (Gregory et al., 2005, p.13). The analysis attempts to mirror the ways in which individuals naturally, or rationally, think (Gregory, 2000). Expert instructions are offered to participants to go through the professionally designed learning scheme which imitates human's natural cognitive process. A general strategy is to help participants break down their entangled value considerations into several dimensions and carefully consider each of them step-by-step. The starting point of assessment is their own held values

through to weighing up required costs and benefits, leading to a choice that best fits the given objectives. Since this calculative process requires systematic thinking while few individuals are natural systematic thinkers, it must be led by decision experts.

Analytic deliberation seeks to facilitate individual contemplation. Basically the idea of value-focused thinking rests on self-exploration. The accordingly constructed deliberative model fosters the required weighing of benefits/costs and arguments in a mental dialogue. In Gregory's (2000, p. 160, emphasis original) study, the participants were asked individually about their value dimensions with the reminder: 'value dimensions are of different importance to different people. We want to know what is important to *you*'. The decision steps of the 'structured decision-making process' outlined in Failing et al. (2007) are in principle doable by solitary individuals. Communication as a group is not essential.

Preferences are expressed and corrected in structured ways. The deliberation could enable a constructive dialogue between participants for deliberating values and preferences, creating a 'legitimate forum' (Failing et al., 2007). The notion appears benign with the principles of deliberative democracy. Yet, it goes with a requirement that individuals must articulate clear distinctions between facts and values (Gregory et al., 2005). Failing et al. (2007) do not shrink from restricting their approach to fact-based dimensions. They claim that the aim is not to pit one validity claim against another, but expose their differences and facilitate better understanding of the concerned issue. Participants are free to use affective and emotional expressions (Gregory, 2002), but 'competing hypotheses' have to be justified on an 'evidential basis' (Failing et al., 2007). Priority is given to expert knowledge. Validity claims made by lay participants are compared with expert beliefs to reveal 'the critical gaps in *lay understanding*, thereby disciplining claims about the adequacy of *lay comprehension*' (Gregory et al., 2005, p.9, emphasis added). Failing et al. (2007, p.57) confess that the communications are imposed a discipline by demanding the participants articulate their concerns in structured and transparent ways with clear references made to scientific data concerning probabilities and consequences.

Analytic deliberation is concentrated on practical tasks. Value disagreements are acknowledged, but fundamental value contest is deliberately avoided:
On the values side, participants often enter a deliberative process highly polarized. Asking for value statements such as "what's more important, drinking water quality or ecological health?" or "how do you feel about toxic waste?" is unlikely to lead to anything but divisive positioning. A key role of knowledge in a decision-oriented process is to distinguish among the relative merits of proposed actions. Unless participants are focused on the practical task of deciding not just the positivist question of what is, but also the normative question of what to do about it, it is possible to spin endlessly in technical and philosophical debates that prove ultimately to be largely irrelevant for management. (Failing et al., 2007, p. 56)

The deliberation is devoted to clarification of facts and a search for practical solutions. 'Normative' question is understood as a pragmatic one, i.e. 'what to do about it'. Fundamental value conflict is not to be dealt with. This offers an alternative

interpretation of the earlier democratic pledge that local knowledge and cultural values have to be *critically* assessed. By critical, it actually means objective scrutiny based on evidence and fact rather than intrinsic merits. A good analytic deliberation is defined in terms of its capacity of deepening participants' understandings. The focus is on 'analysis', suggesting an orientation to the technical and informational aspects of risk characterization.

Procedure

The strictly structured processes begin with participants defining objectives and sub-objectives. They then construct measures to indicate the possible ways of achieving these objectives and rate the importance of each attribute. This process of clarifying uninformed values needs 'technical guidance' (Gregory, 2002, p. 476). Another key step is to make 'unavoidable' value tradeoffs. Gregory (2002) believes that making value tradeoffs is psychologically challenging, but the tension can be eased by addressing them head-on. Tradeoffs are not deemed as inherently irresolvable, provided that they are adequately clarified and made explicit by following the value-focused model (Arvai et al., 2001).

The optimism can be explained by the analysts' understanding of values. They speak of value conflict in terms of technical incommensurability, which 'refers to the issue of representation of multiple identities in descriptive models' (Munda, 2006, p.91). Value is regarded as an expression of wants, which is endogenous to individuals and can be expressed in various formats. Conflict is attributable to the use of incompatible formats, or 'unlike attributes' creating 'confusing type of choice' (Gregory, 2002, p. 486). As the expression formats are believed to be independent of the real utility function, alternative attributes may be used. Thus natural and constructed metric are suggested for easing tradeoffs. Rights-based beliefs are understood as a result of exercising 'simplistic decisions rules (e.g., any loss, however small, of a valued resource is prohibited)' to 'escape' from hard trade-offs (Gregory et al., 2005, p.11). Such trade-offs can evoke affective responses when individuals adopt these rules, and may create confrontations between them. Cognitive aids are deemed instrumental 'to defuse such confrontations' by 'stabilizing' emotions (ibid, p.11).

Second, value exists only at individual level. Making informed value tradeoffs are accordingly viewed as a solitary affair largely based on individual introspection. Gregory's (2002, p. 467) solution, i.e. 'addressing people's concerns head-on', concerns the internal conflicts within one's own mind. Deliberating individuals are required to justify their trading off morality or principles only before themselves. They succeed to the extent that they feel satisfied, regardless of whether or not the choice would be actually justifiable or acceptable to others. An anticipatable defence from these authors is that analytic deliberation has incorporated group discussion making room for this. However, as revealed throughout all their works, collective discussion plays merely a supplementary role of facilitating information sharing and exposing differences. Mutual justification is not a necessary requirement to get a policy option passed, and utility points are assigned as an individual decision. The critical decision moment is free from mutuality. Avoided is the toughest issue of addressing one's

choice at her rivals' worlds.

A disaggregation procedure is used for value elicitation. A complex issue is broken down into several dimensions each linked to an 'end objective', such as 'ecological health', which are then further reduced to a set of 'means objective', such as fish and wildlife conservation. By considering their more 'tangible' constituents, the hard-to-define spiritual and cultural values are made recognizable and included into evaluation. Then, participants may be asked to individually express their preferences by assigning 'importance points' to each performance measure. This makes possible conversion of the perceived importance of one dimension in terms of another one, including to equivalent dollars so long as one of the dimensions is expressed in dollar terms (Gregory, 2000). The use of natural or constructed metric as a neutral unit avoids provocative forms of value expressions such as dollar. Participants are not directly asked to substitute their held values for something incompatible, but indirectly so. This could avoid both 'the unnecessary controversy' involved in trading off protected values, and 'the masking of real trade-offs' which is the 'true nature' of risk decisions (Failing et al., 2007, p. 57). Psychologically, expressing importance is less challenging than evaluating a loss. Tradeoffs are made explicit but framed in a different way.

The overall importance for each option is calculated by aggregating the importance points assigned. The levels of aggregate preference for all the policy alternatives then become visible and comparable. The analytic approach facilitates learning to compare and make choice through focused calculative procedures presented in a decision-friendly context. The procedures mainly serve and regulate individuals instead of groups.

Arvai et al. (2001) assess the quality of deliberative decision according to three dimensions, namely, participants' satisfaction, diversity of issues discussed, and improvement in knowledge. The first and third dimensions are assessed by the participants while the second by the research team. Either ways, these measures operate at individual level. By these assessment standards, it is possible for a process of analytic deliberation to be judged as effective even if it involves merely solitary thinkers with adequate decision supports and supply of relevant information. Despite called 'risk communication', the communicative dynamic is not assessed. Another measurement concerns about time consistency of preferences. Properly aided deliberations could change values or preferences, and preferences would be expressed consistently over the course of the process and remain roughly stable afterwards. Possibility aside, this criterion again reveals the prime focus on individual rationalization, or the relationship between one's subjective states across different times.

Another set of assessment criteria concerns the extent in which accepted standards of decision analysis, which policy debates often lack, are met (Gregory et al., 2005). McDaniels et al. (1999) stress that decision quality depends more on a right decision framework than right people or right information, suggesting the primacy of procedural scientific-ness over fairness. The other assessment criteria offered by McDaniels et al. (1999, p. 507-9) generally pertain to quality of recommendations

and cost-effectiveness. A public participation initiative can be judged as good if it could provide useful insights to decision-makers and satisfactorily meet the given objectives at reasonable cost.

ANALYTIC VS. DEMOCRATIC

Analytic deliberation is an aided learning process designed to facilitate preference engineering. Participants are led to express their views following certain principles of decision science. In a democratic deliberation, participants express values as well as judge those expressed by others. Some of its defining principles are in effect executed by them and open to their challenge. Analytic deliberation does not entertain unrestricted empowerment.

Analytic deliberation promotes instrumental rationality, striving for logically consistent, systematical and efficient ways of value elicitation. In democratic deliberation mutual recognition is regarded as a meaningful outcome. Although a plausible pathway to search for an acceptable end is delineated, unlike those scientific methods, it does not endeavour to specify a comprehensive moral end from which substantive operative norms could be deduced leading to a course of action in relation to resource allocation. To the contrary, the analytic-deliberative approach implies such an end, i.e. utility maximization. It is devoted to seeking the greatest benefit for individuals or society through the elicitation and evaluation of values in forms that other people could comprehend and would accept as valid. The idea of impartiality which characterizes neoclassical economics is recognized. In democratic deliberation there is no presumption of universal acceptance beyond basic rights.

Value plurality is handled in different ways. The philosophy behind analytic deliberation is value reductionism. The democratic deliberative approach does not reject normative uniformity, but it is not a necessary criterion of good decision. Multiplicity of values is not to be reduced for the sake of pragmatic needs. Reasoned differences are an acceptable outcome.

THE DEMOCRATIC POTENTIAL OF THE ANALYTIC DELIBERATION

The methodology of deliberative valuation emerges as an interface where science and democracy clash. Some decision science principles are at variance with those of deliberative democracy. Three interrelated inconsistencies are identified, concerning organizing principles, value pluralism and evaluation focus, respectively.

The Fallacy of Impartial Deliberation

The principle of impartiality could displace the need for actual communication. To fulfil its purposes, the analytic approach actually only requires demonstration by clarifying and sharing information, and correcting errors. The use of MAUT is instrumental to this, e.g. by replacing a multicriteria problem for a monocriterion one with a single valued function, replacing incomparable options for analytically comparable ones, and denying preference thresholds. This may however go at the

expense of excessively changing the nature of the problem at hand (Munda, 1995).
The democratic rhetoric, detailed in Failing et al. (2007), falls short of the normative role of public deliberation. Deliberative opportunities are used to advance case-relevant knowledge comprising 'fact-based inputs (what is) and value-based inputs (what ought)' (Failing et al., 2007, p. 50). It is believed that value questions need clarification rather than refutation:
Exploration of value-based knowledge (priorities and preferences) on the other hand, must focus on seeking clarification and understanding rather than corroboration or refutation……The quality of a value claim will be related to clarity, consistency and explicitness. (Failing et al., 2007, p. 50) It is doubtful that normative questions about public goods, concerning the well-beings of other people or species, can be satisfactorily answered merely by clarifying knowledge content. To settle such a 'what ought' question, one must either justify her claims or refute others'. Following Holland (1997), the question is a matter of judgment, not preference. Convincing justification and refutation must go with reasons which in principle could be rejected even sufficiently clarified. Clarification attempts not prepared to be refuted belong to a preference-type question, rather than a 'what ought' question. If the clarification requests acceptance from a second party, it would become a kind of justification and move the discussion towards a normative level.

Yet, analytic deliberation is actually a programme of demonstration, although 'justification' is stated at various points. According to Gutmann and Thompson (1996), demonstration is a process required by impartiality, comparing to deliberation required by reciprocity. It entails the use of objective evidence and factual information to show why a policy option is the best according to *the* universally acceptable criteria. Analytic deliberation fits squarely to this notion. This is evidenced in its emphasis of 'evidential basis' and 'clarification', and scepticism to opening 'philosophical debates' and 'unnecessary controversy' (Failing et al., 2007). Further proofs are evident in those statements concerning objectification of value expressions and, more generally, scientific rationalization of public participation appeared in the publications.

There is little room for value debates and the normative question of 'why to do'. It is then debatable to employ common democratic vocabularies such as 'justifying knowledge claims', 'to debate…competing claims', 'normative judgment', 'legitimate forum', and 'constructive dialogue…about values' (Failing et al., 2007, various pages). It seems that 'justification' is understood as justifying the knowledge content of validity claims. Justifying the normative content of a proposal is not like justifying (demonstrating) its knowledge content. The latter is meant to be accepted upon perfect validation in objective terms, whereas the former might still be rejected even so. To make a public decision, decision-makers need no more than collecting the most credible evidence and demonstrating it to the public. This is all the justification it needs. There is no moral need for mutual justification and actual discussion. The merits of analytic deliberation diminish with the intensity of fundamental social conflict. This indicates a decisive deviation from the concept of deliberative democracy to which the opposite applies.

Democracy without value debate is meaningless. With commensurability assumed

and value debate avoided, what the analysts would need is simply a well-designed questionnaire and a calculator, not group deliberation. Being a preference engineering exercise analytic deliberation is futile in responding to deep political and moral conflicts. Crafted along the line of a hard science it is trapped in a problem about value pluralism.

Expert Culture and a Meta-democratic Problem

A function of analytic deliberation is exposing differences. The principle that all potentially affected parties should be included is granted. However, not all validity claims are reasonable so that some of them should be excluded through democratic procedures. Deliberative democracy demands that discursive space be sufficiently open and seeks reconciliation within deliberation. Analytic deliberation offers no decision principle that is endogenous to deliberation to identify and exclude unqualified proposals. Otherwise deliberating individuals would have been expected to reject other people's claims on grounds acceptable to them. Instead, they are led to merely learn from each other. Learning could be uncritical, without testing each other's claims. No wonder value contest is discouraged and 'tutorial' is used as an analogy.

Certainly, the emphasis of evidential basis could be regarded as such a principle. Yet its formulation and execution is exogenous to the deliberation process from which political legitimacy is sought; it is embedded into the deliberative design. Value claims must be made measurable and articulated in universally acceptable and objective terms. The definition of these terms is circumscribed by the scope of decision analysis. Following Keeney (1992), Gregory and Failing (2002) devise a value-articulating framework based on three criteria, namely, measurability, operationality and understandability. The strategy is not to empower participants to determine acceptability, but to determine acceptability on their behalf by limiting the discursive space in *a priori*. Diverse perceptions of reality have to be reformulated in accordance with the predefined rules.

A 'democratic' defence for adopting decision analysis standards is that uninformed participants may risk becoming captives of interested stakeholders or agencies. As Gregory et al. (2005, p.7) put it, '*t+o create a better-informed public, the managers of deliberative processes must circumscribe the potentially relevant facts and set priorities among them'. However, this too could pave the way to third-party manipulations. Democratic legitimacy would be held in suspicion if the relevance or rationality of arguments is arbitrarily defined by decision analysts, particularly when they are subtly associated with industrial or political interests. Analytic deliberation is predisposed to a particular social state and problem definition which ought to be subject to a democratic process. This raises a meta-democratic problem.

Analytic deliberation could lead to, in Anderson's (1993) terms, a secondary conception of value plurality which captures diverse authentic standards of evaluating qualities of goods. However, it falls short of a primary one based on a plurality of evaluative attitude by which goods are sensibly valued in different ways. This conception pertains to the extent in which goods are *appropriately* valued and

may be independent of their meeting any authentic evaluative standard. With 'why' and 'ought' questions avoided, analytic deliberation fits well to the opposing monistic view that 'all goods are the proper objects of a single evaluative attitude' (Anderson, 1993, p.4). Alternative evaluative modes are restricted. The monocriterion rationalization may unnecessarily strip off some culturally specific ways of organizing value 'language' and preclude individuals from expressing ethical propositions based on moral conviction and emotion (Satterfield, 2001). Anecdotal and intransitive forms of value expressions may be penalized.

Expert cultures could pose threat to value pluralism. Failure to democratically elicit values limits the plurality expressed. Failing et al. (2007, p. 50) claim that some but not all science is reliable. Presumably they believe that their science is undeniably reliable. So the participants are restricted from revising rules of the deliberative process.

Procedural flexibility is limited. Deliberative democrats are sceptical to any hegemonic view (Dryzek, 1990, 2000). They hold that both deliberative design and even principles are redeemable on its own terms and that outcomes remain indefinitely provisional and revisable. Value pluralism is considered a concept to be publicly defined in a continuous fashion, and regulated not by any first-order ethical domain. Under the analytic-deliberative framework, value expressions are required of a specific shape compatible with a particular set of scientific predispositions, and the discursive design is not prepared to be challenged from the valuing agents. The institutions for pluralism are crafted following a distorted democratic programme.
As the methodological foundation simply moves from one science (neoclassical economics) to another (decision science), the prospect for theoretical pluralism is limited. While scientific rationalism is envisaged as one tradition of value along with ethics, paradoxically value pluralism is circumscribed by one of its specific domains concerning human behaviour.

Subject-centred Evaluation

A subject-centred view of public deliberation is tightly linked to serving the values and interests of individuals and groups (Renn et al., 1995). An option is chosen for its ability to satisfy the dominant values and interests. Renn et al. (1995, p. 7-8) contend that people's values and interests are nearly always diverse, so participatory process must have losers by any evaluative criteria. Philosophically, then, no evaluation could be justified over another. This view sees public participation as a zero-sum game. In practice, it is hard to not recognize certain justice principles as legitimate, such as equality and efficiency. Forcing people to one side is likely to lead to a vicious cycle of conflict. Some social imperatives would be better interpreted as demanding balance and recognition, such as moral pluralism and multiculturalism. These imperatives could be 'satisfied' only by simultaneously satisfying the preferences of competing groups, but this is unrealistic given resource constraints. An appropriate evaluative focus is people's interaction in which recognition of shared values and reasonable differences are realized. A subject-centred view gives little credit to the role of inter-subjective communication in seeking fair terms of social cooperation.

Analytic deliberation focuses on individual thinking processes. Despite the rhetoric of mutual learning, the involved evaluative activities are actually concentrated on individual cogitation and preference articulation. The role of social interaction is trivial. The constructed choice-making pathways help individuals select the policy option that can meet their values and interests to the greatest extent. This makes little room for the virtue of mutual respect that could lead participants to recognize or agree on a course of action for reasons departed from their personal values or interests. The idea of 'workable agreement', based on varied values and interests and coordinated through communicative norms, is not a criterion of ideal deliberative outcome. Choices divorced from one's well-clarified objectives are regarded as a product of cognitive failure. A successful workable agreement might then be considered an inferior solution because the decisions of at least some of the participants might be departed from their own values and interests.

Value conflict is resolved ultimately not by striving for mutual acceptance or recognition, but indirectly by deriving an algorithmic solution from an aggregation of individual decisions. Attainment of inter-subjective understanding is not taken as a criterion of success. With the algorithmic solution rationally arrived, a deliberation might be judged as successful, irrespective of the extent in which diverging participants appreciate rival viewpoints and the relationship between them goes adverse. In effect, the reasons offered to those 'losers' of a decision are embedded into the standard decision procedures. It would not be clear as to why the decision made is legitimate *for them*, if these criteria do not explain why the decision *per se* is the most reasonable. Reasonableness should, at least in the first instance, be sought from those who make the arguments to allow unavoidable compromise to be justified *on its own merits*.

Merely enabling disagreeing individuals to speak and express preference does not constitute a sufficient condition for deliberative democracy. More important is the capacity to *listen*, which is crucial to accommodating irreducible diversity out of empathy. Gregory et al. (2001) confess that analytic deliberation does not engage in conflict resolution. As far as deep moral conflict is concerned, such a calculation-oriented deliberative approach might risk reaching a rational decision without giving the suffered adequate respect and motivations to comply or genuinely contribute to a collective action. The minimal emphasis on inter-subjective encounters might fail to nurture moral qualities essential to a democratic state.

DISCUSSION AND CONCLUSION

One purpose of this paper is to provide insights into the challenge of merging methods. The specific analytic-deliberative approach reviewed lacks pluralistic and democratic potentials. Attempts to utilize the hard science of decision analysis in the realization of a critical deliberative democracy may be a daunting task. Nevertheless, this it not tantamount to an advocacy of a replacement of analysis for lay judgement. Modest analytic innovations play a crucial role in those valuation tasks that involve a great deal of technical information.

The analytic-democratic tension may be attributed to the nature of the public good issues addressed. Analytic-deliberative strategies are more commonly applied to

environmental risk assessment. Strictly structured and professionally aided deliberative strategies could ease the otherwise exhausting choices concerning risks. Deliberative democracy, on the other hand, typically deals with morally charged social issues involving cultural or religious conflicts. Such disputes stem from a clash of inviolable moral beliefs rather than poor understanding of causal information. Fundamental values and procedural fairness are key factors. Environmental problems are characterized by entangled moral and technical issues. Purely analytic or democratic approach can hardly satisfactorily respond to the challenge. More compelling is to integrate these two unusually demanding models in a cooperative fashion with an awareness of their constraints and conflicting assumptions.

The cooperation required is not a mechanical application of established knowledge to the other discipline. Judged individually, the benefits of analysis and democratic deliberation are obvious. Yet they have demanding and competing propositions and assumptions precluding a win-win merging. Joint venture that combines their best features may end up with a reduction in problem-solving capacities that could offset added contributions. Under certain circumstances analytic deliberation might become a distorted communication programme. It would then be premature to claim the benefits of democratic deliberation if the required normative conditions are unsatisfactorily fulfilled.

Notwithstanding the tension, it is not futile to find better ways of recognizing the reality of conflict and dealing with it authentically and democratically. Opinions, notions and concepts come from complex internal divisions and external interpellations that operate in the minds of people. The methodological clash illustrates an uncoordinated interaction of contradicting ideologies and discourses, and is a reflection of the actual value conflict in the society. The tension between discursive communication and citizen empowerment, and structured analysis mirrors the fact that a vibrant civil society consists of oppositional and insurgent social forces inconsonant to bureaucratic, technocratic and bourgeois controls. As far as research practice is concerned, it is unwise and unrealistic to deliberately avoid this reality of conflict by demarcation or granting privilege, for the social meaning of any such discourse is in part derived from their antithesis. What is required is an intellectual conversation to authentically confront the competing imperatives, rather than a sceptical attitude that unhelpfully view them as an inherent, regrettable dichotomy to be dealt with in the absence of the other. An analytic-democratic joint venture should be treated as a reflexive, communicative activity between two intellectual traditions rather than a mechanical merging of modes of inquiry.

A missing link observed is that the relation of democratic deliberation to post-positivism has gone unnoticed. Post-positivist inquiry demands democratic coordination on the part of inquirer, and not just the inquired. Subjects deliberate on values in a conceptual arena framed by the value-laden inquirer. Of importance then is the scholarly practice behind the scene. The methodological tension should not be understood as an ‘objective’ expert holding a knowledge toolbox struggling over competing techniques, but one of consciously engaging in the activity of problem definition where the inquirer is in effect part of the subject of study interacting with

her respondents. Thus there are two levels of democracy calling for attention. A key message of this paper is that deliberative valuation would be a hopeless initiative if it fails to recognize the linkage between democratization of science and value pluralism.

A viable theory of value pluralism must be democratically theorized on the part of the analysts. Drawing on Dewey, Dryzek and Berejikian (1993, p. 59) suggest that the cure for the ailments of democratic theory is *more democratic* theory – theory that is democratic in its production, as well as its content. As a corollary, a democratic value-articulating institution has to be democratic in its production and hermeneutic activities, and not just in implementation. Value pluralism does not tolerate a conscious separation of reality construction activities on the part of the value holders inquired from those of inquirer.

An otherwise monolithic approach guided by an autistic expert culture should be held in suspicion for the inquirer's excessive intervention. A technocratic or economistic deliberative design that subtly puts key democratic concepts at peripheral has limited democratic potential. The real challenge to DMV is not the practical difficulties of grappling with diversity, but the biases that enter the deliberative process unconsciously, unspoken and unrecognized (O'Hara, 2001). What is required is a meta discourse to be extended to methodological practice to expose disciplinary and expert biases. It entails a fair, non-hierarchical communication and coordination among relevant research traditions in favour of a productive encounter among distinct intellectual perspectives. Decision analysts and economists involving in DMV research have to balance in an introspective fashion their scientific beliefs with the competing elements of the democratic theories they refer to. To make a public deliberation democratic, they must be well aware of the potential threat of their predispositions about the process and outcome, and refrain from unnecessary manipulation as much as possible.

Value pluralism is attainable and defensible if it is sought in post-positivist terms. It demands as much democracy from the research practice as from the encounter among subjects of inquiry. The democracy sought broadly resonates with those required in a post-normal science (Funtowicz and Ravetz, 1993, 1994). The evaluative focus hinges on the communicative norms governing the interaction of the researchers and their relative roles.

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Table 1 Comparison of Analytic and Democratic Deliberations

1. Scope	**Analytic Deliberation**	**Democratic Deliberation**
Problem framing	Cognitive inability	Irreducible moral conflict
Conception of values	Monistic	Pluralistic
- Ontological foundation	Multiple	Multiple
- Dimensionality	Strong	Weak
- Comparability	Different ways of information interpretation	Competing ethical principles
- Source of value disagreement		
Problem solving	Supplementary	Central
- Role of democracy	Aided by science	Scrutinize science
- Relationship with science	Provide insights	Provide insights and/or make decisions
- Role of the public		
2. Strategy		
Analogy	Tutorial	Debate
Imitation	Natural cognitive processes	Political/social interactions
Organization	Expert-led	Participant-oriented
Reflection	Introspective	Inter-subjective
Primary goals	Correct preference; deepen understanding of the issue at hand	Contest preference; deepen mutual understanding
3. Procedure	Higher	Lower
Degree of intervention	Clarify values, think broad, make wiser tradeoffs	Justify values, think broad, determine acceptability
Decision steps	Disaggregation and aggregation	Holistic assessment
Value elicitation	Via natural or constructed metrics	Via speech
- Treatment	Self-assessed levels of satisfaction and knowledge gain; internal stability of preference	Level of reciprocity; inter-personal consistency of preference
- Formal expression pathway	Procedural scientific-ness; quality of recommendations.	Procedural fairness and openness; meta-consensus
Assessment criteria		
- For participants		
- For procedure and outcome		