

Environmental valuation analysis, public deliberation, and their pragmatic syntheses: a critical appraisal

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Abstract. This paper explores how theoretical, practical and political issues are addressed differently by cost–benefit analysis and deliberative–participatory approaches to environmental policy. Theoretically rigorous approaches may prove to be too narrowly defined and so unsuitable because they neglect the requirements of practical implementation. Yet pragmatism which flaunts theoretical understanding lacks analytical power and can mislead policy. How economic methods, such as contingent valuation, compare with those from political science, such as citizens’ juries, is an open question which we attempt to address. In addition, the new hybrid approach of deliberative monetary valuation is critically reviewed. A comparison of these approaches is made which draws out the difficulties of developing practical policy tools which are theoretically grounded and avoid political manipulation.

Introduction

Economists concerned with offering governments policy advice on environmental problems, ranging from dam construction to the enhanced greenhouse effect, have appealed to monetary valuation. The microtheoretic basis underlying economic welfare measures has been put forward as a major advantage of cost–benefit analysis (CBA). Indeed, following controversy over the CBA estimates included in the second assessment report of the Intergovernmental Panel on Climate Change, the inequitable treatment of potential lives lost in low-income countries was defended by appeal to such theory (Fankhauser et al, 1997). This reasoning attempts to separate the ethical and political from the scientific and technical. Yet, a line of argument against CBA has been the inherent technical abstraction which restricts debate and discussion. Thus, wider concepts of value are excluded by assumption, despite evidence for their importance in practice (Spash, 2000a; 2000b).

Judging the most appropriate approach to policy is a difficult act of balancing performance in theory and practice. If the theoretical basis is ontologically flawed—too abstract, ignoring important components, or factually incorrect—the method will fail to produce theoretically desired outcomes. For example, CBA may lead to an environmental tax on fuel as the most efficient approach for addressing air pollution from vehicles, but this tax may fail in practice because of the perceived inequity which results, that is, it has a disproportionate impact on the poorest in society and creates social exclusion. There are practical consequences if a process fails to represent positions adequately, or if individuals fail to act as predicted because relevant factors have been excluded from policy formulation.

In order to allow for a plurality of environmental values to be brought into the policy debate, a range of formal deliberative–participatory approaches have been put forward (Royal Commission on Environmental Pollution, 1998). CBA treats policy formation as a set of discreet decisions while deliberative–participatory approaches

may, depending upon their institutional form and context, be more amenable to recognising policy formation as an ongoing process. Part of that process concerns how the public is allowed to have a say in policy and this can be expected to affect policy outcomes, which must be considered in a dynamic socioeconomic context.

Simple policy choices have a significant impact on the social and cultural landscape, resulting in a policy path which will in turn affect how future choices are formulated. Therefore the stakes are high for choosing a theoretical perspective to underpin policy. Indeed, Dryzek (1990, page 15) argues that policy conflict is as much a product of debates among competing definitions of issues as the substance of an issue itself. The choice of policies and policy tools also impact on the behaviour of individuals and evolution of social systems. The result is a form of policy path dependence, as there is with the choice of technology. Thus, open debate among the body politic is offered as the best method of addressing the formation and preservation of environmental values.

Formal approaches to participatory deliberation have developed in a variety of ways (for example, focus groups, citizens' juries, and consensus conferences) which show a different conceptualisation of the policy problem from that assumed in economics. In this paper we investigate the general features of such formal deliberation in comparison with CBA, and explore the recent trend toward a synthesis, which we term 'deliberative monetary valuation' (DMV). More generally, we consider how a variety of factors bear upon the assessment of alternatives for public input into policy. In the following sections we discuss theoretical, practical, and sociopolitical aspects of environmental policy formulation as they relate to CBA, deliberative-participatory approaches, and DMV, respectively. DMV is assessed against the claims of its proponents that a deliberative element overcomes the weaknesses of environmental CBA. This is followed by a synthesis which aims to draw out key aspects of the analysis and to provide a cross-comparison.

Valuing the environment under CBA

The increasing prevalence of environmental problems has been matched, over the last decade, by an exponential growth in studies employing monetary valuation, with the contingent valuation method (CVM) and other stated preference methods leading the way. Environmental CBA is part of an overall attempt by some economists to incorporate environmental concerns into mainstream economic theory, and to show how traditional economic growth and environmental protection might be made compatible. Environmental and resource economists have been strong advocates of such an approach, although the results of including environmental factors (for example, entropy, waste disposal, and resource depletion) often challenge the theoretical basis of neoclassical economics (Spash, 1999). Monetary valuation of the environment has itself spread from the project level and a concern for site-specific recreational benefits to policy appraisal and international environmental problems (for example, ecosystem management, biodiversity loss, global climate change). This has led to controversy, both within the economics profession and on a wider political platform, over the extended use and application of CBA methods.

Economic assumptions and model boundaries

All models make assumptions and simplifications in order to understand the world. However, the standard economic specification of the policy sphere simplifies, assumes away, or makes exogenous, components essential to understanding environmental problems, such as complexity, political processes, and ethical considerations. For example, implicit ethical choices are made by reducing the value dimension to preference utilitarianism, and discounting the importance of future generations. Such

fundamental epistemological choices define the realm in which economists are meant to operate, and the extent to which an economic understanding of the world is applicable.

Economic theory also has a specific conception of the individual. The dominant characterisation of the economic person is as an individualist who is self-interested in regarding entities or acts as having value only if they (directly or indirectly) influence his or her own utility, and who is rational in the sense of making consistent choices to maximise his or her personal utility. Well-being is then measured by the satisfaction of personal preferences which are taken to constitute the social 'good'. Economists often regard this model as being value neutral because all preferences are regarded as equal. Policy formulation built upon this model prescribes the aggregation of preexisting preferences expressed through the market to determine social outcomes (that is, via a social welfare function). In the absence of actual markets, as is normally the case for environmental entities, a hypothetical or pseudo market may be constructed to obtain shadow prices. Thus, freedom is defined by the ability to choose in the marketplace so as to satisfy preferences.

That preferences are assumed to be well formed and fully informed immediately bounds the decision problem in a very narrow way. As Loasby (1976) has noted, the concept of choice in the neoclassical framework loses all meaning because, assuming perfect information, there is no choice but merely the mechanical act of selecting optimal bundles of goods and services. Indeed, the content and meaning of choice are dependent upon uncertainty. Once information is allowed to be imperfect, the relationship between learning and acting becomes central so that preferences are no longer exogenous, complete, and predetermined. As CVM practitioners have discovered, preferences can be formed both on the basis of the context and the content of information provided in a survey (Spash, 2000b). Yet, despite evidence for preference construction, many economists remain committed to the characterisation of preferences as stable and coherent so that 'true' preferences can be revealed. A moment's reflection upon product marketing makes clear that preferences can be manipulated and that human choice in a complex world is far removed from expected utility calculations. Thus, hierarchical procedures and lexical rankings are commonly employed in decisionmaking, and product loyalty is built upon these very characteristics. Preferences which deny trade-offs (for example, lexicographic preferences) require serious attention and motives to act can include social altruism and biospheric orientations (Spash, 2000a). Acknowledging the existence of such considerations is problematic for mainstream economic theory because of the challenge posed to the relevance of preferences for determining social policy.

O'Neill (1995, page 202) argues that the ethical dimension of social choice problems cannot simply be collapsed into desires or wants, and a similar point has been made by others (Etzioni, 1986; Sagoff, 1988). This means that preference aggregation is neither ethically neutral nor welfare maximising. Preferences are often ethically loaded and unequal. For example, the preferred mode of sexual satisfaction of a rapist or the preference of a murderer for killing are generally regarded as immoral regardless of individuals' willingness to pay to obtain their desires. This may be taken to indicate the need for a clear division between the economic sphere of decisionmaking and the political realm where moral questions arise. Some have argued that the roles of an individual can be distinctly separated as citizen and consumer (Sagoff, 1988), although this is at best an oversimplification. Such a clear dichotomous demarcation of politics and economics seems rare and even the most innocent consumer item (for example, an orange or a shoe) has political, ethical, and environmental characteristics which come to the fore in one context and are submerged in another (for example, oranges from South Africa under apartheid, training shoes from Southeast Asia made by child labour).

A single problem or choice can be viewed from many perspectives simultaneously and involve a combination of considerations, for example, cultural, social, personal. Thus while the epistemological origins of environmental CBA are firmly rooted in a conception of the individual as consumer, in practice this fails to match how individuals choose or value the environment.

Empirical evidence of multiple values and motives

The use of CVM surveys has revealed much evidence of the divergence between theoretical assumptions and how humans value the environment in practice. For example, participants in a CVM survey may misunderstand how their payment will be interpreted by economists and policymakers. That is, the process of CBA and its role within an accounting procedure of governance, via the treasury, is far from apparent to those involved in answering CVM surveys. Respondents may believe they are providing support for a social or moral norm. Hence a divergence occurs between the individual's belief that they are giving a charitable contribution and the economic analyst's use of responses as a welfare-theoretic measure of changes in the quantity or quality of an environmental good or service (Spash, 2000b).

Explaining the institutional context of CVM to respondents has revealed discontent with the method and even outrage at the interpretation given to an earlier stated willingness to pay (Burgess et al, 1998). Individuals may find themselves holding value positions which are fundamentally different from their self-interested consequentialist framing under economics, and as a result individuals may desire a policy approach which allows them to express deeply held values. Ethical dimensions are often paramount in the environmental policy field. Individuals' ethical positions affect the values they express and their acceptance of boundaries between different value concepts.

If respondents are aware that the institutional context conflicts with their values, they may refuse to provide a bid or offer a large bid to reflect their concerns. Standard practice systematically excludes these responses as being associated with noneconomic reasoning, regarded as 'irrational', or deemed to be attempts to strategically bias the whole exercise. Such explanations reify the data. They also fail to address respondents who deny the relevance of economic trade-offs but actually provide a moderate monetary valuation (Spash, 2000a). Such respondents are found to be willing to pay for environmental improvements (for example, the re-creation of a wetland ecosystem) while rejecting consequential explanations of their behaviour and instead favour rights (for example, the right to be free from harm, or protection for endangered species). Indeed, respondents have repeatedly been found to hold positions compatible with rights-based beliefs and lexicographic preferences (Spash, 2000a).

Thus, the motives behind monetary values become relevant to understanding the content and meaning of the numbers coming out of stated preference methods. Choices being made on the basis of collective values, protecting rights, or defending just outcomes are no longer related to the trade price being sought by economists. However, the practical requirement for obtaining a number overrides the empirical data and theoretical considerations. For example, Burney (2000, page 513), an economist at English Nature, argues environmental valuation and stated preferences techniques are the 'policy reality'. He regards the relevance of incommensurable values or rights-based ethics for the applicability of stated preference methods as a matter of judgment and states that: "A practical policy maker might take the view that stated preference techniques should quantify these ethical positions, and then as a sensitivity analysis give these respondents a high value in the calculations" (page 516).

That such practical approaches may violate value theory seems unimportant. Indeed, the theoretical premises behind CBA itself are often violated and appear to

be too abstract for consideration in practical environmental policy. The general use of monetary valuation for analysing global issues moves well beyond microtheoretic foundations where *ceteris paribus* is essential. The changes under, for example, climate change due to the enhanced greenhouse effect, loss of biodiversity, or degradation of ecosystem functions, are comprehensive rather than marginal adjustments. As Vatn (2000) has noted, the concept of marginal analysis, upon which economic calculus is predicated, proves difficult to define, or irrelevant, because of the inherent characteristics of many environmental problems: "The problem is how to protect systems resilience, not to search for marginal values that have no real meaning" (page 504). Large-scale environmental CBA is meaningless in neoclassical terms because it becomes divorced from theoretical requirements for representing welfare and fails to address key environmental considerations. Despite this, the practice of pricing is recommended as a practical input to policy processes. Hence, while supposed pragmatists attempt to value the world's ecosystems, they are derided as much by neoclassical economists on theoretical grounds as by environmentalists on ethical grounds. Yet, political pragmatism consistently seems to counter both theoretical and moral concerns.

Pragmatism and the political role of CBA

CBA is seen as pragmatic because of an assumed consistency with the prevailing 'financial bottom line'. The apologists argue that, if environmental policy is to be taken seriously by the institutions of government, monetary valuation must be accepted as a necessary evil to be included as part of an array of coexisting (but unspecified) methodologies. However, such pragmatism relies on a short-term view of policy and may be motivated by the potential to gain improved professional standing by association with an approach which is palatable to the political elite (Jacobs, 1994, page 69). As O'Neill (1995, page 199) has pointed out, there is inconsistency in advocating the adoption of a policy approach which describes humans as self-interested while neglecting the role of self-interest in that advocacy. Of course, the extent to which CBA can be regarded as serving an elite depends upon how far results can be manipulated.

The ability to distort CBA to elicit politically convenient results is exacerbated by the difficulties of explaining the principles behind the methods. There are certainly many questionable practices and a few illustrations which can be mentioned. The use of willingness to pay instead of the more theoretically correct compensation measure for resource damages has been justified on grounds of delivering 'conservative values' (see critique by Knetsch, 1994). The lack of sensitivity analysis in CBA allows results to be reported as if definitive and universally applicable (Merrifield, 1997). Apparently simple technical choices can totally alter policy advice. For example, the results from a CVM study were subjected to a 25% discount rate and this was justified in a footnote on the basis that individuals pay such rates on their credit cards (DETR, 1999). In this case the result was reported without sensitivity analysis and dramatically reduced a proposed tax on the aggregates industry, which was then dropped.

That CBA is implicitly embedded within a political process where results are mediated through institutional design has been used to argue that critics should show less concern. The argument is often made that CBA results are but one input to the 'decisionmaking process' and alone will never decide acceptance of a project or policy. As was discussed above, the CBA process self-selects certain types of values. Other values and interests are then to be taken into account elsewhere in the political process. Thus, reasons for advocating environmental valuation are based on only a partial account of politics. This means the institutional role of CBA is poorly understood within economics and, more importantly, the pragmatists' argument that monetary

valuation of the environment merely reflects 'how things are done' also falls down. For example, Cameron (1992, page 160) summarises the political process surrounding a CVM of whether to allow uranium mining in Kakadu National Park, Australia:

"An interviewer comes to a householder's door, gives them more information than they probably had before about the Kakadu Conservation Zones, and asks them would they be willing to have their income reduced by \$100 per year for the next ten years to add the zone to the national park rather than use it for mining. The mining lobby takes issue with the results when they are made public and hires economists who attempt to debunk the CV study. The conservationists and the mining industry lobby cabinet when the RAC [Resource Assessment Commission] report comes out, and the media highlight the conflict. Cabinet eventually makes a decision based primarily on the values of the area as an Aboriginal sacred site."

Here, CBA was apparently used as a political tool and dropped as an argument in the final decision. The relevance of Aboriginal rights combines concerns for environmental, social, and cultural values which CBA is unable to address, but which seem more important in this context.

Yet some advocates claim CBA has democratic advantages, arguing this is a process of 'one person one vote' whereby the public can express what they want (Burney, 2000, page 515). The extent to which the 'one person one vote' analogy applies to CBA is limited because 'votes' are relative to income, although this has sometimes been described as an improvement over voting because the intensity of preferences can be expressed. A more fundamental difference is the appeal to representation by statistical sampling theory, where 600 to 1500 randomly selected people can represent a national population (Mitchell and Carson, 1989, page 108). In practice, obtaining a truly random sample of the population is impossible because all methods have their flaws (for example, voter registration, telephone listings, or postcodes). Systematic bias can arise where nonresponse affects the sample and data set gathered. More important, as O'Neill (2001) points out, even were such a statistical sample obtainable this would meet only one of the many relevant types of representation. In practice, concerns also arise over the extent to which specific sections of society are represented and/or have their viewpoints taken into account.

More generally, the economic language of trade-off and monetary compensation can be of limited cultural relevance even within Western society. As Frey (1997) and Siebenhüner (2000), show civic virtue and other-regarding behaviour make possible the provision of public goods, such as environmental quality, but can be crowded out by an economic approach to policy. According to Elster (1983, page 96), "if the democratic method was introduced solely because of its side effects on economic prosperity, and no one believed in it on any other grounds, it would not produce them". An alternative approach is to focus on political processes whereby reasons behind particular wants can be articulated.

Deliberative – participatory approaches

Deliberation occurs in everyday discussion and internally within the individual (Goodin, 2000). Formalising deliberative processes for policy purposes has produced the consensus conference (Joss, 1998), citizens' jury (Smith and Wales, 1999), and deliberative poll (Fishkin, 1995). Most of these involve the assembly of selected citizens who listen to evidence, deliberate the merits of policy options, and produce findings or vote on their preferred outcome. The model of deliberative democracy is based upon the conception of politics as a process of purposeful determination by citizens of desirable ends and the means of their achievement (Dryzek, 1990, page 10). The aim is to allow a process for informing and constructing preferences. Rather than attempting

to squeeze all value dimensions into a single axiological scale, the deliberative process internalises the spectrum of rationalities, considerations, and values.

An important aspect of deliberation is the ability to recognise silent voices, such as the young, future generations, ecosystems, and nonhuman entities. Long-term pollution problems are inadequately addressed by personal preferences because of myopia, and the ethical treatment of unborn future generations requires a recognition of the need to constrain current actions. Issues such as the rights of future generations and nonhuman entities can be directly discussed in deliberative forums. Goodin (1996) argues that the adoption of deliberative processes can facilitate the explicit consideration of nature's interests via the transformation and validation of perspectives.

Information produced by deliberative processes reaches decision takers in the form of, or at least accompanied by, corresponding discourses outlining the reasons for different options, although some may question whether such information is actually desired by current decision takers given their institutional context. The provision of a richer information set is consistent with a broad theory of rationality where the reasons 'why' a particular outcome is selected are as important as 'what' is selected (Elster, 1983). In this sense, human well-being is more than simply a matter of satisfying human wants. Well-being is a consequence of processes and institutions that have some internal logic or claim to virtue. The aim is to educate human capacities of judgment and desires so that we come to prefer what is good (O'Neill, 1993, pages 65–82).

The mechanism driving the deliberative process is discourse. Dryzek (1990, page 38) defines discourse as free and open communication in political life, oriented toward reciprocal understanding and trust. He describes the ideal conditions as being communicative rationality, where individual actors in a deliberative environment reflect upon various positions (or discourses) surrounding an issue and avoid strategic behaviour. Communicative rationality implies a high degree of openness, where participants come together to mutually accommodate and adjust to other discourses, or interests, that present themselves. Ideally, the deliberative space is where the dominance of particular interests is dissipated and 'communicatively competent' individuals assess arguments based on logical merit—which resonates with Sagoff's (1988) depiction of the 'citizen'.

O'Hara (1996, page 96) uses the term 'discursive ethics' to refer to the social choice problem as primarily a decision process involving communication and mutual accommodation. Contesting discourses during deliberation lends legitimacy to discursive processes. The theoretical promise is that the shift in emphasis from satisfaction of preferences to discursive process will provide the opportunity to consider a richer array of the ways in which individuals relate to the environment and to each other (Cameron, 1992).

Institutional design, representation, and legitimacy

The theoretical promise of deliberative processes will be limited by their practical design. For example, citizens' juries may vary widely in terms of remit and method of recruiting participants. Definitive conclusions about the practice of deliberative approaches are difficult to draw because of a lack of critical research. Thus, although outcomes are known to be highly sensitive to design, research has yet to identify the dynamics contributing to particular outcomes. Some studies confirm the advantages of deliberation (Fishkin, 1995; Niemeyer, 2001), whereas others give less cause for optimism (Brouwer et al, 1999; Pelletier et al, 1999; Skillington, 1997). Yet practical issues associated with conducting formal deliberative approaches can be identified.

A number of authors have identified tension between good deliberation and a representative forum which provides legitimacy (for example, Smith and Wales, 1999).

Although large numbers of participants cannot guarantee political legitimacy, if numbers of participants are kept small, for the sake of good deliberation, the rest of the population may reject the verdict as unrepresentative. Alternatively, if large numbers are included in the process, the chance of achieving communicative rationality is dramatically decreased. Partial deliberation can lead to outcomes that run counter to the communicative ideal. For example, Pelletier et al (1999) conducted a series of 'search conferences' on food policy in the USA and found participants favouring simplistic solutions when attempting to reconcile a complex array of elements. Similarly, when individuals are forced to make a decision in the face of complexity and a shortage of information they vote along party-political lines rather than considering substantive issues (Sears, 1993).

The outcome of a deliberative process can also be biased by the recruitment process. As with CBA, the relevant population from which to draw participants is often unclear. There may in fact be scale limits to the applicability of different forms of deliberation which make them inappropriate for issues with regional or national dimensions. Rippe and Schaber (1999) argue that citizens' juries, for example, should be used at the local level, and by implication address only those issues which can be meaningfully broken down to that level. Indeed, much of the deliberation literature seems to assume a local policy context and has yet to address the complications of larger geopolitical scales. Restriction to a local level may aid selection of participants, although a self-selection bias can still arise where only individuals prepared to give up their time participate (Rippe and Schaber, 1999, page 82). This might mean recruiting those already prepared to deliberate and who are active in debating community issues. One solution is to make participation compulsory, as for trial by jury, although in practice this implies a high degree of institutional acceptance and adoption of deliberative forums. Even with compulsory participation, viewpoints may fail to be articulated.

Kuran (1998) notes that individuals with particular concerns fear their views will be subjected to ridicule and therefore remain silent. There is also a concern that individual participants are expected to be articulate and possess good communications skills. Where they fail to possess such skills, views will be inhibited. Such views might, of course, fail to withstand deliberative scrutiny, in which case the individual could be right to remain silent. In either case, the transformation of their particular views, within the context of the forum, will be hindered. The aim is for all views to be dealt with on the deliberative floor on the basis of communicative rationality, lest they manifest themselves in other forms of political action.

Dryzek (2000, pages 154–155) resolves the problem of representation by reformulating the concept as representation of discourses rather than individuals. Put another way, deliberative processes are representative so long as participants are able to deliberate the merits of all possible discourses. Such deliberation may be with others or through internal reflection (Goodin, 2000). Yet this solution still requires communicative rationality, without which the representation of silent voices is open to question.

Communicative rationality is compromised when individuals act strategically (Skillington, 1997), and there is some concern that the process of formal deliberation makes participants more aware of the possibilities for laundering self-interested preferences as being for the common good (Goodin, 1986). This concern is qualified by the transparency of the process which enables individuals to judge for themselves whether others are expressing a genuine argument or merely posturing. Thus, Dryzek (2000) has distinguished between a closed discursive process that leads to a simple aggregation of preferences and a 'communicative' discourse that concerns the 'premises of judgment'. The former is seen as being far more susceptible to strategic influence.

Power and political influence

Formal deliberation certainly appears to be perceived as a fair process and there is evidence that the public prefers deliberative processes, such as citizens' juries, to CBA (Rippe and Schaber, 1999, page 80). Rather than being an accounting exercise, deliberative forums explore policy options and transform individual positions. Unlike the more parsimonious conceptions of democracy, in which participation ends at the ballot box, in deliberative democracy policy formation is viewed as an active and ongoing process that can change the nature of the polity itself. This may therefore be seen as empowering the participants.

However, viewing any type of deliberative process as a panacea is dangerous and neglects a number of issues concerning the context of deliberation. A population may be dominated by self-interest ["constituted of knaves" to use Frey's (1997) phrase], in which case deliberation is unlikely to produce a communally best outcome. Various forms of political manipulation (for example, selection of participants) may be applied to deliberative forums, especially where the stakes are high. An effective method of control, as used for public enquiries in the United Kingdom, is to restrict deliberation through the remit or terms of reference. The information delivered to participants may also be controlled (as under CVM), although deliberative forums usually allow participants to question information and demand new evidence or explanations.

Such possibilities for questioning information can challenge the power brokered by vested interest groups who may therefore oppose the introduction of deliberative forums or their findings. In fact, successful deliberation in environmental policy would inevitably erode existing channels of influence. Thus, interest groups would be expected to seek to manipulate formal deliberative approaches as they became more common (Niemeyer, 2001). In any transition to participatory deliberation, where the balance of political power is being altered, a struggle to maintain the status quo can be expected from those in power. Vested interests may attack deliberative forums as unconstitutional or accuse the organisers of bias. Thus, such processes need to be embedded in a broader political framework that is itself discursive and defined by communicative rationality. Indeed, in order for deliberative forums to be maintained, the policy recommendations of the participants must be put into practice and hence the forum must be 'plugged in' to the political and institutional process.

Paradoxically, political manipulation and strategic behaviour are products of external forces that deliberative democrats seek to transform through the power of discourse. Their hope is that deliberative approaches will produce longer term benefits by transforming the polity, for example, reducing conflict (Dryzek, 1990, page 41). The process is seen as increasing trust, which is regarded as essential for the provision of the common good. Involving the community directly in decisions has been described as increasing welfare as a by-product of increasing empowerment and self-esteem (Elster, 1983, page 92). However, such gains must be weighed against the potential for formal deliberation to fall short of the theoretical ideal. There is, therefore, identifiable tension between the world the deliberative democrats would like to achieve, and the 'way things are done' as described by pragmatists. Thus, there has been some searching for a 'middle path'.

Deliberative monetary valuation

A small but growing literature concerns combining environmental valuation with various forms of deliberative process. This is logically associated with the long-standing apologia for CBA that it is but one input into a comprehensive social decision process. That process has rarely been specified, although some now describe it as ideally discursive (for example, O'Riordan, 1997). In addition, the classification of individuals

as consumers in some realms but citizens in others (for example, when deciding about 'public goods') has led to the suggestion that merging valuation and deliberation might better reflect citizens' preferences (Sagoff, 1998). Others, realising that preferences are constructed but believing environmental valuation is unavoidable, appeal for "some way for participants to iterate their ideas before revealing a willingness to pay" (Burney, 2000, page 514).

Foundations and categorisation of DMV

In fact, the search for validity in applying CBA methods has led to a variety of appeals to interest groups or members of the public in an attempt to supplement the normal information content of prices placed on the environment. Thus, the travel cost method may be combined with an interview approach in order to sustain assumptions of how individuals behave, value time, and relate to the environment. Hedonic pricing has sought corroboration from estate agent valuations as representing 'informed' preferences. Focus groups have been used in conjunction with the CVM to test survey design on the basis that group deliberation could validate the information content and help identify design biases. This last approach is most clear where deliberative practices have begun to be used. For example, the largest CVM study in the United Kingdom was conducted on environmental impacts associated with aggregates (DETR, 1999). The interesting feature of this work in the current context was the informal use of vested industrial interests (stakeholders) in the first part of the study and the use of public focus groups in the design stage of the second. But the feedback from the public proved problematic because it diverged from economic assumptions (for example, the expressed desire for community compensation unrelated to the individual), and neither process was formally reported.

Thus, two broad approaches to combining deliberation and monetary valuation can be identified. The first regards monetary valuation as basically sound but able to benefit from supplementary, and often informal, processes which borrow elements of deliberation. The second sees the use of deliberative approaches as a new method allowing the (collective or individual) production of a monetary valuation for environmental goods and services. Under the first approach a variety of alternatives exist, and monetary valuation may be either followed or preceded by some element of deliberation. Stakeholder participation, as mentioned above, may be employed to validate outcomes. The implication is that *ex post* deliberations can be used in some way to adjust valuation results or their presentation. Deliberative processes and environmental valuation may also be sequential. For example, Kenyon et al (2001) selected a subsample of participants from a CVM for a citizens' jury on the same environmental issue. *Ex-ante* deliberation has been employed in designing CVM surveys with the use of focus groups to test the wording and respondents' understanding of survey questions. Deliberation is then regarded as useful in providing insight into the processes by which respondents produce their willingness to pay or accept. This may be extended to allowing a deliberative process to determine the options or institutional context to be valued in the survey.

The second approach is what we term 'deliberative monetary valuation', as advocated by, for example, Brown et al (1995), Jacobs (1997), James and Blamey (2001), Kenyon et al (2001), Ward (1999). DMV is the use of formal deliberation concerning an environmental impact in order to express value in monetary terms for policy purposes, and more specifically as an input to CBA. For example, consider a proposal to build a new road through a wilderness area, which will destroy the habitat of a number of rare or threatened species. A group of citizens would be selected and meet to discuss information about the environmental damages associated with the development.

Known costs and benefits (discounted) would be presented, while those pertaining to environmental damages would be deliberated. The citizens would form a jury aiming to provide a monetary value for environmental damages which might be in terms of an individual willingness to accept compensation to allow the project to proceed. The result would then be incorporated into a net present value calculation to determine the viability of the project.

Developing DMV practice

Ward (1999) regards DMV as a potential improvement over CVM because subjecting the valuation process to democratic deliberation should increase both the validity and the legitimacy of the outcome. He argues for the use of such a DMV approach in circumstances concerning “big issues” where the “potential costs of making the wrong decision are large” (1999, page 93), although, where the stakes are high, the temptation for manipulation of DMV would be greatest. Advocates of a DMV approach tend to assume it is capable of simultaneously addressing political, ethical, and instrumental dimensions of environmental problems, and maintaining the use of a money metric (for example, Brown et al, 1995, page 253). However, this pluralism means the results may be inappropriate for use in a CBA. For example, Brown et al (1995) use the term ‘values jury’ to describe a process similar to a citizens’ jury, but where a decision ‘hinges on valuation’. However, environmental damages are then regarded in terms of ethical and social norms rather than placing a trade price on the environment and so fail to fit within a CBA framework. DMV also moves away from CBA if the outcome is given in terms of a single collective value or an individual valuation for an ‘average’ member of the group rather than a set of individual valuations which are then averaged (as under CVM).

Yet DMV does begin to address some of the criticisms levelled at environmental valuation because preferences are seen as being, at least partially, constructed during the valuation process. Participants deliberate and justify their positions in their own terms, producing outcomes that conform to a broad concept of rationality. Preferences are formed through a process of reasoning (Elster, 1983). However, DMV is fundamentally instrumental in approach and adopts a deliberative mechanism only to achieve a monetary value. This must conflict with the ethical status of the environment, which distinguishes distributional, social, and moral reasons for regarding entities as outside the realm of money and exchange (O’Neill and Spash, 2000, pages 527–528). Refusals to place a price on an entity can then be understood as instances of expressive rationality, where the understanding of entity or relationship is constituted of a nontradable aspect. Therefore, contrary to the assertion of Jacobs (1997, page 228), the extent to which DMV can represent the ‘interests of nature’, in the sense of Goodin (1996), is highly questionable if such interests are nontradable. As Lenman (2000, page 443) points out: “Environmental politics is thus arguably less an area where our political culture is divided by sharply conflicting values than an area where values that are widely shared come into pervasive conflict with widespread consumer preferences.” If this is so, DMV seems set on creating greater conflict by assuming the dominance of the latter over the former.

Another aspect of DMV is the social and psychological impact it has upon participants and the way in which they approach a given issue. The message to the participants is that all public acts are to be regarded as mediated by financial transactions. However, participatory deliberation allows increased scope for heuristic reflection over environmental values and enhances the ability to cope with complexity. The cognitively demanding task of absorbing information about an environmental issue would therefore be contrasted with requiring participants to compress all aspects

into a single metric. Plural and incommensurable values constitute distinct dimensions of environmental choice. Thus, successful deliberation under DMV might be expected to result in serious questioning of the financial terms of reference imposed by the analyst. This could lead either to dubious outcomes or to the rejection of any pricing request. Blamey et al (2000, pages 27–28) regard these problems in terms of a divergence between artificially imposed and actual relationships with the environment. They argue that DMV may be best applied where individuals have an actual and direct financial relationship with a project. Where a scenario is hypothetical they suggest jurors be asked to ‘suspend disbelief’ or encouraged to believe that the payment scenario is real—although they themselves concede this violates the principles of deliberation and communicative rationality.

Thus, communicative and expressive rationality and plural values may be crowded out by the retention of monetary valuation as the focus for policymaking (O’Neill and Spash, 2000). As the work of Frey (1997) shows, offering monetary solutions to social problems can crowd out civic virtues. Thus, environmental degradation presented as a sociopolitical issue can stimulate what might be termed good civic behaviour, but, once the issue is phrased in terms of compensation payments and economic incentives, the motives to act in the best interest of others are eroded. This line of reasoning can be extended to differences in public expectations between public and private ownership, where sociopolitical goals are emphasised by the former and private gain by the latter. More generally, the range of reasons as to why an environmental change matters is constituted of a variety of relationships including those with family, friends, and future generations.

Dissenting views, representation, and manipulation

Monetary valuation is a simple solution to a messy problem, but the power to illuminate and transform lies in the mess of deliberation (O’Hara, 1996, page 102). In this regard, the expression of lexicographic preferences or noneconomic reasoning is as problematic for DMV as for stated preference methods. Such dissenting views are important because they actually define the contours of the policy problem at hand (Rydin, 1999, pages 478–480). Under CVM, protest bidders or those who refuse to nominate a price may be excluded or substituted by average or statistically representative values during data aggregation. This exclusion of data is a highly dubious practice, but is not easily achieved under DMV. Thus, although challenging the economic approach, this may actually be a positive aspect of DMV, because the policy contours are highlighted rather than bulldozed. Under DMV, a respondent’s failure to articulate a monetary valuation compatible with economic theory becomes a point for discussion and illumination by the participants.

That DMV necessarily relies upon small numbers to produce a deliberated valuation means it is no longer statistically representative. Jacobs (1997, page 223), suggests that the problem of statistical representation can be overcome by holding parallel DMVs. However, financing the replication of DMV processes just to achieve statistical representation seems unnecessary if the aim is representation of interests through discourse. Each subsequent forum would then reveal fewer additional insights into the collective choice problem. In addition, statistical representation fails to address the impossibility of expressing certain interests (for example, ethical concerns) via a monetary discourse. Holding multiple DMVs may also exacerbate strategic behaviour if participants are aware of the outcomes of previous DMV processes and adjust their arguments and valuations accordingly.

Strategic behaviour may prove more problematic for DMV than either valuation or formal deliberation, because DMV provides the financial impetus for strategic behaviour

and a process whereby strategy can be developed and others recruited. However, the greatest scope for strategic manipulation of process lies with the organisers. When participants are overwhelmed by the process, they can feel under duress to meet the expectations of the organisers. Rydin (1999) refers to the imposition of a monetary dimension upon environmental debates as a form of 'preemptive consensus', which artificially draws a line around otherwise disparate views. Under formal deliberation, participants can question the validity of the process, but under DMV this possibility is heavily restricted. The combination of valuation and deliberation implies a soundness of process and legitimacy that may be unwarranted because the bounded approach could serve to exclude certain perspectives and legitimise political agendas (O'Hara, 1996, page 104).

In summary, the DMV approach has a deliberative component, but is restricted to producing a monetary value. There is little improvement over CBA when the process permits the evaluation of only specific predetermined options on grounds of fiscal viability. The environment is still regarded as a commodity under DMV which crowds out civic virtues. This may be less of a concern for variations of DMV that assess redistribution of public funds, when participants avoid valuing the environment *per se*. However, truly discursive approaches would require participants to reflect upon and develop other options. DMV might be used where a participatory–deliberative process has already yielded specific options relating to the allocation of public funds. That is, the outcome of a formal deliberation could be the need for monetary valuation in the final stage. The correct perspective may then be that of Lenman (2000) who views CBA techniques as legitimate only as an input into, not a substitute for, political deliberation.

Assessing approaches to environmental policy

This section draws from the above discussion the importance of three broad grounds upon which to judge approaches to environmental policy. First, there is the theoretical basis of an approach, the assumptions upon which it is based, and how far these address key aspects of policy concern. Second, there is the transformation of theory into practice and the extent to which pragmatic considerations interact or override theoretical concerns. Third, there is the political need for representative approaches which are free from manipulation by vested interests, but which also address the existence of political power blocks. These three areas inevitably overlap.

A summary of distinguishing features across these three areas is used to show, in table 1 (see over), how monetary valuation and formal participatory–deliberative approaches diverge. This allows analysis of the ways in which environmental valuation and deliberation have been translated into DMV. The table also provides a summary of key points discussed in the preceding sections.

Whether explicitly or implicitly, all prescriptions for the formation of environmental policy make simplifying assumptions about the various aspects of a problem and create a world of partial ignorance (Loasby, 1976). This can be the result of positive and active exclusion of information, that is, certain knowledge is regarded as external to a subject area, unverifiable, or taboo. Alternatively, a passive error may occur through confusion, inaccuracy, an absence of information, ambiguity, risk, or vagueness (Dovers and Handmer, 1995). Environmental policy covers a multitude of components from the individual (concerning desires and aspirations) through socioeconomic processes of manufacture and exchange (producing waste and depleting resources) to the political. All these activities take place within pervasive ecological processes. Excessive abstraction of a policy problem can therefore undermine the ontological validity of any prescription. That is, recommendations which are based upon theories which exclude relevant facts create errors and can be seriously misleading.

Table 1. Comparing environmental policy approaches.

	Monetary valuation	Deliberative forums	Deliberative monetary valuation
<i>Theory</i>			
Individual ontology	Informed consumer: purchasing structured attributes, that is, 'goods'.	Citizen capable of reflection.	Uninformed consumer – citizen: attributes revealed by a process of reflection.
Preferences	Preferences are given.	Preferences are constructed and negotiable.	Preferences are both given and constructed.
Rationality	Instrumental assuming all dimensions are utilitarian.	Communicative process: all dimensions explicit, including ethical.	Instrumental/bounded communication once all dimensions in monetary terms.
Orientation	Outcome.	Process.	Process as means to an outcome.
Social ontology	Society is the sum of self-interested individuals.	Individuals are citizens within a social context.	Society consists of self-interested consumer – citizens.
<i>Practice</i>			
Justification	Pragmatism: how things are done.	Transformation: how things can be done.	Pragmatism: consensus seeking.
Framing	Set by funding agency with input from consultants/experts.	Negotiated between participants and researchers.	Set by funding agency with possible restricted negotiation by participants.
Key Authority	Treasury.	Public.	Treasury.
Value misrepresentation	Social and moral norms as individual self-interest.	Individual preference in the language of the common good.	Both types of behaviour possible.
<i>Polity</i>			
Political manipulation	Possible and encouraged by technical closure.	Possible, but mitigated by communicative rationality.	Possible but mitigated if exploration of technical issues allowed.
Representation	Statistical.	Political social democratic.	Political market liberal.
Social impact	Crowds out civic virtues, reinforces individualism.	Emphasises social constructs.	Exposes conflict between market individualism and civic virtues, possible increase in scepticism.

The epistemology of environmental policy must therefore address complexity. Environmental policy is necessarily complex because human interaction with environmental systems involves numerous and varied factors which must be taken into account. As ecology has shown, the interactions and feedback mechanisms involved in understanding even apparently simple ecosystem processes defy meaningful treatment of parts as separable from the whole. This challenges traditional atomistic and mechanistic approaches to scientific understanding as adopted from physics and extended into the social sciences (Norgaard, 1994). Methodologies are required which accept the limits of reductionism and directly address complexity. The potential to include a multitude of dimensions during a formal deliberative process means the complexity of environmental policy can, in theory, be addressed.

The theoretical treatment of individuals and their interpersonal psychology reveals fundamental differences between disciplinary approaches. These concern how an individual acts within the domains of environmental policy, the economy, and polity. The treatment of individuals as 'economically rational' (that is, self-interested and aiming to maximise utility), is far removed from the individual as a member of a community who aims to achieve a collectively best outcome. Thus, economic theory tends to assume that preferences about collective environmental goods and services are predetermined and require no further explanation. Once humans are viewed as moral agents, their values, and consequently, preferences, can only be understood in historical, social, and ecological contexts (Siebenhüner, 2000). Preference construction means taking into account the formation of preferences and their change through campaigning, media coverage, advertising, or survey processes. Thus, deliberative forums will raise questions as to the social construction of behaviour and analyse the underlying motives. Biospheric and social – altruistic attitudes and their value basis are then seen as relevant to environmental policy. Such attitudes are rarely considered in economics, where the practical concern is defined in terms of jobs, low inflation, and growth of gross domestic product.

Practical considerations should, however, concern whether a policy recommendation is feasible to implement, can be achieved, and is deemed acceptable within the wider context of social values. Particular instruments are expected to perform as intended and problems which might be encountered must be foreseen and dealt with effectively. Where recommendations may fail in practice this can be the result of inadequate representation of social processes leading to problems such as social exclusion, counterintuitive results from regulation, and rejection of policy. For example, when proposing a policy involving environmental degradation a monetary payment may be seen as compensation by an economist and as a bribe to act inappropriately by the general public (Frey, 1997). That an assessment of the appropriate amount of compensation may exclude certain public attitudes (for example, protest bids), or employ inappropriate social norms (for example, willingness to pay), is itself often justified on grounds of practicality.

Thus, the role of agents, and the agencies within which they work, can be seen as part of the agenda affecting environmental policy formation. The aim of producing a set rate of return and showing financial viability is driven by the treasury, and hence more time may be spent on producing numbers to justify prior decisions than considering policy implementation. As the chief economist at the UK Environment Agency has pointed out, environmental agencies are constituted of individuals and groups who approach environmental problems through their own professional and personal values and are motivated by their own institutional priorities (Palmer, 2000). Deliberative experiments have failed to be plugged in to the decision process or to define their role within existing institutions; if they are to have a place in articulating environmental values the institutional context must be analysed (O'Neill and Spash, 2000).

Justifying particular methodological approaches to policy assessment as the 'way things are done' is often shortsighted and plays to particular vested interests. There is some danger in having theory act merely as a support for political action. Etzioni (1986, pages 159–160) has described the evolution of theories concerning utilitarianism in economics as adjusting theory to suit changing practice. Theory cannot merely be the result of pragmatic considerations or it loses independence and explanatory power, becoming a mere artefact of the political process. Instead, the concern is to alter the institutional and political sphere on the basis of theoretical insight and in the face of failures to address persistent problems.

However, the interactions between theoretical understanding and the requirement to be practical do affect academic culture. A feature of the modernist approach to environmental research is the participation of the ‘professional’ natural scientist and neoclassical economist in public decisionmaking through a dominant belief pattern (logical positivism), which they then reinforce. This has resulted in an enduring fixation, particularly in economics, with the relevance of ‘objectivity’ for solving complex environmental and social problems. Thus, calls for more research are common, as if no decision could be made without ‘the truth’ having first been revealed. This approach inevitably denies the ever-present state of partial ignorance in which humanity lives. Economists, for example, create ignorance within their profession about the dynamic process of decisionmaking within which decision tools operate. This is also evident in the official model of decision appraisal. The linear approach involves analysing an issue to inform a final decision better, and good analysis is then assumed to create better decisions. However, as Palmer (2000, page 416) states:

“In many cases, the decision, or key elements of it, may be ‘made’, or may emerge, in advance of the more detailed analysis. In the traditional model, where the analysis precedes the decision and informs it, this may be seen as a failure: the analysis is being used for *ex post* justification rather than *ex ante* information.

Therefore while this model is in general a good one, it does neglect the dynamic nature of decision-making.”

Systems of governance fall within a spectrum from imposing control by overriding popular opinion (for example, expert testimony, scientific facts), through to creating institutions where deliberative participation is encouraged. Because of the dynamic nature of the decision process, which Palmer highlights, choice among these alternatives will have serious repercussions. Thus, when dealing with technological developments which challenge environmental stability the role of public participation, if neglected, may force its way into the policy debate in politically disruptive forms to correct perceived imbalance, as has been seen with cases such as food safety, nuclear power generation and waste disposal, and genetically modified crops.

Calls for the opening up of scientific processes via public participation in environmental policy formation involve issues of power. However, disciplinary boundaries draw lines around the relevance of power politics and restrict their incorporation in policy advice, and this is especially so where a monodisciplinary perspective is adopted and value debate restricted. For example, environmental economics is linked to a specific political economy, one where markets are the main social institution and the treasury is the central administrative body of governance. This means policy approaches, such as CBA or deliberative–participatory forums, arise within specific political contexts which affect their development and use, and they respond to political institutions which ultimately adopt, reject, or distort their outcomes.

Conclusions

Simplifying complex environmental problems is necessary, but the boundaries drawn around knowledge must be relevant, explicitly considered, and acceptable to those affected. These boundaries also require ongoing reconsideration and this means having a flexible institutional context. That is, systems management needs to be adaptive and where multiple criteria are being taken into account elsewhere this must be explicitly analysed. Flexibility is required in the face of new information. CBA is best suited to bounded problems which are spatially and temporally discrete and which can be addressed within a single jurisdiction, using the set of existing political institutions (that is, microproblems as defined by Dovers and Handmer, 1995).

Deliberative processes shift the emphasis from simple aggregation of existing preferences to focus on processes through which preferences are formed and transformed. There are significant advantages to using formal deliberative processes, such as citizens' juries. However, caution is needed because such processes are highly sensitive to design and context. Where the broader political environment prevents communicative rationality, effective deliberation will be undermined and the outcomes will be inconsistent with theoretical objectives.

Overall, in terms of both theory and politics, DMV is most consistent with CBA and closely based on a rational–instrumental, rather than deliberative, conception of the environmental policy sphere. This conclusion hinges on two aspects of DMV: the narrowing of deliberation to consider only a specific set of predetermined policy options; and the conversion of environmental entities into commodities. The rationality and subjectivity that are part of the deliberative fabric are not communicated as part of the findings, or are obscured by the allure and simplicity of a single number as the basis for determining policy. Those dimensions of deliberative processes that lend themselves to addressing the issue of environmental complexity become lost, along with the reflective and reflexive elements of deliberative outcomes. Strategy and conflict can weigh heavily on the outcome so that the elements contributing to an environmental problem go unchallenged and remain largely intact.

No one particular approach can address all problems, nor is any one particular approach necessarily wrong in all circumstances. Ultimately, a variety of approaches are needed but this means recognising when and how particular tools are unsuitable. The development of principles for the use of both CBA and participatory–deliberative approaches is an important task which must cover the theoretical and political terrain. Unfortunately, past work on defining theoretical limitations within CBA has been ignored or overridden on the grounds of meeting practical needs. This merely reemphasises the importance of institutional analysis to determine why inaccurate and theoretically unsound numbers are preferred over other possible forms of decision process. Without that analysis, formal participation may merely become another misused tool.

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