

MORE OR LESS PLURALISTIC? A TYPOLOGY OF REMEDIAL AND
ALTERNATIVE PERSPECTIVES ON THE MONETARY VALUATION OF THE
ENVIRONMENT

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ABSTRACT

Maintaining plural values is important when there is no conclusive principle by which the relative priority of normative positions can be determined. Value-articulating institutions predicated upon such principles have a low pluralistic potential. In response to the failures of stated-preference approaches to economic valuation, new perspectives have been developed to capture plural values. Three broad approaches are identified. The first, *functional diversification*, seeks to encompass the multiple qualities of the object of valuation, whereas *positional modification* enforces a particular mode of thinking on the subject. Both entail a prior judgement of values and benefit from a reduction in the range of values. Eventually, therefore, both approaches collapse pluralism to a problem that can be tackled. The third approach, *structural reconstruction*, has greater pluralistic potential, recognising that the more diverse and uncertain the object of valuation, the more compelling it is.

KEYWORDS

Value pluralism; environmental valuation; ecological economics; theory of value

1. INTRODUCTION

Analysts of environmental values make various assumptions about the dispositions of individuals who construct actual or potential moral orders for the usage of environmental resources. Neoclassical economists believe that individuals are prepared to sell the environment for the right price. Environmental valuation is then treated as an assessment of hedonic preference intensity as expressed in a market context. The contingent-valuation method (CVM), for example, assumes a hypothetical market in which individuals are confronted with a trade-off between a particular environmental good or service and money, or between various goods or services. This method involves direct inquiry into individuals' willingness to pay (WTP) for an environmental change, or their willingness to accept compensation (WTA), expressed in monetary terms, for such a change.

In extending market-based theory, however, this stated-preference technique has received persistent criticism for its narrow value ethic and poor representation of human psychology (Sagoff, 1988; Spash and Vatn, 2006; Gowdy, 2007; Spash, 2007; Spash et al., 2009; Lo, 2012). Researchers have proposed alternative valuation methods that recognise the plurality of environmental values and are built upon a range of interrelated concepts, theories or models, including multi-criteria attribute theory (Gregory, 2000), multi-criteria evaluation (Munda, 2006), experimental economics (Gowdy, 2007), social constructivism (Söderbaum, 2000; Vatn, 2009), post-positivism (Norton and Noonan, 2007) and discourse ethics (O'Hara, 1996).

Nevertheless, methods of stated-preference valuation that encompass multiple values do not guarantee the moral ideal of value pluralism. Value pluralism refers to the advocacy of maintaining a range of distinct values irreducible to each other, and is a normative concept, whereas value plurality is factual. Anderson (1993) defined two conceptions of value plurality. A 'good' is either something that is appropriately valued, or the bearer of a bundle of qualities that meet certain standards or requirements. From one perspective, values are plural to the extent that the goods under valuation are the proper objects of multiple evaluative attitudes, such as pleasure and respect; the opposite, monistic view allows only one sensible *way of valuing*. From the other perspective, the goods are able to meet diverse evaluative standards; the opposite, monistic view requires that these diverse standards be reduced to a single ground or explained in terms of a single *good-constituting property*.¹

It has been suggested that the importance of value pluralism is closely related to value incommensurability, which describes a situation in which distinct values are not reducible to each other or to a common measurement of value. The standard economic treatment fails to recognise monetary incommensurability. Many of its opponents have advocated the separate assessment of distinct values, or abandon the enterprise of monetary valuation altogether. A value-pluralistic approach, they argue, must be highly disaggregated and ideologically open, i.e. non-reductionistic and inclusive (Söderbaum, 2000). These criteria constitute a categorical test of the compatibility of multi-criteria appraisal techniques with pluralism (Söderbaum, 2000; Vatn, 2009). However, this assessment is open to question (Lo, 2011).

¹ An anonymous reviewer suggests that the two conceptions of value plurality, i.e. multiple ways of valuing and multiple valued properties, correspond to the decision-science binary of intuitive/spontaneous/holistic vs. rational/deliberate/dissecting decisions.

What has gone unnoticed is that these criteria do not constitute sufficient grounds for consciously maintaining a variety of values. Incommensurable values are weakly comparable (Martinez-Alier et al., 1998). Comparison between them entails selection according to predefined rules that allow a particular value category to be privileged over other distinct values, irrespective of commensurability. As long as the analyst holds a conclusive definition of a normative ordering, few rather than many options must be maintained. A value theory that respects incommensurability but is geared to elicit a particular category of values does not guarantee that the whole range of values will be accommodated. That is, if we have identified the ‘best’ category with certainty, pluralism is an unnecessary ideal.

Such certainty, however, seems necessary to defend an alternative to the neoclassical theory of value. A monistic domain faces its greatest competition from an opposite monistic domain, rather than from a pluralistic one that subsumes it. The sharper the contrast, the stronger the argument for accepting an alternative to the monistic economic theory of value. Internal diversity hinders the establishment of such a contrast. An alternative to monistic value theory is most compelling, therefore, if it is predicated on equally monistic arguments. The perfect alternative to the monistic economic theory is likely to be monism of a different sort, rather than pluralism. Establishing a pluralist value theory in such terms is paradoxical.

The principle proposed here concerns neither the recognition of incommensurability nor the deployment of monetary numeraire. A normative theory of environmental

valuation is considered pluralistic when it is grounded in the absence of a conclusive principle by which the relative priority of normative positions can be determined. A pluralistic approach should make room for all value categories and minimise pre-emptive qualitative judgements of categories. An acid test is the extent to which the robustness of a valuation approach depends on the selection or deactivation of a *particular* value category. A valuation approach has much less pluralistic potential if there is stronger theoretical justification for its deployment in response to a decreasing range of possible evaluative attitudes or standards. Deliberate efforts to mitigate moral differences reduce the need to include values.

This paper focuses on approaches to and concepts of monetary valuation that have been proposed as remedies for or alternatives to stated-preference methods of capturing the variety of environmental values. The next section briefly reviews the issue of value pluralism as a challenge to economic orthodoxy. Various emerging concepts and models are then discussed and categorised by weaving fragmentary perspectives on necessary remedies or alternatives into a more comprehensible, coherent discourse. The third section elaborates on the strengths and weaknesses of these concepts and models. The principles that underlie the proposed pluralistic approach are highlighted.

2. OBSERVED VALUE PLURALITY

The primary unit of neoclassical economic analysis is the individual, who is viewed as a utility-maximising consumer. The environment is considered to be of value when the individual is willing to pay for an expected utility gain derived from it.

Environmental value is then deemed to be dependent on the consequences of an action. Environmental valuation is deployed to measure the individual consumer's preference, which is assumed to be complete, continuous and transitive. Within the neoclassical economic framework, the ideal consumer is fully aware of and able to express clearly his or her environmental preference.

This economic model diverges from social and political constructions of environmental value. Concerns about the environment may pertain to the history of humans' relationship with nature and the processes of natural creation (Goodin, 1992). For instance, a sentimental attachment to the land may emerge from the experience of nature's intransigence, and exist independently of material interests (Tuan, 1974). In the social context, environmental values may be expressed in the form of cultural metaphor or social pride, thereby contributing to individual or group identity. Such symbolic sentiments prevent people from trading off valued environmental entities (Burgess et al., 1998). Environmental preferences may also connote political intentions. The individual may act as a citizen representing society at large and expressing a community-regarding commitment (Sagoff, 1988). Such a commitment is often couched in terms of societal norms and the moral obligation to improve social society. Environmental valuation is thus envisaged as a kind of judgement on the appropriateness of an environmental decision or action.

Evidence for the above can be found in numerous CVM reports. Rights-based beliefs are found to be a strong predictor of WTP variations, reflecting the behavioural intention to defend the inviolable rights of nonhuman species irrespective of the consequences (Spash et al., 2009; Lo et al., 2012). Perceptions of unfair valuation

procedures and practices are associated with negative attitudes that lead to protest responses (Jorgensen and Syme, 2000). A related set of motives concerns trust.

Blamey (1998) confirmed that distrust of institutions or scientists and the tendency to ascribe responsibility to other parties are negatively associated with individuals' willingness to pay and the likelihood of their doing so.

Furthermore, recent developments in behavioural economics have shown the assumption of a rational, utility-maximising and isolated economic actor to be untenable (Gowdy, 2007). Kahneman and Knetsch (1992) found that WTP bids are not quantity-sensitive, as economists expect; rather, the stated value denotes an intended moral contribution motivated by attitude and affection. Extrinsic intervention, such as monetary compensation, may 'crowd out' intrinsic value commitment when it is perceived to intrude upon the civic virtues embraced (Frey and Jegen, 2001).

Although the standard economic assumptions are under persistent attack, numerous moral judgements and technical definitions have been applied to explain their limitations and propose solutions. As a result, practitioners are divided as to what kinds of alternatives or remedies are needed.

3. THE VARIETY OF EXPERT RESPONSES

The controversy surrounding the concept of plurality is reflected in the lack of consensus on its nature and proper treatment. Hardcore mainstream economists have dismissed deontological arguments as impractical in terms of policy impact (Pearce, 1998) and irrelevant to economics (Milgrom, 1993). Some authors have cast doubt on

ontological pluralism and discredited plural values. They have rebutted arguments for alternative methods of valuation on the grounds that those 'irrational' expressions are not non-economic (Cooper et al., 2004), that intrinsic values are substitutable (Price, 2000) or that the small number of protest responses does not justify the abandonment of cost-benefit analysis (Orr, 2007). According to these views, the evaluative capacity of the standard economic approach is not severely impoverished by presuming value commensurability.

Some economists have admitted, with qualifications, the limitations of stated-preference approaches, yet only at a methodological level. Hanley and Shogren (2005) averred that the main problem with such approaches is that people's preferences may deviate from the economic model. They suggested that people must be educated to correct their uninformed, unexamined preferences and bring them in line with standard economic theory. Unstable stated values are an economic problem that can be solved by preference construction (Powe, 2007). More sympathetic economists have supported economic orthodoxy and maintained that economics has no critical moral intent.

Behavioural psychologists and decision scientists have explicitly acknowledged the failure of consumer-based theory. Some, like certain economists, appear reluctant to recognise non-economic observations as morally legitimate. Baron and Spranca (1997: 15) argued that rights-based responses indicate a desire for a particular outcome that is 'contaminated' by some 'imagined means' of achieving that outcome. Such responses 'might be incorrect' because they reflect values and emotions expressed in the wrong way. The failure to make instrumental choices is perceived as a cognitive

problem arising from an individual's inability to comprehend or reluctance to face the required welfare tradeoffs (Gregory et al., 1997). Value conflict is deemed reducible; merely a matter of technical incommensurability, which 'refers to the issue of representation of multiple identities in descriptive models' (Munda, 2006: 91). Members of this group of researchers have tended to understand moral differences in technical terms.

Heterodox economists and political theorists with a greater social orientation have argued for the salience of moral intent on the part of the valuing agents. Value incommensurability is regarded as an ethical reality to be respected. As different values are inherently only weakly comparable, it is inappropriate to reduce everything to a monetary metric (Martinez-Alier et al., 1998; Vatn, 2009). Non-economic ethics and motivations are considered additional aspects of life to be recognised and protected in their entirety rather than tailored to a given economic ideal. These researchers have tended to espouse a more ontologically pluralistic conception of value.

This initial characterisation of scientific treatments illustrates the range of hypotheses regarding the nature of value plurality. Hardcore economists favour the status quo, while their more sympathetic counterparts accept minimal methodological adjustments. Psychologists recommend crafting people's psychology without attacking the moral basis of neoclassical economics, whereas social pluralists develop alternatives beyond the neoclassical ambit. The last two sets of epistemological beliefs reflect two fundamentally different approaches to evaluating complex issues. Central to the rational or idealised 'economic' approach is persuasion, which refers to

an internal communication process in which the individual examines each argument carefully and balances the pros and cons to form a well-structured attitude (Renn, 1992). The political approach recognises values that are formed peripherally: a faster and less laborious strategy of forming attitudes in response to specific cues or simple heuristics. Although there are areas of substantial conflict between the two approaches (Lo, 2011), their reconciliation is seen as vital to policy-making (Dietz and Stern, 2008; Renn, 2006).

The divergence in assumptions about values leads to multiple ways of dealing with the issue of value plurality. This has resulted in a range of remedial measures and new approaches to the development of value theories and elicitation techniques. Examples of such measures and approaches can be grouped into three categories, which are explored in the following section.

4. THREE REMEDIAL OR ALTERNATIVE APPROACHES

Every inquiry into environmental valuation comprises three basic elements: the object (the valued), the subject (the valuing agent) and an evaluative framework.

Accordingly, three alternative or remedial valuation approaches can be identified, namely functional diversification, positional modification and structural reconstruction. New or modified value-articulating frameworks often involve more than one of these concepts. Combinations with different emphases have produced a range of valuation models and techniques along the monism-pluralism continuum.

Functional diversification

Functional diversification is justified by the view that the ability to capture the full range of nature's value is constrained by nature's inherent physical complexity. Some of its contributions are not readily recognisable or estimable, due to the limitations of human knowledge. Conventional valuation methods address the flow of tangible resource properties, immediate productive or consumptive benefits and short-term ecological changes. Abstract concepts such as biodiversity are not accounted for in their entirety (Meinard and Grill, 2011). As a result, conventional valuation methods fail to encompass the entire range of dynamic and intangible ecological properties, notably the irreversibility and resilience of ecosystems and the interdependency of ecological functions and values (Barbier et al., 1994; Chavas, 2000). As such primary or 'glue' values are not included in the calculation of total economic value, aggregating the value ascribed to each of a given ecosystem's functions fails to account for the multiple values generated by that ecosystem (Turner et al., 2003). In a primitive form, this critique of conventional valuation methods could lead to a qualified defence of Pearce's (1998) dictum 'demonstration and capture'. According to this view, the success of a value inquiry depends on the extent to which an ecosystem's 'true' state is comprehensively and objectively captured.

Of prime importance is a comprehensive informational grounding. Within the standardised framework established by de Groot et al. (2002: 394), the 'first step' towards the valuation of ecosystems 'involves the translation of ecological complexity (structures and processes) into a more limited number of ecosystems functions'. De Groot et al. (2002: 393) proposed that identifying and defining 'the fullest possible range of 23 ecosystem functions' can 'make comparative ecological economic analysis possible'. The development of this framework contributed to the literature on

ecosystems valuation not by diversifying evaluative perspectives but by combining them with 'a comprehensive data base of ecosystem services and values' (de Groot et al., 2002: 407). Central to this approach are an objective, factual basis for analysis and a broad definition of ecological goods or services.

Functional relationships are a key element of Lockwood's (1997) 'integrated value theory'. This theory concerns the functional and instrumental relationships between three classes of end-valuable entities, namely human beings, non-self-aware biological organisms and the inorganic components of ecosystems. These entities and their functional relationships give meaning to the various modes of value expression and provide a basis for 'moral considerability'. The non-economic values ascribed to natural areas are then justified theoretically in functional terms. Lockwood (1997) argued that value assessment can be advanced by an explicit recognition of such functional realities and interdependencies.

The above approach constitutes a weak form of pluralist theory that defines the range of values primarily in terms of the object of valuation. It concerns value multiplicity, a concept that emphasises the multi-faceted nature of the contributions made by the items valued. Proponents of this approach have argued that the primary problem facing economic valuation is that certain critical qualities of ecological goods or services are unvalued by and omitted from conventional treatments. The objective of functional diversification is to ensure a more dimensionally comprehensive assessment by re-incorporating such unvalued or missing components and encompassing a wider range of the functional attributes or good-constituting properties of the valued items, including less visible attributes and properties such as

an ecosystem's resilient capacity and the ecological role of a species across food chains. Acts of valuing are understood as exercises in accounting for certain objective realities – 'valuing the characteristics of a system' (Barbier et al., 1994: 119). This account is generally in accord with Anderson's (1993) secondary conception of value plurality.

The functional-diversification approach emphasises the importance of informing valuing agents of the correct aspects of the items to be assessed. A common methodological recommendation is to improve the ways in which information about the effects of a given environmental change is communicated, and the quality of the information itself. Turner et al. (2010: 79) attempted to 'identify a place for monetary valuation within the pluralistic approach'. The challenges to economic valuation identified in this study derive from underestimating the properties of biophysical structures and processes, including spatial explicitness, nonlinearities in benefits and threshold effects. One of the suggestions made by Turner et al. (2010) for recognising value plurality involves a 'scoping exercise' that employs 'spatially explicit models of any given ecosystem service' (ibid.: 81) and may benefit from the use of a geographical information system (GIS), which is regarded as 'a valuable tool in valuation' (ibid.: 91). The general remedial strategy proposed, called a 'sequential decision support system' (ibid.: 83), has no explicit social or moral components; instead, it emphasises the need to improve knowledge and understanding of the complexities and interrelationships of ecosystems.

Positional modification

The methodological focus of positional-modification approaches is the individual. The key is to include the right people or to introduce the right principles by which ecological goods or services are evaluated. The standard economic approach is deemed to be flawed as it makes unrealistic assumptions about the motivation and competence of the valuing agents. The constituency adopted in this approach is considered by positional-modification advocates to be morally improper and/or cognitively incapable of performing the required evaluation. Two groups of advocates can be identified according to the relative importance given to these two elements.

For authors who stress the lack of cognitive ability exhibited by valuing agents, the failures of stated-preference approaches rest more on the valuing agents than on the economists who use these techniques. Gregory (2000) argued that individuals often fail to articulate their values effectively in the absence of systematic decision aids. The operational objective of his ‘value integration survey’ is to activate the consumer mode of thinking during environmental-valuation tasks. Consumer sovereignty is reflected in his instructions for the survey, which encourage participants to consider the decision to purchase a car as an analogy (Gregory, 2000: 160). The process is ‘a kind of tutorial’ (Gregory et al., 1993: 179) and the analyst functions as an ‘architect’ (Gregory and Slovic, 1997: 177). Lienhoop and MacMillan (2007: 213–214) proposed a ‘Market Stall’ approach grounded in the belief that ‘[t]he interaction with other people presents an environment that seems to better meet the needs of consumers’. A more radical treatment involves replacing lay people with experts. Mann (2004) advanced a technique known as the ‘Expert Valuation Method’ (EVM) as an alternative to the CVM. According to proponents of the EVM, the ‘right’ valuing agents are not consumers but scientists or local experts with ‘considerable practical

experience’, who are thus better equipped to understand and assess the scientific implications of the ecological goods or services under valuation. The EVM is designed to specify and reinforce a subjective scope or frame of reference for the evaluation required.

According to other authors, the failures of stated-preference approaches have more to do with economists. Such authors are more concerned about ethics and criticise the conventional economic approach for unduly assuming that individuals are necessarily utility-maximising. Acts of valuing are envisaged as social acts with social meanings (O’Neill and Spash, 2000). Variation in public attitudes gives rise to value plurality. This account resembles Anderson’s (1993) primary conception of value plurality. The aim of this type of positional modification is qualitative: to transform one kind of evaluative attitude into another, ‘correct’ one. Alternative ways of value expression are introduced by activating or inhibiting certain personal or group characteristics or attitudes. In practice, this is achieved by experimentally controlling or selecting either the subjects of inquiry or the valuing agents to ensure compatibility with the communal nature of the environment. To address the non-exclusivity of the use of environmental resources, the modification typically involves a shift in evaluative standpoint from private to public interest, and from individual to social rationality. It is used as a demarcation strategy to cope with the value-incommensurability problem. According to Martínez-Espiñeira (2006: 194), the problem of ‘aggregating apples and oranges’ – an analogy for the incommensurability problem – can be avoided by ensuring that ‘all respondents [adopt] the same point of view (as citizens rather than consumers)’. The intrinsic nature and irreducibility of the value of natural wealth have encouraged the sceptical view that the economic realm and the utilitarian conception

of value are irrelevant to the social modes of environmental valuation (Douai, 2009). Like the authors who emphasise the failings of the valuing agents, these authors specify a subjective scope for valuation, albeit towards a different end.

The above-described critics of economic orthodoxy tend to advocate an impartial stance. Brown (1984: 237) argued that '[t]he appropriateness of an assigned value for use in a resource allocation decision depends on the degree to which its use in the decision enhances the resource owner's welfare'. According to Brown, the value should be determined in a way that takes into consideration the welfare of those who actually own the resource under valuation, or are entitled to its benefits. This suggests that relevance or legitimacy depends on who is carrying out the valuation, or for whom it is subject to valuation. Brown (1984: 245) recommended extending Rawls's (1971) ideal of a 'veil of ignorance', realised by inhibiting private interests, to all public-resource decisions, including environmental valuation.

Drawing on Rawls's theory of justice, Costanza (2000) emphasised 'fairness-based values' that can be elicited by encouraging individuals to think as members of a community rather than as individuals. Brown et al. (1995: 258–259) expected each deliberating individual 'to act as society's representative', and recommended that individuals with a 'compelling personal interest' should be excluded from the deliberation. This advice was echoed by Sagoff (1998: 221), who suggested that individuals 'might be asked to deliberate not so much about the welfare effect of an environmental policy on them individually' but on society as a whole. This citizen-based framework was experimentally tested by Martínez-Espiñeira (2006), whose respondents were asked to state their WTP on behalf of society. The strategy

was to modify the subjective position from which the valuing agents considered the environmental change in question.

Functional diversification and positional modification deal with the object and subject of evaluation, respectively, and complement each other. Combining these approaches may require a reconfiguration of the structure of value articulation with particular attention to the evaluative framework.

Structural reconstruction

Structural reconstruction involves a fundamental change in the micro-political structure of the institutions in which values are articulated. Advocates of this strategy have emphasised the failure of the standard economic approach to allow effective reflection on a variety of values. They argue that particular restrictions on the norms and terms of people's interactions with the environment have begun to compromise valuing agents' creativity and critical competence. The aim of structural reconstruction is to emancipate value formation and expression at a micro-political level. It enables individuals participating in a valuation process to deliberate on and pursue their own forms of valuing. Key to this strategy is situating the actual valuation processes, as well as the theoretical activities of the analyst, within a non-coercive, interactive and egalitarian dialogue from which alternative ethical standards and assessment criteria are not deliberately excluded. Rather than specifying a value category to pursue, such pluralistic theories 'do not attempt to enforce a universal vocabulary upon the discourse of environmental value' (Norton and Noonan, 2007: 66).

The above approach explicitly acknowledges the notion of the ‘value of diversity’ (O’Connor, 2000). Acts of valuing are construed not only as expressions of attitudes, but as the outcomes of critical encounters with competing perspectives or criteria, leading in turn to a value judgement. A key assumption is that public value is formed within processes of social interaction, and does not exist prior to these interactions (Pritchard et al., 2000). The potential of preference transformation is increased, but it is sought not from external ideals. Structural reconstruction is reconstructive in the sense that it concerns the various competencies of individuals and norms of interactions, and the categories of opinions and expressions are assumed to be contingent upon the operant dispositions of the valuing agents rather than being specified by the analyst (Dryzek and Berejikian, 1993). The appropriateness of an assigned value depends on the extent to which the processes of assembling and articulating preferences are procedurally fair and capable of supporting individuals ‘in expressing their values in ways they find to be sound’ (Spash and Vatn, 2006: 387), based on their own language and criteria for assessment. The definition of ‘value’ and the terms of its articulation both remain reasonably open. No assumption is made before the inquiry as to what kinds of values will be found (Norton and Noonan, 2007). The search for public value embraces the deontological ethic but does not attempt to marginalise utilitarian calculations (Martinez-Alier et al., 1998; Spash, 2007).

A more critical stance has been taken towards preoccupations held by the analyst. An example is ‘discourse-based valuation’, which is proposed as an application of the concept of discursive ethics to ecosystems valuation (O’Hara, 1996). Discursive

ethics concerns authentic communication among individuals, presupposes no norms other than practical reason and prioritises the ethical qualities of mutual recognition and acceptance (Dryzek, 1990). The concept entails not only a reconstruction of the dispersed 'lifeworld', but a deconstruction of established hierarchies. Conventional scientific rationality has contributed to coercive professionalism and hegemony by erecting formidable barriers to change. The ability of humankind to deal with ecological uncertainties and their social implications entails a decent degree of reflexive potential. In demanding that the conventional technocratic, exclusive valuation methodology be democratised, the proponents of discourse-based valuation seek to minimise the institutional rigidity that may compromise the openness of ecosystems valuation. The frame of reference for this value theory is obtained from within the discourse rather than being imposed by an external source. The role of the analyst is thus restricted.

In this light, Lo (2013) and Lo and Spash (2013) suggest that deliberative monetary valuation should involve an inquiry into meaning and the pursuit of mutual agreement on economic contributions at a societal or individual level. It should aim to secure a socially informed exploration of the alternative meanings to be conferred on the monetary value assigned. The meaning and categories of 'WTP' arise from within the interaction between the valuing agents, before an explanation is given of the monetary value they assign. As a result, environmental valuation is no longer necessarily an economic assessment; it is a political-economic activity responsible for approving appropriate payments for an ecosystem's goods and services.

The key features of the three approaches are summarised in Table 1. Although the

merits of functional diversification and positional modification have been widely acknowledged in the literature, it is argued in the next section that structural reconstruction is a necessary condition for value pluralism.

5. INCOMPATIBILITIES WITH VALUE PLURALISM

Valuation methodologies are value-laden (O'Hara, 1996; Söderbaum, 2000). An important question concerns the extent to which this compromises the capacity for capturing plural values. Problems arise when the merits of the institutions responsible for articulating these values depend upon some degree of value convergence. The strategies of functional diversification and positional modification either remain indifferent to or seek to inhibit actual value conflict, and operate within a given institution geared to a particular moral domain. As a result, they risk prematurely closing down the critical examination of preferences and values.

Conflict avoidance

Public value is derived from collective life. Its social qualities emanate from the interactive processes of communication; from encounters between individuals; from conflicts of interests, ideas and experiences; and from reciprocal learning. All of these processes are influenced by social norms, rules and institutional constraints (O'Connor, 2000). Value statements are meanings conferred according to people's appreciation of the good and their dissatisfaction with the bad. Their perceived alternatives and normative constraints are shaped by personal response and circumstance, contributing to the discourse within which people make sense of the world through encounters with other subjective positions in the collective sphere. The

formation of public value is thus a conflict-ridden process. If public value is understood as an intended action, it is a kind of *inter*-action between the homogeneous views internal to a discourse and external heterogeneous views. Public goods are commonly owned and shared among society's members, such that any single action directed at them is just one integral part of a collective whole. This interactive dynamic cements and gives meaning to the whole; the mere aggregation of individual values or actions is not sufficient to provide mutually reinforcing integration. Just as a social action is always a response to another action or inaction, public value is the coexistence of alternative or rival particulars in coherent mutual dependence. In other words, 'an environmental value requires its antithesis for definition' (Tuan, 1974: 102).

A defensible approach to the valuation of public goods requires a social context (Spash and Vatn, 2006; Vatn, 2009). It should be designed as an evaluation activity that allows diverse perspectives to interact. Functional diversification advances the science of valuation by promoting individual rationalisation supported by comprehensive information; it does not assist in social construction by exposing differences. For instance, de Groot et al. (2002) ascribed environmental values only to various ecosystem contributions. Their framework omits the mediating role of social norms operating at the interpersonal level. Such a valuation exercise does not take into account the level of actual social learning and the extent to which the valuing agents are socially informed. Similarly, positional modification does not require an authentic social setting for preference construction, although it recognises the roles of social construction and social norms. Sagoff (1998) supported the separation of citizens' values from consumers' values, and the creation thereby of a homogenous

group of valuing agents free from the reality of value disagreements that characterises plural societies. Preferences are transformed in a controlled social setting in which alternative discourses are inhibited. Such transformation involves merely the social construction of a singular value.

Neither functional diversification nor positional modification accommodate the diverse relationships between and competing viewpoints held by valuing agents. Individuals are not required to explain why they hold a particular set of value judgements or assessment criteria to others to whom the evaluation results apply. That is, they are under no obligation to justify their personal decisions concerning common goods, despite the fact that these decisions will have collective consequences. The problem of 'who evaluates' (O'Hara, 1999) is inadequately addressed. This is likely to impede the development of mutual respect and recognition that is pivotal to the coexistence of different values in pluralistic societies.

Structural reconstruction includes interactive elements. Positive social relations are often capable of bridging and harmonising diverse values and interests. Such bridging values are as significant as the functional values emanating from good-constituting properties and personally held values, as they play a coordinating role in the cultivation of the values ascribed to public goods, which is broadly understood as a dynamic process. Such bridging values thus qualify as a legitimate contributing factor in valuation.

Furthermore, individuals need a direct response from the natural world or its human

representatives at an equal communicative level, rather than within anthropocentric and self-selective institutions such as markets, on which human impact may not be identifiable (Dryzek, 1995). However, nature cannot respond directly to human actions in socially meaningful ways. Human beings rely on the responses of ‘social others’ to validate their actions towards the environment. The identities and perspectives of these social others are less important than the opportunities for mutual validation that occur during encounters with people from other ‘worlds’. This emphasis on human interaction may still be considered unfair, as its assumptions do not apply to the non-human world. Nevertheless, approaches that prioritise human interaction are fairer than the non-interactive type, because they allow social validation – including conflict and rejection – to take place in an authentic interactive setting rather than within one’s own mind, which is more likely to be constrained by individual circumstances. Although the norms of social interaction may discourage the expression of individual interests, this does not severely threaten the preservation of pluralism as long as the discouragement is not enacted coercively by an external party. In this sense, the ‘publicness’ of environmental value is conferred not by its constituent parts, but by the democratic legitimacy of the value-articulating institution involved.

Embedded judgements

Value-articulating institutions play a normative role by predefining the relevance, validity or legitimacy of values. This creates embedded judgements whose self-reinforcement may constitute the greatest impediment to the enterprise of pluralism. Functional-diversification and positional-modification approaches either effect changes within existing value-articulating institutions or propose new

institutions geared to desired outcomes. This is ambivalent, as the method of addressing value pluralism is specified in accordance with a particular set of end values defined in terms independent of the dynamic of value formation. The success of such approaches depends on the attainment or otherwise of the desired moral end.

This resembles a problem raised by Goodin (1992), who argued that the Green theories of value and agency are logically separate: while the former are ecocentric, the latter operate first and foremost at the level of individual human agents. He contended that the viability of political agency is determined by the extent to which human interest is satisfied, but that this is not the case for the process-based Green values. Logically as well as causally, individual human agency comes first (Goodin, 1992). Therefore, any Green theory of values that regards the prevailing political agency as essentially unproblematic is indefensible (Dryzek, 2000). Goodin argued that it is unproductive to internalise ecocentric perspectives and imperatives without adopting Green methods of reforming political structures and processes accordingly.

Economic theories can be regarded as a specific form of institution and hence a theory of political agency. Functional-diversification approaches are indifferent to the kinds of institutions by which Green values are enfranchised and relevant actions are determined. Only the source and content of the information supplied are diversified. Separating value from agency favours the status quo, as human agency is currently protected and legitimised as a matter of vested interest. As a result, functional diversification works well with conventional forms of valuation survey. Using the framework established by de Groot et al. (2002), for example, all of the types of values generated by defined ecosystem functions are said to be compatible with at

least one standard economic technique. Similarly, Meinard and Grill (2011) sought to ‘improve standard valuation methods’, and Turner et al. (2010: 79) expressed a preference for cost-benefit analysis that has been ‘suitably adjusted for equity concerns’. The value-articulating institutions adopted remain inherently anthropocentric, and their outcomes are necessarily economic constructs, regardless of their perceived functional diversity. Redefining values only implies or concedes that the existing institutions are either environmentally benign or unproblematic. Despite its openness to the multiplicity of values, this method of inquiry may come to resemble a monist treatment, as values are eventually adapted to economic standards. Consequently only isolated successes under green capitalism could be achieved. A value theory that is indifferent to institutions risks being wrested to serve the preoccupations of the theorist. Functional diversification alone is too passive an approach to specify the objects of valuation.

Positional-modification approaches confront the same problem, albeit to a lesser extent. Adopting an alternative evaluative attitude does not guarantee pluralistic articulation. The activation of a particular mode of evaluative attitude requires a controlled setting that privileges a particular constituency. The favoured evaluative attitude is most salient when its alternatives are deactivated. The success of positional modification thus depends on polarisation. Institutions that foster a citizen-oriented mode of thinking tend to inhibit the consumer mode or deny its relevance. This provides an incentive to make monistic claims. Citizen-value theorists are tempted to attack the consumer theory to establish their own theoretical frameworks. The smaller the diversity of values embraced by a theory, the stronger the case for its uniqueness and differentiation from its competitors. As this theory depends on the strength of a

particular position, it may benefit from a narrowing of scope. Eventually, therefore, it risks becoming an anti-economic theory with limited pluralistic potential.

Moreover, positional modification relies on the analyst's judgement of the relevance, validity or legitimacy of various value positions. The solution to the problem of 'aggregating apples and oranges' (incommensurability) is to make the choice on behalf of the valuing agents; asking them all to adopt the citizen mode, for example. The valuing agents are thus construed as merely reacting agents, and are not expected to contest the imposed frame, leaving little reflexive potential on the part of the analyst. Changing the subject's ways of valuing according to the analyst's preference is not a democratic evaluation practice that can be defended in terms of pluralism. In sum, positional modification alone is too active an approach to pre-empt a subjective scope for evaluation.

The aim of structural reconstruction is to reformulate value theory as well as agency theory. For proponents of this framework, diversifying value inputs is not sufficient; the ultimate barrier is understood to lie in the analyst's preconceptions. Egalitarian communication is practised at two levels: by valuing agents and by value theorists. The theoretical foundations on which a value-articulating institution is built must be pluralistic, and the procedures by which it is produced must not privilege any particular qualities of values. 'Categorically charged' institutions are self-reinforcing: the more alternative value categories they inhibit, the more successful they are. Practically, it is impossible to include all types of values; a more fruitful method is to reject institutions that actively exclude any values. Structural theories capture plural values by deconstructing any and all hierarchies.

The above discussion suggests that the mere recognition of value incommensurability is not a sufficient condition for pluralistic value theory. Technical incommensurability is implied by functional diversification, and in some cases by positional modification, while moral incommensurability underscores the more socially oriented approach of positional modification. However, neither of these approaches recognise the absence of conclusive value criteria. The institutions they prioritise are ‘categorically charged’, implying a prior selection of value categories that typically depends on the choice between citizen and consumer mode, and between a utilitarian and a non-utilitarian ethic. Value plurality is acknowledged, but so is value hierarchy. The strongly pluralistic intent of each of these approaches thus becomes a barrier.

A normative value theory committed to known moral ends is far from pluralistic. The importance of a pluralistic institution should be negatively related to its ability to prioritise one value category over its alternatives. Morally as well as logically, a particular categorical preference is not a sustainable justification for a pluralistic institution. The case for functional diversification or positional modification is grounded in such a commitment. Douai (2009: 274) claimed that modes of environmental valuation never relate to the economic realm. In contrast, it is argued in this paper that no pluralistic value theory is justifiable on exclusively economic or anti-economic grounds.

6. CONCLUSION

Attempts to capture plural values are classified at three conceptual levels. *Functional diversification* involves changes to the substance of valuation. The methodological scope of this approach is wide, and it accommodates appropriate functional considerations. Effective functional-diversification techniques recognise the multi-dimensional properties of nature and propose remedial policy options. As this approach does not challenge the normative nature and structure of value-articulating institutions, the status quo, i.e. consumer sovereignty and a utilitarian model, is protected. *Positional transformation* entails changes to constituency. Diverse perspectives, expertise and experiences are embraced within a particular moral scope. The valuing agents are encouraged or selected to speak for the same constituency. Neither approach challenges the built-in moral judgements of existing value-articulating institutions. This creates a set of rules of inclusion or exclusion that do not allow individuals to embrace alternative criteria beyond the specified institutional boundaries. In short, any moral claim with which the analyst disagrees does not count.

Using these approaches, the case for pluralism is not defensible. Underlying the notion of value pluralism are the reality of value conflict and the lack of a conclusive principle by which the relative priority of normative positions can be determined. Value-articulating institutions dedicated to attaining or foreclosing a particular moral outcome are counteractive. What is *required* to change, according to some defined criteria theoretically justified as appropriate, is the scope, attitude or mode of valuation undertaken by the valuing agents. The favoured ethical imperatives are treated as constants, whereas individual preferences are assumed to vary. Some authors express confidence in the existing economic institutions, whereas others

propose alternative approaches in competition with conventional economic philosophy. However, all of the proponents of these approaches advance new value theories as means to desired moral outcomes, and all make conclusive judgements on values.

Building a pluralistic institution upon any one pole of a dichotomy is doomed to failure, because such an institution may subsequently benefit from monistic approaches that differentiate it from its alternatives. Nevertheless, this is the current approach by which value multiplicity is recognised and instituted; ironically, it eventually places a smaller group of values at an advantage. The sufficient condition for pluralism is not only the ability to recognise multiplicity and difference, but the inability to make conclusive choices among the differing many. The ability to prioritise one category satisfies the basic requirement of a monistic institution, irrespective of how many categories and how much diversity are identified.

A theoretically consistent theory of plural values affirms the need to provide opportunities for alternatives to an established position to make compelling cases. Hardly any pluralistic programme would be defensible if the established were not refutable and its alternatives were unable to gain acceptance as grounds for action. A commitment to ‘agreeing to disagree’ is essential.

Normative value theory at the third level seems more appealing. *Structural reconstruction* democratises the ways in which values are assessed and theorised. The nature of the monetary values ascribed by the valuing agents is explicitly determined

by the agents themselves, rather than specified by the analyst. Of importance to this exploration is the involvement of authentic subjective value profiles, which allow conflict to take place between various real discourses surrounding public decisions about the environment. Therefore, a pluralistic-valuation approach is one that does not deliberately restrict the access of the affected or interested parties, and which involves a structurally pluralistic value-articulating institution, such that the analyst's preoccupations with an ideal outcome are rendered transparent and given no advantage, or at least made remediable. Such an approach assumes that the conferred meaning and category of a stated value are contingent; they must be sought in the language of the valuing agents, and are not arbitrarily predetermined by the theoretical framework. This kind of monetary valuation is topical and not theoretical; although it inevitably concerns money and values, it accommodates a wide range of possible theoretical approaches, perspectives and explanations (Lo and Spash, 2013).

Incorporating critical elements into existing institutions appears to be a challenging task for environmental managers and practitioners seeking practical solutions.

Concerns about manageability have limited the political attractiveness of structurally reconstructive institutions. Consequently, monotonic value-articulating strategies continue to be preferred. Although ensuring the non-exclusion of distinctive values may be an effective strategy for reducing the gap between current institutions and value systems, (selective) inclusion seems to be a more manageable approach. This reflects the uniqueness of structural reconstruction while explaining its slow adoption at the institutional level.

Table 1 Key conceptual elements of the three pluralistic valuation approaches

	Functional	Positional	Structural
	Diversification	Modification	Reconstruction
Ontology	Substance (object of valuation)	Constituency (subject of valuation)	Institution (evaluative framework)
Justification	Complexity of object	Complexity of object/value incommensurability	Value of diversity/value incommensurability
Site of Variation	Good-constituting properties	Subjective scope of valuation	Theory of value and valuation
Definition of Value Category	Given	Given	Open
Required Institutional Capacity	Informative potential	Transformative potential	Reflexive potential
Learning Model	Information deficit	Focused reasoning and enlightenment	Critical interaction (extending to researcher)
Practical Strategy	Supply information of better quality	Activate appropriate perspective	Juxtapose conflicting values or criteria

Expected Outcome	Multi-dimensional understanding	Construction of defined values	Reconstruction of values
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REFERENCES

- Anderson, E. 1993. *Value in Ethics and Economics*. Cambridge, Mass.: Harvard University Press.
- Barbier, B. J.C. Burgess and C. Folke, 1994. *Paradise Lost?: The Ecological Economics of Biodiversity*. London: Earthscan.
- Baron, J. and M. Spranca, 1997. 'Protected values'. *Organizational Behavior and Human Decision Processes* **70** (1): 1–16.
<http://dx.doi.org/10.1006/obhd.1997.2690>
- Blamey, R.K., 1998. 'Trust, responsibility and the interpretation of contingent valuation results'. *Australian Economic Papers* **37** (3): 273–291.
<http://dx.doi.org/10.1111/1467-8454.00020>
- Brown, T.C. 1984. 'The concept of value in resource allocation'. *Land Economics* **60** (3): 231–246. <http://dx.doi.org/10.2307/3146184>
- Brown, T.C., G.L. Peterson and B.E. Tonn, 1995. 'The values jury to aid natural resource decisions'. *Land Economics* **71** (2): 250–260.
<http://dx.doi.org/10.2307/3146505>
- Burgess, J., J. Clark and C.M. Harrison, 1998. 'Respondents' evaluations of a CV survey: a case study based on an economic valuation of the Wildlife Enhancement Scheme, Pevensey Levels in East Sussex'. *Area* **30** (1): 19–27.
<http://dx.doi.org/10.1111/j.1475-4762.1998.tb00044.x>
- Chavas, J.-P. 2000. 'Ecosystem valuation under uncertainty and irreversibility'. *Ecosystems* **3**: 11–15. <http://dx.doi.org/10.1007/s100210000003>
- Cooper, P., G.L. Poe and I.J. Bateman, 2004. 'The structure of motivation for contingent values: a case study of lake water quality improvement'.

- Ecological Economics* **50**: 69–82.
<http://dx.doi.org/10.1016/j.ecolecon.2004.02.009>
- Costanza, R. 2000. 'Social goals and the valuation of ecosystem services'. *Ecosystems* **3**: 4–10. <http://dx.doi.org/10.1007/s100210000002>
- De Groot, R.S., M.A. Wilson and R.M.J. Boumans, 2002. 'A typology for the classification, description and valuation of ecosystem functions, goods and services'. *Ecological Economics* **41**: 393–408.
[http://dx.doi.org/10.1016/S0921-8009\(02\)00089-7](http://dx.doi.org/10.1016/S0921-8009(02)00089-7)
- Dietz, T. and P.C. Stern (eds). 2008. *Public Participation in Environmental Assessment and Decision Making*. Washington, D.C.: National Academies Press.
- Douai, A. 2009. 'Value theory in ecological economics: The contribution of a political economy of wealth'. *Environmental Values* **18**: 257–284.
<http://dx.doi.org/10.3197/096327109X12474739376415>
- Dryzek, J.S. 1990. *Discursive Democracy: Politics, Policy, and Political Science*. Cambridge: Cambridge University Press.
<http://dx.doi.org/10.1080/09644019508414226>
- Dryzek, J.S. 1995. 'Political and ecological communication'. *Environmental Politics* **4** (4): 13–30.
- Dryzek, J.S. 2000. *Deliberative Democracy and Beyond: Liberals, Critics, Contestations*. Oxford, U.K.: Oxford University Press.
- Dryzek, J.S. and J. Berejikian, 1993. 'Reconstructive democratic theory'. *American Political Science Review* **87** (1): 48–60. <http://dx.doi.org/10.2307/2938955>
- Frey, B.S. and R. Jegen, 2001. 'Motivation crowding theory'. *Journal of Economic*

Surveys **15** (5): 589–611. <http://dx.doi.org/10.1111/1467-6419.00150>

Goodin, R.E. 1992. *Green Political Theory*. Cambridge: Polity.

Gowdy, J.M. 2007. 'Toward an experimental foundation for benefit-cost analysis'.

Ecological Economics **63**: 649–655.

<http://dx.doi.org/10.1016/j.ecolecon.2007.02.010>

Gregory, R. 2000. 'Valuing environmental policy options: A case study comparison of multiattribute and contingent valuation survey methods'. *Land Economics* **76**

(2): 151–173. <http://dx.doi.org/10.2307/3147222>

Gregory, R., J. Flynn, S.M. Johnson, T.A. Satterfield, P. Slovic and R. Wagner, 1997.

'Decision-pathway surveys: A tool for resource managers'. *Land Economics*

73 (2): 240–254. <http://dx.doi.org/10.2307/3147285>

Gregory, R., S. Lichtenstein and P. Slovic, 1993. 'Valuing environmental resources: A constructive approach'. *Journal of Risk and Uncertainty* **7**: 177–197.

Gregory, R. and P. Slovic, 1997. 'A constructive approach to environmental valuation'.

Ecological Economics **21**: 175–181.

[http://dx.doi.org/10.1016/S0921-8009\(96\)00104-8](http://dx.doi.org/10.1016/S0921-8009(96)00104-8)

Hanley, N. and J.F. Shogren, 2005. 'Is cost-benefit analysis anomaly-proof?'

Environmental and Resource Economics **32**: 13–34.

<http://dx.doi.org/10.1007/s10640-005-6026-2>

Jorgensen, B.S. and G.J. Syme, 2000. 'Protest responses and willingness to pay: attitude toward paying for stormwater pollution abatement'. *Ecological*

Economics **33**: 251–265. [http://dx.doi.org/10.1016/S0921-8009\(99\)00145-7](http://dx.doi.org/10.1016/S0921-8009(99)00145-7)

Kahneman, D. and J.L. Knetsch, 1992. 'Valuing public goods: the purchase of moral satisfaction'. *Journal of Environmental Economics and Management* **22**:

57–70. [http://dx.doi.org/10.1016/0095-0696\(92\)90019-S](http://dx.doi.org/10.1016/0095-0696(92)90019-S)

Lienhoop, N. and D.C. Macmillan, 2007. ‘Contingent valuation: Comparing participant performance in group-based approaches and personal interviews’. *Environmental Values* **16**: 209–232.

<http://dx.doi.org/10.3197/096327107780474500>

Lo, A.Y. 2011. ‘Analysis and democracy: The antecedents of the deliberative approach of ecosystems valuation’. *Environment and Planning C: Government and Policy* **29**: 958–974. <http://dx.doi.org/10.1068/c1083>

Lo, A.Y. 2012. ‘The encroachment of value pragmatism on pluralism: The practice of the valuation of urban green space using stated-preference approaches’. *International Journal of Urban and Regional Research* **36**: 121–135.

<http://dx.doi.org/10.1111/j.1468-2427.2011.01069.x>

Lo, A.Y. 2013. ‘Agreeing to pay under value disagreement: Reconceptualizing preference transformation in terms of pluralism with evidence from small-group deliberations on climate change’. *Ecological Economics* **87**:

84–94. <http://dx.doi.org/10.1016/j.ecolecon.2012.12.014>

Lo, A.Y., A.T. Chow and S.M. Cheung. 2012. ‘Significance of perceived social expectation and implications to conservation education: turtle conservation as a case study’. *Environmental Management* **50**: 900–913.

<http://dx.doi.org/10.1007/s00267-012-9926-2>

Lo, A.Y. and C.L. Spash, 2013. ‘Deliberative monetary valuation: In search of a democratic and value plural approach to environmental policy’. *Journal of Economic Surveys* **27**(4): 768–789.

<http://dx.doi.org/10.1111/j.1467-6419.2011.00718.x>

- Lockwood, M. 1997. 'Integrated value theory for natural areas'. *Ecological Economics* **20**: 83–93. [http://dx.doi.org/10.1016/S0921-8009\(96\)00075-4](http://dx.doi.org/10.1016/S0921-8009(96)00075-4)
- Mann, S. 2004. 'The expert valuation method for assessing agro-environmental policy'. *Journal of Environmental Planning and Management* **47** (4): 541–554. <http://dx.doi.org/10.1080/0964056042000243221>
- Martínez-Espiñeira, R. 2006. 'A Box-Cox Double-Hurdle model of wildlife valuation: The citizen's perspective'. *Ecological Economics* **58**: 192–208. <http://dx.doi.org/10.1016/j.ecolecon.2005.07.006>
- Martinez-Alier, J., G. Munda and J. O'Neill. 1998. 'Weak comparability of values as a foundation for ecological economics'. *Ecological Economics* **26**: 277–286. [http://dx.doi.org/10.1016/S0921-8009\(97\)00120-1](http://dx.doi.org/10.1016/S0921-8009(97)00120-1)
- Meinard, Y. and P. Grill, 2011. 'The economic valuation of biodiversity as an abstract good'. *Ecological Economics* **70**: 1707–1714. <http://dx.doi.org/10.1016/j.ecolecon.2011.05.003>
- Milgrom, P. 1993. 'Is sympathy an economic value? Philosophy, economics, and the contingent valuation method', in J.A. Hausman (ed.), *Contingent Valuation: A Critical Assessment*. Amsterdam: North-Holland.
- Munda, G. 2006. 'Social multi-criteria evaluation for urban sustainability policies'. *Land Use Policy* **23**: 86–94. <http://dx.doi.org/10.1016/j.landusepol.2004.08.012>
- Norton, B.G. and D. Noonan. 2007. 'Ecology and valuation: Big changes needed'. *Ecological Economics* **63**: 664–675. <http://dx.doi.org/10.1016/j.ecolecon.2007.02.013>
- O'Connor, M. 2000. 'Pathways for environmental evaluation: a walk in the (Hanging)

- Gardens of Babylon'. *Ecological Economics* **34**: 175–193.
[http://dx.doi.org/10.1016/S0921-8009\(00\)00157-9](http://dx.doi.org/10.1016/S0921-8009(00)00157-9)
- O'Hara, S.U. 1996. 'Discursive ethics in ecosystems valuation and environmental policy'. *Ecological Economics* **16**: 95–107.
[http://dx.doi.org/10.1016/0921-8009\(95\)00085-2](http://dx.doi.org/10.1016/0921-8009(95)00085-2)
- O'Neill, J. and C.L. Spash. 2000. 'Conceptions of value in environmental decision-making', in C.L. Spash and C. Carter (eds), *Environmental Valuation in Europe: Policy Research Brief*. England: Cambridge Research for the Environment.
- Orr, S.W. 2007. 'Values, preferences, and the citizen – consumer distinction in cost-benefit analysis'. *Politics, Philosophy and Economics* **6** (1): 107–130.
<http://dx.doi.org/10.1177/1470594X07068306>
- Pearce, D.W. 1998. *Economics and Environment: Essays on Ecological Economics and Sustainable Development*. Cheltenham: Edward Elgar.
- Powe, N.A. 2007. *Redesigning Environmental Valuation: Mixing Methods within Stated Preference Techniques*. Cheltenham: Edward Elgar.
<http://dx.doi.org/10.4337/9781847207111>
- Price, C. 2000. 'Valuation of unpriced products: contingent valuation, cost-benefit analysis and participatory democracy'. *Land Use Policy* **17** (3): 187–196.
[http://dx.doi.org/10.1016/S0264-8377\(00\)00020-X](http://dx.doi.org/10.1016/S0264-8377(00)00020-X)
- Pritchard, L., C. Folke and L. Gunderson. 2000. 'Valuation of ecosystem services in institutional context'. *Ecosystems* **3**: 36–40.
<http://dx.doi.org/10.1007/s100210000008>
- Rawls, J. 1971. *A Theory of Justice*. Oxford: Clarendon Press.

- Renn, O. 1992. 'Risk communication: Towards a rational discourse with the public'. *Journal of Hazardous Materials* **29**: 465–519.
[http://dx.doi.org/10.1016/0304-3894\(92\)85047-5](http://dx.doi.org/10.1016/0304-3894(92)85047-5)
- Renn, O. 2006. 'Participatory processes for designing environmental policies'. *Land Use Policy* **23**: 34–43. <http://dx.doi.org/10.1016/j.landusepol.2004.08.005>
- Söderbaum, P. 2000. *Ecological Economics: A Political Economics Approach to Environment and Development*. London: Earthscan.
- Sagoff, M. 1988. *The Economy of the Earth: Philosophy, Law, and the Environment*. Cambridge: Cambridge University Press.
- Sagoff, M. 1998. 'Aggregation and deliberation in valuing environmental public goods: a look beyond contingent pricing'. *Ecological Economics* **24**: 213–230.
[http://dx.doi.org/10.1016/S0921-8009\(97\)00144-4](http://dx.doi.org/10.1016/S0921-8009(97)00144-4)
- Spash, C.L. 2007. 'Deliberative monetary valuation (DMV): issues in combining economic and political processes to value environmental change'. *Ecological Economics* **63** (4): 690–699. <http://dx.doi.org/10.1016/j.ecolecon.2007.02.014>
- Spash, C.L. 2008. 'Deliberative monetary valuation and the evidence for a new value theory'. *Land Economics* **84** (3): 469–488.
- Spash, C.L., K. Urama, R. Burton, W. Kenyon, P. Shannon and G. Hill. 2009. 'Motives behind willingness to pay for improving biodiversity in a water ecosystem: economics, ethics and social psychology'. *Ecological Economics* **68** (4): 955–964. <http://dx.doi.org/10.1016/j.ecolecon.2006.09.013>
- Spash, C.L. and A. Vatn. 2006. 'Transferring environmental value estimates: Issues and alternatives'. *Ecological Economics* **60**: 379–388.
<http://dx.doi.org/10.1016/j.ecolecon.2006.06.010>

- Tuan, Y.F. 1974. *Topophilia: A Study of Environmental Perceptions, Attitudes, and Values*. Englewood Cliffs, N. J.: Prentice-Hall.
- Turner, R.K., S. Morse-Jones and B. Fisher. 2010. 'Ecosystem valuation: A sequential decision support system and quality assessment issues'. *Annals of the New York Academy of Sciences* **1185**: 79–101.
<http://dx.doi.org/10.1111/j.1749-6632.2009.05280.x>
- Turner, R.K., J. Paavola, P. Cooper, S. Farber, V. Jessamy and S. Georgiou. 2003. 'Valuing nature: Lessons learned and future research directions'. *Ecological Economics* **46**: 493–510.
[http://dx.doi.org/10.1016/S0921-8009\(03\)00189-7](http://dx.doi.org/10.1016/S0921-8009(03)00189-7)
- Vatn, A. 2009. 'An institutional analysis of methods for environmental appraisal'. *Ecological Economics* **68**: 2207–2215.
<http://dx.doi.org/10.1016/j.ecolecon.2009.04.005>