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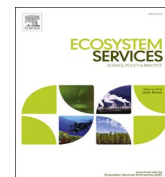
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Shared values and deliberative valuation: Future directions



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ABSTRACT

Valuation that focuses only on individual values evades the substantial collective and intersubjective meanings, significance and value from ecosystems. Shared, plural and cultural values of ecosystems constitute a diffuse and interdisciplinary field of research, covering an area that links questions around value ontology, elicitation and aggregation with questions of participation, ethics, and social justice. Synthesising understanding from various contributions to this Special Issue of *Ecosystem Services*, and with a particular focus on deliberation and deliberative valuation, we discuss key findings and present 35 future research questions in eight topic areas: 1) the ontology of shared values; 2) the role of catalyst and conflict points; 3) shared values and cultural ecosystem services; 4) transcendental values; 5) the process and outcomes of deliberation; 6) deliberative monetary valuation; 7) value aggregation, meta-values and 'rules of the game'; and 8) integrating valuation methods. The results of this Special Issue and these key questions can help develop a more extensive evidence base to mature the area and develop environmental valuation into a more pluralistic, comprehensive, robust, legitimate and effective way of safeguarding ecosystems and their services for the future.

1. Introduction

Shared values are values that convey conceptions of the common good between people and are formed, expressed and assigned through social interactions. The term shared values, and related terms such as social values, shared social values, (socio)cultural values and plural values, have been used to indicate a variety of concepts that relate to a sense of importance transcending individual utility, and that express the multidimensionality of values (Kenter et al., 2015; 2014a, 2014b). Valuation that focuses only on individual values evades the substantial collective and intersubjective meanings, significance and value from ecosystems, while deliberation on shared values can help make

valuation more robust and enhance its legitimacy (Farber et al., 2002; Fish et al., 2011a; O'Neill, 2007; Kenter et al., 2016b). This is important because valuations that overlook these wider meanings may undermine the legitimacy of decisions based upon them. Indeed, in this journal some have argued that 'truly social valuation' of public policy alternatives is the 'next frontier' in environmental valuation, and that developing effective and credible techniques to achieve this is the greatest challenge facing ecological and environmental economics today (Parks and Gowdy, 2013).

Shared values particularly come into play in determining how we evaluate values across the plural ontological and ethical dimensions of value (Kenter, 2016b; ; Kenter et al., 2015; Lo, 2011; O'Neill et al.,

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2008; Sagoff, 1998). This Special Issue illustrates in diverse ways that the ethical, moral and justice dimensions of many environmental issues necessitate approaches that allow for the recognition and elicitation of shared, plural and cultural values (Irvine et al., 2016; Cooper et al., 2016; Everard et al., 2016; Raymond and Kenter, 2016; Edwards et al., 2016; Kenter, 2016b, 2016c; Kenter et al., 2016b; Orchard-Webb et al., 2016; Ranger et al., 2016). Key ethical concerns include: providing a space and opportunity for people to identify values that they may find difficult to articulate (e.g. spiritual, identity); recognising that some values cannot be traded without discussion and negotiation (e.g. the legal or felt rights of local people, intrinsic values of other species); and understanding that it is often difficult to isolate valuation from decision-making processes because people feel there are strong ethical or moral issues at stake that need to be debated (e.g. the justice of the process, fairness in the distribution of benefits or disbenefits, responsibility, and issues of sustainability and future generations).

This reflects dominant themes in environmental debates, which often revolve around a number of key issues, including: lack of trust in elected representatives (Gastil, 2002; Independent Panel on Forestry, 2011), feelings of powerlessness in the face of globalization (Kiely, 2004), the ethical and social impacts of an increase in certain aspects of technology (Everard et al., 2016), and a call for justice and equity in environmental decision-making (Economic and Social Research Council, 2000). While our focus is on the environment, many of the questions discussed here are also increasingly pertinent in other areas of public policy and evaluation. For example, in health valuation, contestation of instrumental, efficiency-based methods of health services valuation and allocation have given rise to nascent ‘communitarian’ approaches to health, drawing on deliberation of communal values (Cleary et al., 2011; Mooney et al., 2002).

Nonetheless, shared values have been under-investigated, leading to a lack of established conceptual and evaluative frameworks to guide their assessment (Bunse et al., 2015; Ives and Kendal, 2014; Kenter, 2016a; Kenter et al., 2015; Parks and Gowdy, 2013; Raymond et al., 2014; Irvine et al., 2016; Scholte et al., 2015). This Special Issue of *Ecosystem Services* addresses a breadth of topics associated with shared values and illustrates a wide range of methods for understanding and assessing them. This paper synthesises current understandings and provides future directions for research around shared values, and the role of deliberation in valuation processes, which is highlighted in this issue as a key way in which shared values can be formed and expressed.

Deliberation has been proposed both as an answer to methodological problems within monetary (and to a lesser degree non-monetary) valuation (Alvarez Farizo and Hanley, 2006; Alvarez Farizo et al., 2007; Bunse et al., 2015; Lienhoop and Hanley, 2006; Lienhoop and MacMillan, 2007; Raymond et al., 2014; Szabó, 2011; Urama and Hodge, 2006), as a means to bring in questions of fairness, justice and participation (O’Neill et al., 2008; Spash, 2008; Zografos and Howarth, 2010), and as an answer to theoretical critiques of economic appraisal that are based on assumptions of individual, commensurable, and consequentialist values (Hockley, 2014; Howarth and Wilson, 2006; Kenter, 2016a; Kenter, 2017; Irvine et al., 2016, O’Neill, 2007, 1996; Sagoff, 1998). While deliberative processes take place formally and informally, and individually and socially, we focus here on group-based deliberative processes that involve reflecting on and discussing values and information to form reasoned opinions (Kenter et al., 2016a). Group deliberation has been an important element in all the methodological approaches in the empirical studies in this Special Issue, and can be considered central to shared values approaches to valuing ecosystem services.

Although the terms shared, plural, social and cultural values may each emphasise somewhat different aspects of values (for an overview of terms see Kenter et al., 2015), for the sake of brevity we summarily refer to shared values or a shared values approach. A shared values approach can be defined as an approach that recognises a plurality of

values (ontologically, ethically, epistemologically) that are socially formed, both substantively and procedurally. In the introduction to this Special Issue of *Ecosystem Services*, Kenter (2016b) highlights six features of such an approach, which are reflected across the diverse papers in the issue: 1) axiological plurality; 2) the need for deliberation on these plural values to establish the common good; 3) the importance of institutional factors, such as the role of power, in such processes of value elicitation-formation; 4) the need to recognise and interpret cultural and institutional histories, place, identity and experience to understand values and contexts; 5) the inevitable subjectivity of valuations that arises from the complexity and contestedness of many environmental issues, because no valuation is ‘complete’ in its ability to encompass every aspect and dimension of value; and 6) the potential of valuations as new democratic spaces, bridging the divide between research and practice.

The Special Issue that this paper concludes originated in two work packages (Church et al., 2014: ‘Cultural Ecosystem Services’; and Kenter et al., 2014b: ‘Shared, Plural and Cultural Values’) of the UK National Ecosystem Assessment Follow-On (UK NEA, 2014), a substantial research programme that aimed to address key areas identified by the UK NEA (2011) as priorities for further development. After completion of the programme, a two-day workshop with UK NEA Follow-On co-investigators and authors across the papers in this Special Issue was held in March 2015 to sketch out future directions for research around shared values. Each participant initially presented their individual perspective, followed by open group deliberation and facilitated brainstorming and reflection exercises. This resulted in a gross list of research questions that was then distilled and refined to 35 questions across eight topic areas (Table 1) through online discussion. These areas are: 1) the ontology of shared values; 2) the role of catalyst and conflict points; 3) shared values and cultural ecosystem services; 4) transcendental values; 5) the process and outcomes of deliberation; 6) deliberative monetary valuation (DMV); 7) value aggregation, meta-values and ‘rules of the game’; 8) integrating valuation methods. The next section synthesises the outcomes of the workshop discussions with key material from papers across the Special Issue. We end with final reflections and conclusions.

2. Key findings and future directions

2.1. Ontology of shared, plural and cultural values

Reviews by Kenter et al. (2014b) and Irvine et al. (2016) demonstrate the wide variety of ways in which the fuzzy and overlapping terms ‘shared’, ‘social’, ‘plural’ and ‘cultural’ values have been used in the ecosystem services valuation and ecosystems management literature. To provide clarity in identification and assessment, Kenter et al. (2015) discriminated five *dimensions* of values: (i) the value concept; (ii) the value provider; (iii) the process used to elicit values; (iv) the scale of value; and (v) its intention (Fig. 1). The *value concept* dimension distinguishes transcendental values (our context-transcending principles and life goals), from contextual values and value indicators. *Value providers* include individuals, ad hoc groups (e.g. in deliberative valuation), communities, societies and cultures, providing individual, group, communal, societal and cultural values. Values may be deliberated or not, depending on the *process of elicitation*. The *scale* dimension discriminates whether values relate to individuals (e.g. individual willingness to pay [WTP]) or a societal scale (e.g. social willingness to pay), and the *intention* dimension differentiates self-from other-regarding values. The authors then identify seven main, non-mutually exclusive types of shared/social values, listed in Table 2: 1) transcendental values; 2) cultural and societal values; 3) communal values; 4) group values; 5) deliberated values; 6) other-regarding values; and 7) value to society. Shared values are then conceived of as ontologically plural in the sense of varying across the above dimensions and in that they may reflect different categories such as

Table 1
Key topics and questions for future research on shared values and deliberation.

Topic area	Key questions
Ontology of shared, plural and cultural values	<p>1 Do people (1) hold a single set of values that can only be approximated through elicitation; (2) hold multiple sets of values activated by different roles, contexts, and value-eliciting institutions; (3) hold partially formed 'proto-values' that are adapted to contexts; or (4) not hold a priori values at all but only form them through expression?</p> <p>2 What are the conceptual and empirical relations between different types of shared values and ethical perspectives, e.g. between other-regarding values and non-consequentialist values?</p>
Catalyst and conflict points and deliberative valuations as new democratic spaces	<p>3 Can deliberative methods integrate fairness and justice concerns to the degree that they lead to decisions that are seen as legitimate by all those parties involved in catalyst or conflict points?</p> <p>4 Can shared values approaches give more voice and agency to those often excluded from decision-making processes?</p> <p>5 By functioning as boundary objects between research, policy and practice, can shared values approaches lead to more effective translation of values into decisions, and what optimises their transformative potential as new democratic spaces?</p> <p>6 How might social media be utilised as online new democratic spaces to effectively engage a wider group of publics and stakeholders in deliberative valuations, and what guidelines and protocols are necessary for the legitimacy of such spaces?</p>
Shared values and cultural ecosystem services	<p>7 How do different non-monetary methods used to value cultural ecosystem services compare in terms of their ontology, epistemology and axiology?</p> <p>8 How should 'two-way relationships' between people and the environment be valued and incorporated into decisions?</p> <p>9 What models for deliberation are used in social and cultural institutions such as faith communities to incorporate shared values into their decision-making that could be adapted for use in environmental decision-making?</p>
Transcendental values	<p>10 Which categories of transcendental values are most pertinent to ecosystem service valuation, management and conservation?</p> <p>11 How do transcendental values affect contextual values and value indicators?</p> <p>12 What role do different types of transcendental values play in deliberative processes, and how are they affected by deliberation?</p> <p>13 How do transcendental values of individuals relate to the shared values of groups in which individuals self-reference, and what role do these hierarchical interactions have on contextual value and environmental behaviour formation and change?</p>
The process and outcomes of deliberation	<p>14 What is the relative impact of different key factors (e.g. ability to deliberate, power dynamics, institutional factors – see Fig. 2) on deliberation and value outcomes in processes of value formation, and what indicators can be used?</p> <p>15 What are the relative impacts of different types of deliberation and deliberative exercises and interventions on individual and group values?</p> <p>16 What is the relation between value formation and value change, at the individual level and in groups in terms of convergence or divergence?</p>

Table 1 (continued)

Topic area	Key questions
Deliberative monetary valuation	<p>17 How does deliberation in valuation compare to deliberation in other institutional processes?</p> <p>18 Are the effects of long-term and repeated deliberation demonstrably different from one-off deliberative interventions, and how does long-term/repeated deliberation affect different types of shared values?</p> <p>19 Do deliberated group values or deliberated individual values offer more robust indicators of welfare impacts than non-deliberated individual values?</p> <p>20 Can deliberation reduce hypothetical bias?</p> <p>21 What criteria should be used for validity and legitimacy of deliberated values?</p> <p>22 How should deliberated individual and social willingness to pay and fair prices be used in appraisal?</p> <p>23 Do deliberated values elicited in valuation workshops endure over time?</p> <p>24 What methodological innovations are needed to address persistent issues of democratic legitimacy in deliberative valuation?</p> <p>25 What protocols, grounded in deliberative democracy theory, can be devised in terms of stakeholder/participant representation, process design and facilitation to deal with explicit and implicit power dynamics in deliberative valuation?</p> <p>26 Can democratic deliberative monetary valuation approaches adequately address non-consequentialist values, including intrinsic values of nature?</p>
Value aggregation, meta-values and 'rules of the game'	<p>27 How can democratic deliberation be used for aggregation and negotiation of values at the large-scale?</p> <p>28 What are people's transcendental values around value-aggregation (meta-values)? How fundamental and universal are they? Do they differ across contexts and cultures?</p> <p>29 How do people's transcendental values around value-aggregation (meta-values) compare to the meta-values used in different institutions?</p> <p>30 How does the use of different value-aggregation rules affect the outcomes of appraisal?</p> <p>31 What procedures are there or can be developed for deliberating on meta-values around value aggregation rules, and how robust are these from a democratic perspective? To what degree can these be transferred between different contexts?</p>
Integrating valuation methods	<p>32 Can epistemological and axiological differences between instrumental and deliberative methods be bridged to take advantage of the strengths of both?</p> <p>33 How can we ensure plural value dimensions are fully recognised without reverting to separate knowledge domains?</p> <p>34 How and to what extent does the use of different valuation methods privilege the values of some social or cultural groups while discounting or undermining the values of others?</p> <p>35 Can we define integrated methodologies that situate local or marginalised values and knowledges in such a way that they can be fully articulated, but which can also be taken forward as evidence for broader decision-making processes?</p>

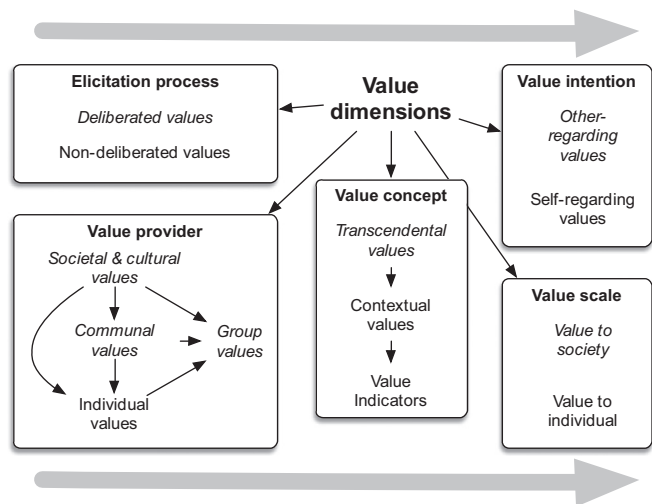


Fig. 1. Shared values framework: the five dimensions and seven main types of shared and social values (Source: Kenter et al., 2015). Bold titles indicate non-mutually exclusive dimensions of value. Emerging from the dimensions, we can differentiate between types of values that might be termed shared, social, or shared social values (italicised), and other types of values. For example, *provider* is a dimension that indicates who might provide values in a valuation setting; societies, cultures, communities and ad-hoc groups provide *societal, cultural, communal* and *group* values, which are all types of shared or social values. Individuals also provide values, but these are not termed shared or social, unless they can be classified as such on a dimension other than that of value-provider. Arrows within boxes indicate directions of influence between different types of values. Grey arrows signify that the type of elicitation process and value provider strongly influence what value types are articulated along the concept, intention and scale dimensions.

utility, rights, virtues and aesthetic values, and are thus potentially incommensurable.

This discussion raises the question of how these different dimensions and types of values interact with each other. For example, many papers in this issue, and in the literature where conventional valuation approaches are critiqued, explicitly or implicitly make strong links between other-regarding values, non-individual (i.e. group/communal/societal/cultural) values and non-consequentialist values. Is this just an artefact of mirroring the neoclassical economic association between individualism, selfishness and utilitarianism, or do we indeed hold a distinct set of other-regarding, moralistic, shared, ‘citizen’ values (Sagoff, 1998) in parallel with a set of selfish utilitarian ‘consumer’ values?

This leads to more fundamental questions on the nature of values and why different valuation approaches lead to different value expressions. Do we hold (1) a single set of values that can only be approximated through elicitation, as is assumed by neoclassical economics, but also implicitly by many non-monetary valuation approaches (Raymond et al., 2014); (2) multiple sets of values activated by different roles, contexts, and value-eliciting institutions (Sagoff, 1998; Vatn, 2009); (3) partially formed ‘proto-values’ that are adapted to contexts; or (4) not hold *a priori* values but form them through social interaction and expression (Irvine et al., 2016; Kenter et al., 2016a)?

This question is most salient for contextual values and their indicators, as transcendental values are generally assumed to be culturally engrained during childhood and stable across our lifespan (Schwartz, 1992; 1994; Manfredi et al., 2014). Nonetheless transcendental values can change when specifically challenged (Bardi and Goodwin, 2011), and several deliberative valuation studies in this issue (Kenter, 2016c; Kenter et al., 2016b; Raymond and Kenter, 2016) demonstrated changes not just in WTP following deliberation, but also in the relative importance of different transcendental values, which again beckons the question if this constitutes value change, value formation or a shift to a different value set activated by the context.

Table 2
Main types of shared and social values with definitions and dimensions along which they can be discriminated (Source: Kenter et al., 2015).

Type of shared/ social value	Definition	Associated dimension
Transcendental values	Conceptions about desirable end states or behaviours that transcend specific situations and guide selection or evaluation of behaviour and events (after Schwartz and Bilsky, 1987).	Concept
Cultural and societal values	Culturally shared principles and virtues as well as a shared sense of what is worthwhile and meaningful. Cultural values are grounded in the cultural heritage and practices of a society and pervasively reside within societal institutions. Societal values are the cultural values of a society; societies may be more or less homogenous, so there may be multiple sets of cultural values in one society that overlap to a greater or lesser degree with each other.	Provider
Communal values	Values held in common by members of community (e.g. geographic, faith/belief-based, community of practice or interest), including shared principles and virtues as well as a shared sense of what is worthwhile and meaningful.	Provider
Group values (within valuation)	Values expressed by a group as a whole (e.g. through consensus and negotiation or voting, or more informally), in some kind of valuation setting.	Provider
Deliberated values	Value outcomes of a deliberative process; typically, but not necessarily, a deliberative group process that involves discussion and learning.	Process
Other-regarding values	As contextual values: the sense of importance attached to the well-being of others (human or non-human). As transcendental values: regard for the moral standing of others.	Intention
Value to society	Benefit, worth or importance to society as a whole.	Scale

2.2. The role of catalyst and conflict points

Catalyst and/or conflict points can play a key role in both the emergence and articulation of values at a societal or community level that have not previously been expressed or articulated (Irvine et al., 2016; Everard et al., 2016; Edwards et al., 2016). They are often linked to wider contested issues and meanings about who is involved in decision-making, whose voice counts and is viewed as legitimate and who receives the benefits or disbenefits of any environmental change. A key issue of many conflicts are the emotional responses that arise from individuals and communities. In psychology emotions are often seen as automatic reactions that can occur when individuals encounter significant issues with others or their environment, while in sociology emotions are explicitly linked to cognition and values, with a focus on the social origin and function of emotions (Buijs and Lawrence, 2013). Buijs and Lawrence (2013) argue that tendencies to rationalise nature often leave little room for emotion and can delegitimise it. Decision makers may dismiss emotions and feelings related to conflicts as irrational and not based on evidence and therefore focus on providing greater amounts of factual information. Terms such as NIMBYism (not in my back yard) can also be used to dismiss community concerns as irrelevant, ill-informed and not legitimate (Burningham, 1995). Emotional attachments to nature should be taken into account in valuations and management of ecosystems with managers playing a greater role in acknowledging and discussing emotions and learning how to deal with them constructively.

Underlying positive and negative emotional responses to environmental issues are often transcendental values. In particular, transcendental values related to broad issues of justice, ethics, fairness and responsibility tend to emerge in response to conflict points and there is often a distributive dimension concerning who is affected and in what way, with the poor and powerless potentially not being heard and taken

into account (O'Neill et al., 2008). Catalyst points can also bring strongly held contextual values to the fore. For example, in response to the proposed public forest estate privatisation in England, 2011, publics identified particular woodlands that held specific meanings (often based on emotional attachment) for them and were valued as special places, such as the woods where they had climbed trees, played hide and seek, and built dens as children (Kenter et al., 2015).

By recognising and making explicit transcendental, societal and communal values while simultaneously addressing obstacles associated with power dynamics through well-designed deliberation, we can bring more understanding to what we share and what differentiates and divides us (e.g. Ranger et al., 2016), and it may be possible to arrive at a more widely accepted consensus or compromise (e.g. Orchard-Webb et al., 2016). As discussed above, deliberative approaches may also allow shifts from an individual to a societal stance of an issue, which can help identify common ground and reduce the polarisation of views that often characterises conflict situations. Irvine et al. (2016) discuss the potential of deliberative valuations as new democratic spaces and Kenter (2016b) adds that such valuations can function as boundary objects between researchers, stakeholders and decision makers. Ranger et al. (2016); Edwards et al. (2016); Kenter (2016c) and Orchard-Webb et al. (2016), all in this issue, demonstrate examples of this in practice in different marine and terrestrial contexts, where environmental managers or decision makers are directly involved in valuation and evaluation processes, enabling more effective translation of values into policy and practice. From this perspective, the aim of integrating deliberation into valuation is not just more robust value elicitation, but to provide more effective opportunities for diverse voices to be recognised in decisions, and to build bridges between potentially conflicting perspectives and interests in the process of shared value formation.

Social media are increasingly being used in relation to conflict and catalyst points, providing opportunities to mobilise and raise the profile of any conflict as well as coordinate activities of diverse groups of people across wide geographical areas. In the public forest estate privatisation example, the use of social media was critical in raising awareness about the proposed 'sell off' and galvanising protest that led to the government cancelling the public consultation (Kenter et al., 2015). The role of social media in catalyst and conflict situations is likely to increase, and it could potentially be utilised to engage a wider group of publics and stakeholders in debates around shared values, or as a vector for deliberative valuations.

2.3. Shared values and cultural ecosystem services

While shared values approaches are not limited to cultural ecosystem services, these services raise particular axiological and ontological issues that favour approaches involving deliberative and non-monetary valuation. Many aspects of cultural ecosystem services resist classification as a 'service' or 'benefit' because they can be intangible, experiential, identity-based or idiosyncratic. While others have raised these points (Chan et al., 2012b, 2016; Church et al., 2014; Daniel et al., 2012; Kenter et al., 2011; Milcu et al., 2013; Pleasant et al., 2014), Cooper et al. (2016) develop these arguments specifically in relation to spiritual and aesthetic values of ecosystems, finding that such values are often intersubjective and non-consequentialist, and reflect a two-way relationship between people and nature. While they benefit human well-being, spiritual and aesthetic values of ecosystems should not primarily be classified as 'services' or 'benefits'. Indeed, the primary value direction may be from humans to the rest of nature ('ecosystems') as duties owed. These arise from the very different conceptions of nature in aesthetic and spiritual discourses to that of ecosystems delivering services.

Cooper and colleagues argue that aesthetic judgements of value have been distinguished from personal tastes and pleasures since the Enlightenment. Aesthetic value is tied to the actual objects and their

compositional relationships and not in the happenstance of how much pleasure an observer receives on a particular day. Brady (2003) points out that aesthetic judgements of nature are intersubjective, established through the identification of aesthetic qualities and agreements that emerge through social processes or, for example, meeting the test of time. These value judgements can motivate a moral responsibility to maintain the beauty of specific places and the wider world, 'aesthetic preservationism', expressed in protective designations such as National Parks.

Many spiritual discourses about nature also resist talk of consequentialist benefits and economic analysis. These discourses counter assertions that the world has been successfully disenchanting by the commodification of nature. For example, in a study in this issue on the values associated with marine sites under consideration as potential marine protected areas (MPAs) by Kenter et al. (2016b), divers and anglers portrayed profound experiences of beauty, fascination, magic, and connectedness that provided a deep layer of meaning to the places they visited that would have been invisible if the study had only focused on monetary outcomes. For example, one diver noted, "I ticked all of these [values] and more, I added religious which is strange really because I am an atheist. I was in one place and visibility opened up and it was like a cathedral, with jewel anemones lighting up everywhere. I felt like I was in the presence of God, if there is such a thing. I was crying when I came out of the water".

Considering the importance of shared values for cultural ecosystem services more broadly, Fish et al. (2016a) in their novel cultural services framework highlight the important role that shared cultural values play in terms of influencing how spaces are perceived, what practices are undertaken in those spaces, and how spaces and practices interact in shaping identities, forming capabilities and generating experiences. The authors emphasise that these cultural values and interactions are not abstract but are expressed as life *in situ*. Understanding cultural services thus means understanding peoples' modalities of living that form and reflect the values and histories that people share, the places they inhabit and their symbolic and material practices. Importantly, shared cultural values are thus not wholly intangible as they are directly conveyed in material culture (Satterfield et al., 2013; Fish et al., 2016a). While it has previously been (rightly) argued that monetary valuations are challenged by intangible cultural values, in contrast Kenter (2016c) and Fish et al. (2016b) note that monetary valuation techniques such as choice experiments, deliberative or not, on their own are typically too abstract to adequately recognise cultural materialities. Fish et al. (2016a; 2016b) thus emphasise the need for interpretive and interpretive-deliberative approaches to investigate these modalities; examples in this issue include storytelling (Kenter et al., 2016b; Orchard-Webb et al., 2016), arts-led dialogue (Edwards et al., 2016), ethnographic video interviews feeding into deliberative workshops (Ranger et al., 2016), and participatory mapping (Kenter, 2016c; Fish et al., 2016b).

However, these different types of non-monetary valuation methods have different ontological, axiological and epistemological assumptions, and thus the method chosen will influence how and which values are conveyed, beckoning the need for comparisons between valuations and whether and how those differences might affect decisions informed by those valuations. Cooper et al. (2016) note how some faith communities incorporate shared values into their own decision-making thus providing models that could be adapted for use in environmental decision-making.

2.4. Valuation and transcendental values

The role of transcendental values is an important but understudied area of research in relation to monetary and non-monetary valuation of ecosystem services. Raymond and Kenter (2016) showed that transcendental values directly influence WTP and behavioural intentions, as well as indirectly via worldviews, beliefs, norms and environmental

concerns. Case studies across this Special Issue (Kenter et al., 2016b; Kenter, 2016c; Orchard-Webb et al., 2016; Raymond and Kenter, 2016); demonstrated how different psychometric approaches (including scales presented in survey instruments and a form of ‘participatory psychometrics’ adapted for use in a group setting), and deliberative and qualitative approaches such as storytelling were harnessed and in some cases integrated to help elicit and understand transcendental values in relation to ecosystem services.

Beyond this issue, there has been very little research demonstrating and investigating the role of transcendental values in ecosystem service valuation, and more broadly environmental management and decision-making, with few links between the environmental psychology and ecosystem services literature (Hicks et al., 2015; Raymond and Kenter, 2016), though there has been more attention to transcendental values in conservation research (Dietsch et al., 2016; Manfredo et al., 2016). More research is needed to better understand the effects of transcendental values on contextual values, value indicators (e.g. WTP) and behaviour, and the role of transcendental values in deliberation. This is likely to involve integrating elements of different psychological theories such as the Value Belief Norm theory, the Theory of Planned Behaviour and the Value Change Model (Raymond and Brown, 2011; Kenter et al., 2016a; Everard et al., 2016, and considering the interactions between individual and group psychological processes and the social-ecological context in which these processes are situated, e.g. through multi-level models that concurrently examine the interactions among individual and group psychological processes and the environmental context (Manfredo et al., 2014).

However, psychological approaches have focused on subsets of transcendental values (primarily biospheric, altruistic and egoistic values), leaving out other transcendental values pertinent to ecosystem management, in particular those that are procedurally important, e.g. around responsibility, fairness, justice and participation. Such process-related values are likely to impact on how people perceive and frame ecosystem service valuation (O’Neill, 2007) and are particularly important when considering issues around intergenerational equity and regard for non-human species (Irvine et al., 2016). As will be discussed in more detail in Section 2.6.1, deliberative democratic valuations can address these process values explicitly (Kenter, 2017; Orchard-Webb et al., 2016), but as of yet their role in deliberation and valuation is poorly understood. Conversely, deliberative valuation processes also provide opportunities for exploring interactions between transcendental and contextual values of individuals and the group, and the psychological processes responsible for changes in values.

The work on transcendental values in this issue ultimately highlights that ecosystem managers cannot just focus policy instruments on monetary drivers of change (Raymond and Kenter, 2016). Any change of behaviour wrought by a scheme will be short term unless policy instruments target the underlying antecedents of that behaviour (Cromton, 2010). Ultimately, broader shifts in environmental attitudes and behaviour have been the result of shifts in transcendental values at the societal and cultural level (Everard et al., 2016). Changes in contextual values and behaviour, resulting from activation of particular transcendental values through short term interventions such as one-off deliberative exercises, are not likely to endure with individuals unless these are reflected in their social environment through social learning processes (Bardi and Goodwin, 2011; Kenter et al., 2016a). However, changes in contextual values and behaviour in relation to the environment can also take place through a variety of other ways than through changes in transcendental values, such as through changes in perceived benefits and costs, perceived behavioural control and symbolic and affective motivations, in turn interacting with broader cultural, geographic and contextual factors (Steg and Vlek, 2009; Dietsch et al., 2016). This highlights the need for research taking an integrated perspective on environmental motivation, value and behaviour formation and change, accounting for the direct and indirect effects of transcendental values and the role of affective and hedonic motivations

and contextual factors, as well as how these play out in interactions between individuals and group. In this way, environmental policies can be targeted at multiple motivations and at different scales (individuals, social groups and communities, societies as a whole) to be effective.

2.5. The process and outcomes of deliberation

As noted above, most papers in this issue have illustrated that the ethical, moral and justice dimensions of many environmental issues necessitate approaches that allow for the recognition and elicitation of shared, plural and cultural values (Cooper et al., 2016; Edwards et al., 2016; Everard et al., 2016; Irvine et al., 2016; Kenter, 2016a, 2016b; Kenter et al., 2016b; Orchard-Webb et al., 2016; Raymond and Kenter, 2016; Ranger et al., 2016). Deliberation thus becomes critical for many environmental questions, to allow for discussion and debate about fairness, equity and justice issues concerning shared, plural and cultural values, to recognise that some values cannot be traded off and that valuations cannot be abstracted from decision-making contexts, and to provide space for articulation of complex, subtle and implicit values and value formation more broadly.

Kenter et al. (2016a) describe that a deliberative process can include the following elements:

1. the search for, acquisition of, and social exchange of information, gaining knowledge (by learning about the information acquired), and the expression and exchange of transcendental values and beliefs, to form reasoned opinions;
2. the expression of reasoned opinions (rather than exerting power or coercion), as part of dialogic and civil engagement between participants, respecting different views held by participants, being able to openly express disagreement, providing equal opportunity for all participants to engage in deliberation, and providing opportunities for participants to evaluate and re-evaluate their positions;
3. identification and critical evaluation of options or ‘solutions’ that might address a problem, reflecting on potential consequences and trade-offs associated with different options; and
4. integration of insights from the deliberative process to establish contextual values around different options, and determining a preferred option, which is well informed and reasoned.

As a democratic ideal, deliberation is a reflexive process in which participants not only discuss information (thus far the main focus of deliberative monetary valuation [DMV] approaches; Bunse et al., 2015), but also set the terms of the discussion, debate how questions should be framed and what types of values should be considered (Orchard-Webb et al., 2016). They can discuss how values should be weighted and what rights and duties to take into account, including issues surrounding long-term sustainability (Farber et al., 2002). Participants can also discuss and reflect upon how the outcome of their deliberations should be used.

Kenter et al., (2016a) argue that the process of value formation in deliberation is intrinsically a social learning process, which they define as a change in understanding that goes beyond the individual to become situated within wider social units or communities of practice through social interactions between actors within social networks (after Reed et al., 2010). It is this social mediation of learning that explains why some deliberative processes achieve their goals while others fail, for example if the power dynamics of the social context are not effectively facilitated, leading to a biasing of outcomes towards the positions of dominant individuals or groups. The Deliberative Value Formation model identifies key factors that influence potential outcomes of deliberation (Fig. 2) and conceptualises the social process as feeding into a translation of transcendental values to a specific context.

However, indicators need to be identified or developed for different stages of this process, and more comparative research is needed to consider how different types of deliberative interventions affect these

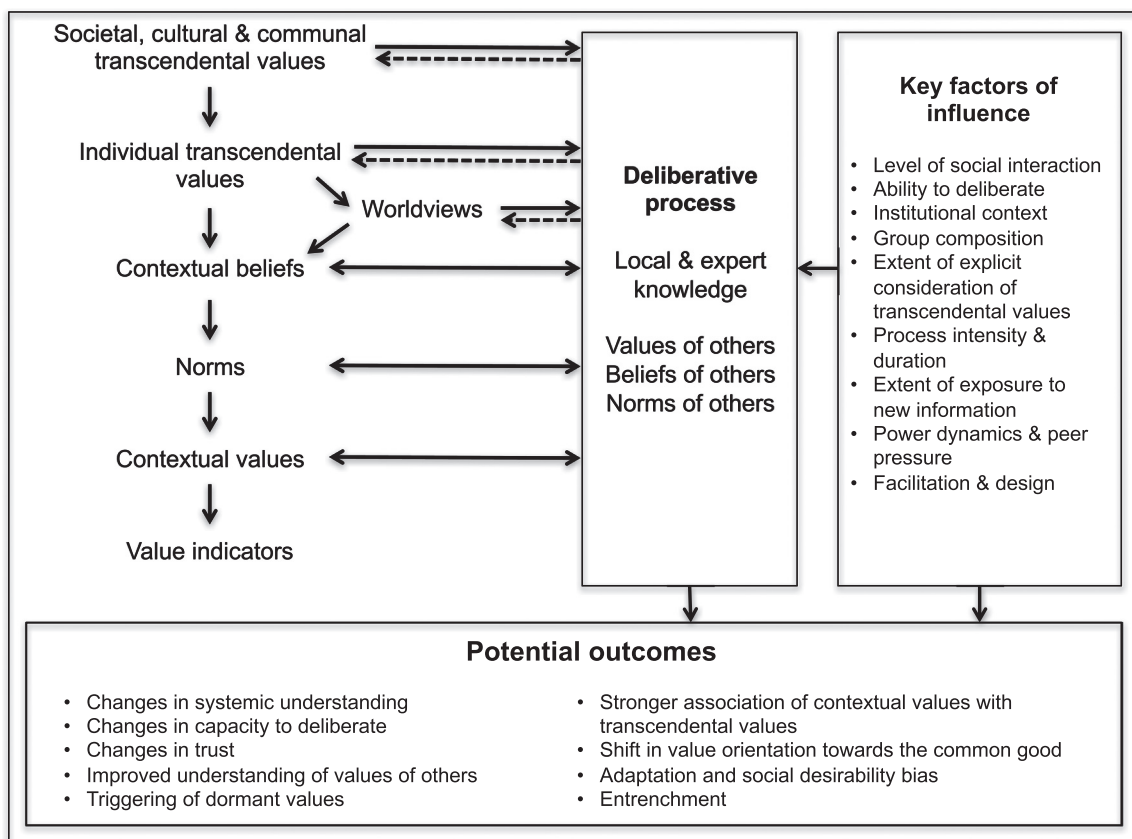


Fig. 2. The Deliberative Value Formation (DVF) model (Source: Kenter et al., 2016a), proving a theoretical template of how an individual forms contextual values and indicators through deliberation with others, the key factors that influence this process and its potential outcomes. Arrows indicate the direction of influence. Worldviews and transcendental values, while they influence the deliberative process, are assumed to be relatively enduring and are only likely to change as a result of long-term or repeated deliberative processes (dashed arrows).

processes. For example, in the study by Kenter (2016c) deliberation helped participants to better understand the wider role of different environmental components in the social-ecological system (e.g. the role of wetlands vs woodlands), while it also brought out competing social demands for resources such as education and healthcare, which reduced monetary values for ecosystem services overall but increased the portion assigned to conserving biodiversity. Kenter et al. (2016b) found that deliberating on narratives brought out the deeper meanings, identities and experiences associated with values, which led to convergence between monetary values for marine conservation and non-monetary well-being indicators. However, there are few other studies that have considered specific effects of these kind of interventions both in terms of deliberative outcomes (e.g. changes in trust between participants, changes in capacity to deliberate) and value outcomes (e.g. changes in WTP). Questions can also be raised around the relation between value formation and value changes, both at the individual level and in groups in terms of convergence or divergence: in what form do values exist before they are expressed in a valuation process, and how do different features of the process, such as the key factors identified by Kenter et al. (2016a; Fig. 2) lead to different outcomes? Fig. 3 depicts possible ways in which values may be changed or formed, and in a social process converge or diverge: they are preformed and may or may not be changed through expression/deliberation (Fig. 3a); they are unformed or poorly formed as ‘proto-values’, and formed in the process of expression (b); they are changed or formed and also converged through the process (c or d); they are preconverged and changed (e) or exist as shared proto-values and formed through the process (f); the process changes preformed values leading to value divergence (g); or proto-values are formed but also diverged through the process (h).

While changes in contextual values are commonly reported after

deliberation, Raymond and Kenter (2016), Kenter (2016c) and Kenter et al. (2016b) provide some of the first empirical evidence that short-term deliberative processes can lead to more fundamental changes in norms and transcendental values. Whether or not these changes in values are transient, when asked in the Kenter et al. (2016b) study, participants expressed a clear preference for values they expressed *after deliberation*, i.e. reflecting shifts in transcendental values, to be used in decision-making. This is consistent with theories of reasoned action and planned behaviour (Ajzen and Fishbein, 1980), the model of responsible environmental behaviour (Hines et al., 1986–87; Hungerford and Volk, 1990; Sia et al., 1985–86) and Value-Belief-Norm theory (Stern et al., 1999; Stern, 2000), where changes in personal and social norms inform behavioural intentions.

By integrating deliberation into a decision-making process (e.g. for policy development), these behavioural intentions may then be reflected in actual decisions resulting in the creation of preventative measures or incentives to facilitate the intended behaviours formed by those involved in the decision-making process. Following this approach, it may therefore be possible to design interventions that affect changes in communal values, drawing on an understanding of social networks, concepts of homophily and the capacity for knowledge brokers and boundary organisations to create bridges between heterophilous social groups. So far there has been little comparative investigation between deliberative ecosystem service valuations and these other kinds of institutional deliberations.

Over longer time horizons, Everard et al. (2016) suggest that social learning processes can lead to a socialisation of shifts in values at the scale of broader social units, communities of practice or societies. They argue that society evolves by expansion of the ‘ethical envelope’, which is progressively cemented into societal and cultural values, norms and

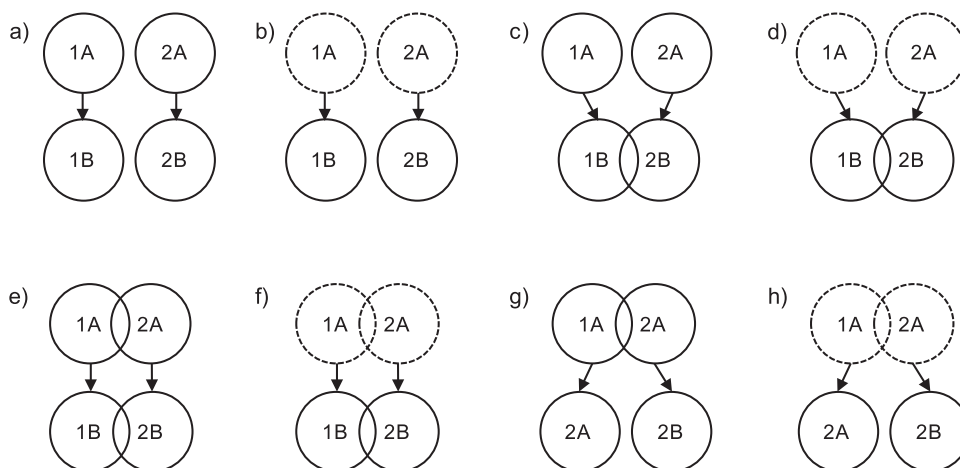


Fig. 3. Ways in which deliberation can impact on values in terms of value formation, change, convergence (e.g. through collective learning) and divergence (e.g. through loss of trust between actors). In diagram a, values of individuals 1 and 2 are changed as a result of deliberation but there is no value convergence or divergence between individuals. In b, values are yet unformed or poorly formed (‘proto-values’) and are formed through deliberation, but again without con-/divergence. In c and d, deliberation results in not just value change or formation but also convergence. In e pre-converged values are collectively changed through deliberation. In f, there are some shared but poorly formed values, and deliberation helps to form them. In g and h, deliberation leads to divergence.

institutions when social learning leads to ‘rippling out’, affecting the development of constraining levers including regulation, modification of markets, a range of statutory and near-statutory protocols and evolving bodies of law.

2.6. Deliberative monetary valuation

DMV can be seen as a range of approaches distributed on a spectrum between two archetypes: *Deliberated Preferences* and *Deliberative Democratic Monetary Valuation* (DDMV) (Kenter, 2017; Table 3). The former adapts stated preferences methods to include information-focused deliberation to enhance individual preferences, dealing with unfamiliarity with complex goods such as ecosystem services. In contrast, the latter applies a conception of deliberation as a process to enable value pluralism, better integrate transcendental values, and focus on the public rather than individual good. Deliberated Preferences approaches conventionally elicit individual WTP, while DDMV elicits monetary values at the societal scale (social WTP), or fair prices at the individual scale. This issue presents two Deliberated Preferences case studies (a choice experiment by Kenter, 2016c and a contingent valuation study by Kenter et al., 2016c), both involving a multi-stage DMV where the valuation moved from non-deliberated to deliberated individual preferences, increasingly moving closer to a DDMV format, where participants ultimately voted on fair prices. A third case study (Orchard-Webb et al., 2016) was fully implemented through DDMV, establishing social WTP through negotiation by a group of stakeholders.

2.6.1. Deliberated preferences

Debate and empirical research on the motivations behind WTP in stated preference approaches has suggested that WTP is often not reflective of exchange values, but rather should be seen as a charitable contribution (Kahneman and Ritov, 1994; Ryan and Spash, 2011; Spash, 2006). These contributions may lead to higher bids than consequentialist payments (Spash, 2006). The two Deliberated Preferences studies in this issue (Kenter, 2016c; Kenter et al., 2016b) suggest that a shift from individual values to shared values, in these cases expressed as group-deliberated fair prices, not so much rejects the ‘purchase model’ in favour of a ‘contribution model’ (Kahneman et al., 1999), but rather means a shift to what Dietz et al. (2009) calls a ‘public policy model’. Within this broader societal framing, participants consider benefits and costs alongside competing social priorities, policy effectiveness, and the process and justice related concerns and values

Table 3
Deliberated Preferences vs Deliberative Democratic Monetary Valuation (DDMV)
(Source: Kenter, 2017).

	<i>Deliberated Preferences</i>	<i>DDMV</i>
Conception of deliberation	Informing preferences through group discussion	Deliberating on plural values to consider public good
Issues the approach addresses	Familiarity	Complexity and uncertainty
	Weak value plurality	Strong value plurality Value aggregation
Means of establishing value to society	Aggregation of individual utility	Deliberation and negotiation
Value concept focus	Contextual and indicators	Transcendental, contextual and indicators
Value provider	Individual in group setting	Group
Rationality assumptions	Instrumental	Communicative
Conception of representativeness	Statistical	Statistical or political
Scale of value and value indicators used	Value to individual (individual WTP or fair price)	Value to individual (fair price); Value to society (deliberated social WTP)

WTP: Willingness to pay

highlighted previously in Sections 2.2, 2.4 and 2.5, such as fairness, equity and responsibility.

The two DMV studies by Kenter and colleagues demonstrate that this shift can generate significantly different outcomes in terms of monetary values, which in both cases decreased substantially compared to non-deliberated individual WTP. Based on evidence from economic models, psychometric analysis, participant discussion and feedback, it is apparent that these shared values are more informed, considered, confident and reflective of participants’ deeper-held, transcendental values than individual non-deliberated values. In the Kenter et al. (2016b) study, which focuses on cultural services around potential

marine protected areas, fair prices converged with non-monetary subjective well-being values, whilst individual WTP did not. Participants formed values in relation to specific habitats, where there had previously only been values for marine sites in general. Participants felt more confident in the deliberated values, which they also felt were most suitable for informing policy-making. The study concludes that these findings imply that deliberated shared values were a better impression of welfare impacts than conventional individual WTP, and suggests the possibility of harnessing group deliberation and fair prices to reduce hypothetical bias, which remains an important unresolved issue in stated preferences research.

Another debate that is unresolved is how value indicators that move away from neoclassical value assumptions – deliberated WTP and particularly fair prices – should be aggregated and used in appraisal. For example, the legitimacy of Deliberated Preferences might be questioned in terms of their representativeness, based on the evidence that deliberation changes values, and valuation workshop participants thus become unrepresentative of the population they are supposed to represent. However, it is important to realise that *ex ante* valuations are always a limited impression or projection of what *ex post* welfare impacts will turn out to be. As such, the question should be rephrased as whether participants' values post-deliberation are more or less reflective of actual welfare impacts of a policy or project after it has come about. This is, of course, impossible to answer *ex ante*, but improvements in participants' confidence, the forming of more specific values, better reflection of transcendental values, and convergence of monetary and subjective well-being values suggest that this may well be the case.

Legitimacy concerns might also reflect viewing deliberation as a type of manipulation, particularly where it aims to 'moralise' (Lo and Spash, 2013) preferences. However, it can also be argued that our preferences are manipulated on a daily basis (e.g. through advertising) and that deliberation can provide a transparent route to establishing values that is preferable to feigned notions of consumer sovereignty (Norton et al., 1998; Farber et al., 2002; O'Hara and Stagl, 2002). In this issue, the Deliberative Value Formation model (Kenter et al., 2016a) provides a theoretical and methodological framework for the design of transparent, effective and inclusive deliberative valuations, noting that regardless of whether deliberative valuation focuses on better informing preferences or on better recognising plural and transcendental values to consider the public good, there will be similar key issues to consider, e.g. relating to participants capacity to deliberate, power dynamics and group composition (Fig. 2).

2.6.2. Deliberative Democratic Monetary Valuation

Democratic deficits in environmental policy persist despite growing beliefs that democratisation of valuation can secure more sustainable and equitable decision-making (Norton et al., 1998; Farber et al., 2002; Fish et al., 2011b; Lo and Spash, 2013; Parks and Gowdy, 2013; Zografos and Howarth, 2010; Kenter et al., 2015; Kenter, 2016b; Irvine et al., 2016; Orchard-Webb et al., 2016). Also, focus on the democratic content of ecosystem service valuation methodologies has increased in the context of broader demands for improved democratic legitimacy in mechanisms for multiple and diverse stakeholder engagement in environmental planning and ecosystem management (Pieraccini, 2015a, 2015b; Ranger et al., 2016). DDMV embraces the essentially political nature of valuation by creating an inclusive platform and mechanism for inter-subjective group deliberation of shared communal, cultural and societal values. DDMV seeks to negotiate fair terms for social co-operation through group deliberation on plural values and establish social WTP through negotiation, rather than aggregation of individual values (Kenter, 2017). The democratic content in DDMV is secured by a combination of procedural fairness at each stage of the process; creating inclusive platforms for expression of transcendental and contextual values by 'free and equal citizens'; and creating the conditions for communicative rationality via social interaction and

learning resulting from argument, reason giving, listening and respecting other views (Lo and Spash, 2013; Kenter, 2017).

In a rare empirical examination of DDMV, Orchard-Webb et al. (2016) illustrate how a variety of deliberative, interpretive and analytical techniques can be combined in a stakeholder-led process of developing and evaluating policy, establishing deliberated group values for different policy options, and securing shared learning between stakeholders, in terms of both the motivation for values attributed to their local environment and the democratic outcome value of the process of deliberation and dialogue. DDMV was shown to help address DMV methodological challenges regarding inclusivity, participation, conditions for reasoned debate, and efforts to secure mutuality and reciprocity. However, the empirical study also recognised its limitations in terms of evidence of inequalities of power within the process design and group discussions, requiring development of further understanding and case studies regarding the identification and mitigation of hidden exclusions within design, recruitment, facilitation and participation. In particular, there is a need to pursue empirical work to develop and test a range of DDMV protocols that are defensible in terms of deliberative democracy theory. Just as Habermas (1984) developed a dynamic critical reflexive test for the application of communicative rationality, there is a need to employ protocols that act as a check on imbalances and technologies of power in the operationalizing of DDMV.

For example, one such protocol might raise questions around the conditions needed for more inclusive or expansive interpretations of deliberation (beyond formal reasoned argument) that better reflect the wide range of approaches citizens feel most comfortable using to communicate and persuade others of their values or goals (see Young, 1996). Other protocols might relate to enabling community co-design; just representation and group composition; and the balance of techniques needed for expressing different local knowledges. Using deliberative democratic theory to inform these protocols will help address concerns regarding the democratic legitimacy of findings, as well as helping secure more sustainable and just decision-making in environmental policy and planning.

Another key question is how DDMV may be able to represent the interests of those who are unable to represent themselves at the table, including non-humans and future generations. Stated and Deliberated Preferences valuation approaches can elicit bequest and existence values, but these are ultimately still grounded in assumptions of self-regarding utility. In theory, DDMV is inclusive of plural values without such ethical restrictions, but there is currently no evidence that DDMV can genuinely improve representation of plural values, including intrinsic values, compared to Deliberated Preferences approaches.

2.7. Value aggregation, meta-values and 'rules of the game'

The formidable challenges of collective decision making have been well-recognised since at least Plato (Christiano, 2015). Whenever proposals affect multiple individuals with heterogeneous knowledge, incentives and preferences, those preferences must somehow be elicited and aggregated to arrive at a collective decision. Arrow (1950) formalised the impossibility of aggregating individual rankings while satisfying certain basic desirable criteria (e.g. non-dictatorship). Valuation methods often go beyond rankings and seek to elicit the intensity of preferences or values more broadly, but aggregating them remains challenging. DDMV studies such as Orchard-Webb et al. (2016) can 'aggregate by mutual consent' (Howarth and Wilson, 2006), while cost-benefit analysis (CBA) usually applies the Kaldor-Hicks criterion: maximise the net monetary value of willingness to pay/accept across all individuals, regardless of rights, or distribution. Neither approach is unproblematic. While deliberation can achieve genuine reductions in disagreement, 'mutual consent' can also reflect inequalities of knowledge, capability and power (Kenter et al., 2016a; Orchard-Webb et al. 2016; Lo, 2013), and deliberation becomes more

challenging (though not necessarily impossible) as the number of affected people increases. CBA can be conducted at large scales, and as an analytical exercise can claim to reduce inequalities of power between stakeholders. However, it is a product of power relations at higher levels (e.g. who determines the options to be valued or what discount rates are used?), and Kaldor-Hicks (or common adjustments thereto) appears to violate common intuitions about how aggregation should occur (e.g. by assuming that winners compensate losers, such that policies are win–wins and the marginal utility of money is therefore irrelevant; Hockley, 2014).

People's meta-values for how aggregation should occur, what might be called the 'rules of the game', are by definition transcendental shared values: they should transcend a specific context (Kenter et al., 2015). However, despite the long history of thought in this area, empirical evidence on people's values and preferences for different aggregation approaches remains rare. We know little about how they are affected by context or culture and how much they vary between individuals (though some evidence is provided by stylised experiments, e.g. Griffin et al., 2012). We also need to understand more about how people's transcendental values around and preferences for aggregation rules compare to those used by different decision-making institutions, and how important any differences are in terms of the real-world outcomes that result. We hypothesise differences will be greater the more issues are complex and contested, or involve values that are difficult to monetise. Of course, such transcendental values will be challenging to elicit, and are unlikely to be independent of the methods used. Deliberation with others is also likely to affect what meta-values and preferences around aggregation people express, which leads to the theoretical need for agreement on the terms of deliberation. This can in theory lead to an infinite regress, though in practice could be achieved on the basis of established participatory principles (see Kenter et al., 2016a). The question of how we should aggregate individuals' values has received vastly less attention than procedures for their elicitation. Thus, while the challenges noted here are formidable, we would expect considerable returns to careful empirical work on these meta-values.

2.8. Integration of valuation methods

The empirical studies detailed in this Special Issue illustrate how different types of methods (deliberative, analytical, interpretive) can be integrated to better incorporate complexity into valuation, work with plural values in contested contexts and help make implicit and subtle values explicit, taking advantage of the specific strengths of different methods. Fig. 4 gives an impression of our view of the relative suitability of key methods and methodological approaches in these terms.¹ DMV (Kenter, 2016c; Kenter et al., 2016b; Orchard-Webb et al., 2016) and multi-criteria analysis (Ranger et al., 2016) provide a pragmatic analytical backbone to value formation and elicitation exercises for most studies, establishing value indicators for different environmental benefits and policy options. Visioning and participatory systems modelling (Kenter, 2016c; Orchard-Webb et al., 2016) provide an effective means to orientate towards joint analysis, consider complex linkages and consider future uncertainties. Participatory mapping (Kenter, 2016c; Fish et al., 2016) allows a spatial consideration of often specific and localised values that elude the more abstract monetary valuation. Discussion of different elements of well-being and sense of place in relation to transcendental values using a values compass (Kenter et al., 2016b; Orchard-Webb et al., 2016), large-scale well-being indicators (Bryce et al., 2016) or ethnographic video interviews

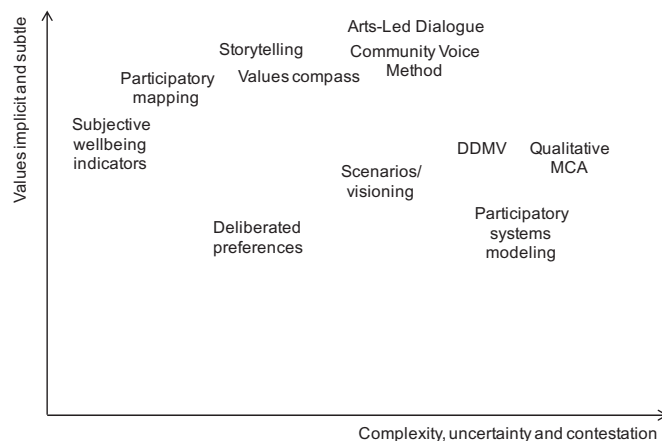


Fig. 4. Methods used in empirical studies in this issue of *Ecosystem Services* and their relative suitability for application in complex, uncertain and contested contexts and for making implicit and subtle values explicit. DDMV: Deliberative Democratic Monetary Valuation. MCA: Multi-Criteria Analysis.

following the Community Voice Methodology (Ranger et al., 2016) allows for bringing together values and subjective experience. This can be supported by storytelling (Kenter et al., 2016b) and arts-based interventions (Edwards et al., 2016; Fish et al., 2016), which prove a useful method to understand experiences that are otherwise difficult to appreciate, allowing art and stories to express the way a place can make someone feel (Chan et al., 2012a). Bringing together narratives and deliberation allows people to better understand what is worthwhile and meaningful to both themselves and others, and to gain a sense of empowerment from their voice being heard.

Different monetary and non-monetary methods thus have different strengths in terms of eliciting particular kinds of values. However, Kenter (2016b) warns against a methodological 'dividing the turf', where conventional monetary valuation and CBA deal with provisioning, regulating services and recreation, and non-monetary approaches value cultural ecosystem services; or 'parallel tracks' where distinct monetary and 'sociocultural valuation' evidence bases are separately built up. The paper argues that this creates an artificial divide between monetary and non-monetary methods, equates different non-monetary methods that are widely diverse, does not deal with institutional and axiological critiques leveraged against monetary valuation or encourage us to be critical of each others' assumptions more broadly, and fails to lead to genuine inter- and transdisciplinary. Splitting off non-monetary/sociocultural/cultural service values is in danger of not just leading to separate value domains but also separate knowledge domains. Without clear integration mechanisms, and in combination with a 'Pontius Pilates' perspective on knowledge transfer, researchers stay clear of weighing different evidences, passing the burden on to decision makers. This undermines the effectiveness of valuation evidence, as addressing the major social-ecological sustainability challenges of our time requires moving beyond a naive technical-rational model of knowledge utilisation to enable transdisciplinary integration of knowledge (Haines-Young and Potschin, 2014; Rivera-Ferre et al., 2013; Edwards et al., 2016; Kenter, 2016b).

While the the case studies in this issue have not resolved these issues perfectly, they provide examples of working closely with decision makers in integrating different knowledges and values through deliberation and of using deliberative models for weighing up different dimensions of value based on interdisciplinary conceptual frameworks. However, a better understanding is needed of how different elements of shared values approaches should be integrated to suit different contexts and objectives, and how different combinations of methods affect procedural and substantive outcomes. Such questions can also be linked to those concerning the temporal effects of deliberation as well as the role of such methods in processes of conflict and decision

¹ We do not suggest that these two dimensions should be the sole criteria by which to select which methods to use or combine for assessing shared values. Methods may, for example, also be more or less suitable according to their resource and time demands, the types of values they can elicit, and in relation to decision making their appropriateness for different stages of the policy cycle (see Kenter et al., 2014a and Kenter, 2016a for an overview).

making. Integrating methods will be a key part of elucidating the process of deliberation and further developing and testing the Deliberative Value Formation model. For example, integrated methods are necessary to elucidate how different types of values are expressed and how these are adapted or developed through deliberation compared to instrumental analytical approaches (Raymond et al., 2014). Such methods integration and comparison may allow important questions to be answered such as how and to what extent different analytical, interpretive and deliberative valuation methods privilege or undermine the values of different social or cultural groups, e.g. in terms of social class, education, and non-indigenous vs indigenous groups. A key challenge is to define sets of methods that situate local or marginalised values and knowledges in such a way that they can be fully articulated, but which can also be taken forward as evidence for broader decision-making processes.

3. Conclusions

Shared, plural and cultural values of ecosystems constitute a diffuse and interdisciplinary field of research, covering an area that links questions around value ontology, elicitation and aggregation with questions of participation, ethics, and social justice. We have presented future directions for further research around a broad range of areas relating to shared values, with particular attention to deliberation as a means both for formation of shared values, and also to integrate different types of knowledge and values. Notably, contributions in this Special Issue develop a wide range of key themes that have been highlighted by IPBES as crucial in recognition of the plural nature of values (Box 1), such as the importance of culture and institutions, the relationality of values, and participatory means of integrating values in decisions. Box 1 also highlights a number of ways that the work in this issue can extend on and help operationalise the IPBES values framework and help address some of its current gaps, such as in relation to mechanisms for integration of plural values and in terms of the crucial understanding that values are often poorly formed, requiring a process of value formation, rather than just elicitation.

The conception of shared values as the values that we come to express and assign through our interactions with others raises fundamental questions on the nature of the contextual values that we express: whether we hold single or multiple sets of values, partially formed 'proto-values', or simply do not hold values and only form them through expression and interaction. This has implications for how we understand valuation and gives rise to the need for a different valuation language. For example, if contextual values are not held separately from processes of elicitation, valuation becomes a process of value formation and expression, rather than of capturing values.

Irrespective of whether values are held or formed through expression, the ethical, moral and justice dimensions of many environmental issues necessitate approaches that allow for the elicitation of shared, plural and cultural values, particularly in contexts that are complex or contested. While not limited to cultural ecosystem services, these issues come to the fore more often than not in relation to cultural aspects of ecosystems such as spiritual and aesthetic values. Here values are often expressed in ways that are intersubjective, evolve through social processes and reflect two-way relationships between people and nature, resisting talk of consequentialist benefits.

Catalyst and conflict points can play a key role in the emergence and articulation of values at a societal or community level that have not previously been outwardly or explicitly articulated. Catalyst and conflict points can be symbolic and are often linked to wider contested issues and meanings about who is involved in decision-making, whose voice counts and who receives the benefits or disbenefits of environmental change. By recognising transcendental societal and communal values (the deeper-held and overarching values held by society and communities), it becomes possible to make these values explicit and incorporate them in decision-making to better anticipate and manage conflicts.

An integrated mixed method approach is required to elicit the multiple dimensions of shared values and to translate transcendental values into contextual values and value indicators. Monetary valuation is limited to quantifying values. Other methods are needed to understand their meaning or content, and the communal, societal and transcendental values that underpin them. Psychometric, non-analytical and interpretive methods such as artistic methods or storytelling can reveal those shared values. They can be combined with analytical-deliberative methods (e.g. DMV and multi-criteria analysis) to provide a comprehensive valuation that can quantify values, understand their individual and shared meanings and significance, and better include ethical dimensions. More research is needed on how different method integrations generate different procedural and substantive outcomes, whether diverse approaches with sometimes conflicting theoretical assumptions in terms of epistemologies and value ontologies can be bridged, and where there are hidden issues of power and exclusion in terms of which methods are chosen and how they are implemented. Direct involvement of practitioners and decision-makers in a number of studies in this issue (Kenter, 2016c; Orchard-Webb et al., 2016; Ranger et al., 2016; Edwards et al., 2016) demonstrates how mixed method valuations integrated through deliberative processes can become a boundary object between research and decision makers. Investigation of how these new democratic spaces can function in terms of more effective translation of values into policy and practice is crucial for enabling the transformative potential of valuations.

Shared values resulting from deliberative, group-based valuation are different from individual values. Empirical evidence presented this issue (Kenter, 2016c; Kenter et al., 2016b) suggests that they are more informed, considered, confident and reflective of participants' deeper-held, transcendental values. Deliberated, group-based monetary values may be a better reflection of real welfare impacts than non-deliberated individual values, if derived through a carefully designed and managed process, and research is needed to further explore how, and the degree to which deliberation can enhance participants' ability to value the implications of counterfactual futures and reduce hypothetical bias.

As a socially-mediated learning process, deliberative value formation is influenced by a set of key factors such as timescale and depth of interactions, the diversity of perspectives brought by different participants to the deliberation, the quality of facilitation and process design, the management of power dynamics within the deliberation and the degree to which transcendental values are made explicit. While it is generally assumed that transcendental values do not change in the short term, empirical evidence from psychometric testing indicates that carefully designed, short-term deliberative processes can lead to changes in both contextual and transcendental value expression (Raymond and Kenter, 2016), though further research is needed to investigate whether and when these value changes are transient or lasting. Whether or not this is the case, if participants state clear preferences for values they expressed after deliberation (i.e. reflecting this shift in contextual and transcendental values) to be used in decision-making, this suggests that valuations that integrate deliberation have the capacity to draw on more salient knowledge that is perceived to be more legitimate, and less likely to be contested. It also highlights the importance of attending to transcendental values, which have thus far largely been ignored in both monetary and non-monetary valuation of ecosystem services.

However, deliberative valuation methods such as DMV raise important questions around the legitimacy of deliberation processes. From a conventional economic perspective, in Deliberated Preferences approaches these are likely to focus on issues such as representation and consumer sovereignty. In contrast, DDMV bases its legitimacy on deliberative democratic theory that posits ideals of communicative rationality, which are very difficult to fully achieve in practice. This is in particular because there is an intrinsic tension between on the one hand recognising participants' freedom to deliberate on their terms without external interference, and on the other hand the need for

Box 1. Shared values and values in IPBES

The conceptualisation and operationalisation of shared values in this issue can contribute to the understanding of values by IPBES (as discussed by Díaz et al., 2015), both by enrichment and exemplification in areas of existing overlaps, and by helping to address various unresolved issues. In terms of the first, IPBES recognises the importance of transcendental values as our principles and life goals, and as important determinants underlying our contextual values (cf. in this issue Raymond and Kenter, 2016). There is also an understanding of the importance of culturally specific socialisation in shaping these values, and the important role of formal and informal institutions in forming and expressing these values (cf. in this issue Everard et al., 2016). There is explicit recognition of the role of specific local knowledge (cf. in this issue Ranger et al., 2016), practices (cf. in this issue Fish et al., 2016a and Edwards et al., 2016), and places (cf. in this issue Fish et al., 2016b and Kenter, 2016c) in generating and validating values. There is emphasis on relational values as distinct from instrumental and intrinsic values (cf. in this issue Cooper et al., 2016; Bryce et al., 2016 and Fish et al., 2016a). There is much attention to inclusivity in terms of different languages and ways of expressing values and knowledge (cf. in this issue Orchard-Webb et al., 2016; Kenter et al., 2016b and Edwards et al., 2016). More broadly, IPBES emphasizes the importance of participation, and this issue has demonstrated a wide range of deliberative and participatory approaches throughout.

There are also some important ways through which the emerging theory and methods around shared values can expand IPBES value understandings. First, Díaz et al. (2015) give little attention to the process of value formation, with values implicitly described as ‘out there’ to be captured. In contrast, an important thread throughout this Special Issue is the understanding and empirical demonstration that values, particularly around complex and often contested goods such as ecosystems, are formed through processes of valuation, and thus that there is a need to clearly understand and conceptualise how such value formation processes take place (Kenter et al., 2016a; Irvine et al., 2016). Second, a shared values approach to valuation is explicit in its recognition not just of the need to consider plural knowledges and values, as is emphasised by IPBES, but also how these are integrated and relate to and can influence decision-making contexts. In particular, we argue that deliberative valuations have significant promise as integrative boundary objects (Kenter, 2016c) and new democratic spaces (Irvine et al., 2016), where transdisciplinary processes with direct involvement of decision-makers integrate multiple knowledges and plural values into policy formation and evaluation (with examples by Orchard-Webb et al., 2016; Ranger et al., 2016; Edwards et al., 2016; Kenter, 2016c). Finally, we highlight in this paper the need to consider people’s meta-values around how these processes should take place, and that understanding and negotiating meta-values can help inform how these new democratic spaces should be shaped and how conflicts between multiple evidence-bases and incommensurable dimensions of value should be resolved. Thus, shared values approaches can provide a rich contribution to key aspects of plural valuation as conceived of by IPBES, and help expand these conceptions and operationalise them through novel theory and methods.

enabling and equalising mechanisms through process design, capacity building exercises and active facilitation. DDMV, while promising in terms of creating conditions for inclusivity, value plurality, reasoned debate, mutuality and reciprocity, thus has key challenges in terms of identification and mitigation of hidden exclusions within design, recruitment, participation and facilitation.

Deliberation also opens up avenues to deliberate on meta-values, transcendental values around how to aggregate values. Within mainstream economics, difficulties associated with aggregating values, such as in CBA, have long been recognised, but have also been neglected (Hockley, 2014; Kenter et al., 2015; Parks and Gowdy, 2013). There is also little empirical evidence on what people think the ‘rules of the game’ should be in relation to aggregation. Deliberative avenues for aggregation by mutual consent have their own practical and theoretical challenges, with only few examples in practice especially at larger scales, providing an interesting avenue of exploration for future research.

In conclusion, we have presented 35 research questions to help give direction to future ecosystem services valuation research, and more broadly valuation in complex and contested contexts where plural, subtle and conflicting values come into play. Ultimately, the purpose of ecosystem service valuation is to ensure that we recognise the tremendous importance of ecosystems for human economies, societies and cultures. Crucially, valuations cannot be separated from these social, cultural and institutional contexts (O’Hara and Stagl, 2002; Vatn, 2009). In this sense any valuation is ‘social’, whether this is recognised by those conducting it or not. The discourse on shared, plural and cultural values and deliberative valuation presented here provides directions to help embed these social aspects in a more transparent and rigorous way. Shared values approaches are crucial in realising the transformative potential of valuation by enhancing democratic participation, integrating knowledge, generating social learning and providing deliberative platforms that directly engage policy makers and practitioners. Further study is needed to demonstrate a more extensive evidence base to mature these approaches, and develop valuation into a more pluralistic, comprehensive, legitimate

and effective way of safeguarding ecosystems and their services for the future.

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References

- Ajzen, I., Fishbein, M., 1980. *Understanding attitudes and predicting social behaviour*. Prentice-Hall, Eaglewood Cliffs, NJ.
- Alvarez Farizo, B., Hanley, N., 2006. Improving the process of valuing non-market benefits: combining citizens’ juries with choice modelling. *Land Econ.* 82, 465.
- Alvarez Farizo, B., Hanley, N., Barberán, R., Lázaro, A., 2007. Choice modeling at the market stall: individual versus collective interest in environmental valuation. *Ecol. Econ.* 60, 743–751. <http://dx.doi.org/10.1016/j.ecolecon.2006.01.009>.
- Arrow, K., 1950. A difficulty in the concept of social welfare. *J. Political Econ.* 58, 328–346.
- Bardi, A., Goodwin, R., 2011. The Dual Route to Value Change: Individual Processes and Cultural Moderators. *J. Cross-Cult. Psychol.* 42, 271–287. <http://dx.doi.org/10.1177/0022022110396916>.
- Bryce, R., Irvine, K., Church, A., Fish, R., Ranger, S., Kenter, J.O., 2016. Subjective well-being indicators for large-scale assessment of cultural ecosystem services. *Ecosyst. Serv.* 21, 258–269. <http://dx.doi.org/10.1016/j.ecoser.2016.07.015>.
- Buijs, A., Lawrence, L., 2013. Emotional conflicts in rational forestry: towards a research agenda for understanding emotions in environmental conflicts. *For. Policy Econ.* 33, 104–111.
- Bunse, L., Rendon, O., Luque, S., 2015. What can deliberative approaches bring to the monetary valuation of ecosystem services? A literature review. *Ecosyst. Serv.* 14, 88–97. <http://dx.doi.org/10.1016/j.ecoser.2015.05.004>.

- Burningham, K., 1995. Environmental values as discursive resources. In: Guerrier, Y. (Ed.), *Values and the Environment*. Wiley, Chichester.
- Chan, K.M.A., Guerry, A.D., Balvanera, P., Klain, S., Satterfield, T., Basurto, X., Bostrom, A., Chuenpagdee, R., Gould, R., Halpern, B.S., Hannahs, N., Levine, J., Norton, B., Ruckelshaus, M., Russell, R., Tam, J., Woodside, U., 2012a. Where are cultural and social in ecosystem services? A framework for constructive engagement. *Bioscience* 62, 744–756. <http://dx.doi.org/10.1525/bio.2012.62.8.7>.
- Chan, K.M.A., Satterfield, T., Goldstein, J., 2012b. Rethinking ecosystem services to better address and navigate cultural values. *Ecol. Econ.* 74, 8–18.
- Chan, K.M.A., Balvanera, P., Benessaiah, K., Chapman, M., Díaz, S., Gómez-Baggethun, E., Gould, R., Hannahs, N., Jax, K., Klain, S., Luck, G.W., Martín-López, B., Muraca, B., Norton, B., Ott, K., Pascual, U., Satterfield, T., Tadaki, M., Taggart, J., Turner, N., 2016. Opinion: why protect nature? Rethinking values and the environment. *Proc. Natl. Acad. Sci. USA* 113, 1462–1465. <http://dx.doi.org/10.1073/pnas.1525002113>.
- Christiano, T., 2015. Democracy. In: Zalta, E.N. (Ed.), *The Stanford Encyclopedia of Philosophy* (Spring 2015 Edition).
- Church, A., Fish, R., Haines-Young, R., Mourato, S., Tratalos, J., Stapleton, L., Willis, C., Coates, P., Gibbons, S., Leyshon, C., Potschin, M., Ravenscroft, N., Sanchis-Guarner, R., Winter, M., Kenter, J.O., 2014. UK National Ecosystem Assessment Follow-on. Work package report 5: Cultural ecosystem services and indicators. UNEP-WCMC, Cambridge.
- Cleary, S., Mooney, G., McIntyre, D., 2011. Claims on health care: a decision-making framework for equity, with application to treatment for HIV/AIDS in South Africa. *Health Policy* 113, 464–470. <http://dx.doi.org/10.1093/heapol/czq081>.
- Cooper, N., Brady, E., Bryce, R., Steen, H., 2016. Aesthetic and spiritual values of ecosystems: recognising the ontological and axiological plurality of cultural ecosystem 'services'. *Ecosyst. Serv.* 21, 218–229. <http://dx.doi.org/10.1016/j.ecoser.2016.07.014>.
- Cromton, T., 2010. Common Cause: the Case for Working with Our Cultural Values. WWF-UK, Godalming.
- Daniel, T.C., Muhar, A., Arnberger, A., Aznar, O., Boyd, J.W., Chan, K.M., Costanza, R., Elmqvist, T., Flint, C.G., Gobster, P.H., Grêt-Regamey, A., Lave, R., Muhar, S., Penker, M., Ribe, R.G., Schauppenlehner, T., Sikor, T., Soloviy, I., Spierenburg, M., Taczanowska, K., Tam, J., der Dunk, von, A., 2012. Contributions of cultural services to the ecosystem services agenda. *Proc. Natl. Acad. Sci.* 109, 8812–8819.
- Díaz, S., Demissew, S., Carabias, J., Joly, C., Lonsdale, M., Ash, N., Larigauderie, A., Adhikari, J.R., Arico, S., Báldi, A., Bartuska, A., Baste, I.A., Bilgin, A., Brondizio, E., Chan, K.M., Figueroa, V.E., Duraipapp, A., Fischer, M., Hill, R., Koetz, T., Leadley, P., Lyver, P., Mace, G.M., Martín-López, B., Okumura, M., Pacheco, D., Pascual, U., Pérez, E.S., Reyers, B., Roth, E., Saito, O., Scholes, R.J., Sharma, N., Tallis, H., Thaman, R., Watson, R., Yahara, T., Hamid, Z.A., Akosim, C., Al-Hafedh, Y., Allahverdiyev, R., Amankwah, E., Asah, S.T., Asfaw, Z., Bartus, G., Brooks, L.A., Caillaux, J., Dalle, G., Darmaedi, D., Driver, A., Erpul, G., Escobar-Eyzaguirre, P., Failler, P., Fouda, A.M.M., Fu, B., Gundimeda, H., Hashimoto, S., Homer, F., Lavorel, S., Lichtenstein, G., Mala, W.A., Mandivenyi, W., Matczak, P., Mbizvo, C., Mehrhadi, M., Metzger, J.P., Milkissa, J.B., Moller, H., Mooney, H.A., Mumbly, P., Nagendra, H., Neshover, C., Oteng-Yeboah, A.A., Pataki, G., Roué, M., Rubis, J., Schultz, M., Smith, P., Sumaila, R., Takeuchi, K., Thomas, S., Verma, M., Yeo-Chang, Y., Zlatanova, D., 2015. The IPBES Conceptual Framework – connecting nature and people. *Curr. Opin. Environ. Sustain.* 14, 1–16. <http://dx.doi.org/10.1016/j.cosust.2014.11.002>.
- Dietsch, A.M., Teel, T.L., Manfredi, M.J., 2016. Social values and biodiversity conservation in a dynamic world. *Conserv. Biol.* <http://dx.doi.org/10.1111/cobi.12742>.
- Dietz, T., Stern, P.C., Dan, A., 2009. How deliberation affects stated willingness to pay for mitigation of carbon dioxide emissions: an experiment. *Land Econ.* 85, 329–347. Economic and Social Research Council, 2000. Risky choices, soft disasters: environmental decision-making under uncertainty. Global Environmental Change Programme. ESRC. Swindon and University of Sussex, Brighton.
- Edwards, D., Collins, T., Goto, R., 2016. An arts-led dialogue to elicit shared, plural and cultural values of ecosystems. *Ecosyst. Serv.* 21, 319–328. <http://dx.doi.org/10.1016/j.ecoser.2016.09.018>.
- Everard, M., Reed, M.S., Kenter, J.O., 2016. The ripple effect: institutionalising pro-environmental values to shift societal norms and behaviours. *Ecosyst. Serv.* 21, 230–240. <http://dx.doi.org/10.1016/j.ecoser.2016.08.001>.
- Farber, S.C., Costanza, R., Wilson, M.A., 2002. Economic and ecological concepts for valuing ecosystem services. *Ecol. Econ.* 41, 375–392. [http://dx.doi.org/10.1016/S0921-8009\(02\)00088-5](http://dx.doi.org/10.1016/S0921-8009(02)00088-5).
- Fish, R., Burgess, J., Chilvers, J., Footitt, A., Haines-Young, R., Russel, D., Turner, K., Winter, D.M., 2011a. Participatory and Deliberative Techniques to Embed an Ecosystems Approach Into Decision-making: Full Technical Report. DEFRA, London.
- Fish, R., Burgess, J., Church, A., Turner, K., 2011b. Shared Values for the Contributions Ecosystem Services Make to Human Well-being, in: UK National Ecosystem Assessment: Technical Report. UNEP-WCMC, Cambridge.
- Fish, R., Church, A., Winter, M., 2016a. Conceptualising cultural ecosystem services: a novel framework for research and critical engagement. *Ecosyst. Serv.* 21, 208–217. <http://dx.doi.org/10.1016/j.ecoser.2016.09.002>.
- Fish, R., Church, A., Willis, C., Winter, M., Tratalos, J.W., Haines-Young, R., Potschin, M., 2016b. Making space for cultural ecosystem services: insights from a study of the UK Nature Improvement Initiative. *Ecosyst. Serv.* 21, 329–343. <http://dx.doi.org/10.1016/j.ecoser.2016.09.017>.
- Gastil, J., 2000. *By Popular Demand. Revitalising Representative Democracy Through Deliberative Elections*. CA University of California Press, Berkeley.
- Griffin, J., Nickerson, D., Wozniak, A., 2012. Racial differences in inequality aversion: evidence from real world respondents in the ultimatum game. *J. Econ. Behav. Organ.* 84, 600–617. <http://dx.doi.org/10.1016/j.jebo.2012.09.010>.
- Habermas, J., 1984. *The theory of communicative action: reason and the rationalization of society* (Volume 1). Beacon Press, Boston, Massachusetts.
- Haines-Young, R., Potschin, M., 2014. The ecosystem approach as a framework for understanding knowledge utilisation. *Environ. Plann. C* 32, 301–319. <http://dx.doi.org/10.1068/c1329j>.
- Hicks, C.C., Cinner, J.E., Stoeckl, N., McClanahan, T.R., 2015. Linking ecosystem services and human-values theory. *Conserv. Biol.* 29, 1471–1480. <http://dx.doi.org/10.1111/cobi.12550>.
- Hines, J., Hungerford, H., Tomera, A., 1986/7. Analysis and synthesis of research on responsible environmental behavior: A meta-analysis. *J. Environ. Educ.* 18 (2), 1–8.
- Hockley, N., 2014. Cost-benefit analysis: a decision-support tool or a venue for contesting ecosystem knowledge? *Environ. Plann. C* 32, 283–300.
- Howarth, R.B., Wilson, M.A., 2006. A theoretical approach to deliberative valuation: aggregation/aggregation by mutual consent. *Land Econ.* 82, 1–16. <http://dx.doi.org/10.3368/le.82.1.1>.
- Hungerford, H., Volk, T., 1990. Changing learner behavior through environmental education. *J. Environ. Educ.* 21 (3), 8–21.
- Independent Panel on Forestry (2011) Final Report. (www.defra.gov.uk/forestrypanel)
- Irvine, K., O'Brien, L., Ravenscroft, N., Cooper, N., Everard, M., Fazey, I., Reed, M., Kenter, J.O., 2016. Ecosystem services and the idea of shared values. *Ecosyst. Serv.* 21, 184–193. <http://dx.doi.org/10.1016/j.ecoser.2016.07.001>.
- Ives, C.D., Kendal, D., 2014. The role of social values in the management of ecological systems. *J. Environ. Manag.* 144, 67–72. <http://dx.doi.org/10.1016/j.jenvman.2014.05.013>.
- Kahneman, D., Ritov, I., 1994. Determinants of stated willingness to pay for public goods: a study in the headline method. *J. Risk Uncertain.* 9, 5–37. <http://dx.doi.org/10.1007/BF01073401>.
- Kahneman, D., Ritov, I., Schkade, D., 1999. Economic preferences or attitude expressions? An analysis of dollar responses to public issues. *J. Risk Uncertain.* 19, 203–235.
- Kenter, J.O., 2017. Deliberative monetary valuation. In: Spash, C.L. (Ed.), *Handbook of Ecological Economics: Nature and Society*. Routledge, Abingdon.
- Kenter, J.O., 2016a. Deliberative and Non-Monetary Valuation. In: Potschin, M., Haines-Young, R., Fish, R., Turner, R.K. (Eds.), *Handbook of Ecosystem Services*. Routledge, Abingdon.
- Kenter, J.O., 2016b. Shared, plural and Cultural Values. *Ecosyst. Serv.* 21, 175–183. <http://dx.doi.org/10.1016/j.ecoser.2016.10.010>.
- Kenter, J.O., 2016c. Integrating Deliberative Choice Experiments, Systems Modelling and Participatory Mapping to Assess Shared Values of Ecosystem Services. *Ecosyst. Serv.* 21, 291–307. <http://dx.doi.org/10.1016/j.ecoser.2016.06.010>.
- Kenter, J.O., Reed, M., Fazey, I., 2016a. The Deliberative Value Formation model. *Ecosyst. Serv.* 21, 194–207. <http://dx.doi.org/10.1016/j.ecoser.2016.09.015>.
- Kenter, J.O., Hyde, T., Christie, M., Fazey, I., 2011. The importance of deliberation in valuing ecosystem services in developing countries—evidence from the Solomon Islands. *Glob. Environ. Change* 21, 505–521. <http://dx.doi.org/10.1016/j.gloenvcha.2011.01.001>.
- Kenter, J.O., Reed, M.S., Everard, M., N.I.K., O'Brien, E.A., Molloy, C., Bryce, R., Brady, E., Christie, M., Church, A., Collins, T., Cooper, N., Davies, A., Edwards, D., Evely, A., Fazey, I., Goto, R., Hockley, N., Jobstovgt, N., Orchard-Webb, J., Ravenscroft, N., Ryan, M., Watson, V., 2014a. Shared, Plural and Cultural Values: A Handbook for Decision-Makers. UNEP-WCMC, Cambridge. <http://dx.doi.org/10.13140/RG.2.1.4683.5281>.
- Kenter, J.O., Reed, M.S., Irvine, K.N., O'Brien, L., Brady, E., Bryce, R., Christie, M., Church, A., Cooper, N., Davies, A., Hockley, N., Fazey, I., Jobstovgt, N., Molloy, C., Orchard-Webb, J., Ravenscroft, N., Ryan, M., Watson, V., 2014b. UK National Ecosystem Assessment Follow-on. Work Package Report 6: Shared, Plural and Cultural Values of Ecosystems. UNEP-WCMC, Cambridge. <http://dx.doi.org/10.13140/RG.2.1.1275.6565>.
- Kenter, J.O., O'Brien, L., Hockley, N., Ravenscroft, N., Fazey, I., Irvine, K.N., Reed, M.S., Christie, M., Brady, E., Bryce, R., Church, A., Cooper, N., Davies, A., Evely, A., Everard, M., Fish, R., Fisher, J.A., Jobstovgt, N., Molloy, C., Orchard-Webb, J., Ranger, S., Ryan, M., Watson, V., Williams, S., 2015. What are shared and social values of ecosystems? *Ecol. Econ.* 111, 86–99. <http://dx.doi.org/10.1016/j.ecolecon.2015.01.006>.
- Kenter, J.O., Jobstovgt, N., Watson, V., Irvine, K., Christie, M., Bryce, R., 2016b. The impact of information, value-deliberation and group-based decision-making on values for ecosystem services: integrating deliberative monetary valuation and storytelling. *Ecosyst. Serv.* 21, 270–290. <http://dx.doi.org/10.1016/j.ecoser.2016.06.006>.
- Kiely, R., 2004. Neo-liberal globalization meets global resistance: the significance of 'anti-globalization' protest. In: Dasgupta, S. (Ed.), *The Changing Face of Globalisation*. SAGE, Thousand Oaks, CA, 264–297.
- Lienhoop, N., Hanley, N., 2006. Contingent valuation: environmental polling or preference engine? *Ecol. Econ.* 60, 299–307.
- Lienhoop, N., MacMillan, D., 2007. Valuing wilderness in Iceland: estimation of WTA and WTP using the market stall approach to contingent valuation. *Land Use Policy* 24, 289–295.
- Lo, A.Y., 2011. Analysis and democracy: the antecedents of the deliberative approach of ecosystems valuation. *Environ. Plan. C: Gov. Policy* 29, 958–974.
- 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. *Ecol. Econ.* 87, 84–94. <http://dx.doi.org/10.1016/j.ecolecon.2012.12.014>.
- Lo, A.Y., Spash, C.L., 2013. Deliberative monetary valuation: in search of a democratic and value plural approach to environmental policy. *J. Econ. Surv.* 27, 768–789. <http://dx.doi.org/10.1111/j.1467-6419.2011.00718.x>.

- Manfredo, M.J., Teel, T.L., Dietsch, A.M., 2016. Implications of human value shift and persistence for biodiversity conservation. *Conserv. Biol.* 30, 287–296. <http://dx.doi.org/10.1111/cobi.12619>.
- Manfredo, M., Teel, T., Gavin, M., Fulton, D., 2014. Considerations in Representing Human Individuals in Social-Ecological Models, in: *Understanding Society and Natural Resources*. pp. 137–158.
- Milcu, A.I., Hanspach, J., Abson, D., 2013. Cultural ecosystem services: a literature review and prospects for future research. *Ecol. Soc.* 18, 44.
- Mooney, G., Jan, S., Wiseman, V., 2002. Staking a claim for claims: a case study of resource allocation in Australian aboriginal health care. *Soc. Sci. Med.* 54, 1657–1667. [http://dx.doi.org/10.1016/S0277-9536\(01\)00333-1](http://dx.doi.org/10.1016/S0277-9536(01)00333-1).
- Norton, B., Costanza, R., Bishop, R.C., 1998. The evolution of preferences. *Ecol. Econ.* 24, 193–211. [http://dx.doi.org/10.1016/S0921-8009\(97\)00143-2](http://dx.doi.org/10.1016/S0921-8009(97)00143-2).
- O'Hara, S.U., Stagl, S., 2002. Endogenous preferences and sustainable development. *J. Socio-Econ.* 31, 511–527. [http://dx.doi.org/10.1016/S1053-5357\(02\)00134-8](http://dx.doi.org/10.1016/S1053-5357(02)00134-8).
- O'Neill, J., 1996. Cost-benefit analysis, rationality and the plurality of values. *Ecologist* 26, 98–103.
- O'Neill, J., 2007. *Markets, Deliberation and Environment*. Routledge, Abingdon.
- O'Neill, J., Holland, A., Light, A., 2008. *Environmental Values*. Routledge, Abingdon.
- Orchard-Webb, J., Kenter, J.O., Bryce, R., Church, A., 2016. Deliberative democratic monetary valuation to implement the ecosystems approach. *Ecosyst. Serv.* 21, 308–318. <http://dx.doi.org/10.1016/j.ecoser.2016.09.005>.
- Parks, S., Gowdy, J., 2013. What have economists learned about valuing nature? A review essay. *Ecosyst. Serv.* 3, e1–e10. <http://dx.doi.org/10.1016/j.ecoser.2012.12.002>.
- Pieraccini, M., 2015a. Re-thinking participation in environmental decision-making: epistemologies of marine conservation in South-East England. *J. Environ. Law* 27, 45–67.
- Pieraccini, M., 2015b. Democratic legitimacy and new commons: examples from English protected areas. *Int. J. Commons* 9 2, 552–572.
- Pleasant, M.M., Gray, S.A., Lepczyk, C., Fernandes, A., Hunter, N., Ford, D., 2014. Managing cultural ecosystem services. *Ecosyst. Serv.* <http://dx.doi.org/10.1016/j.ecoser.2014.03.006>.
- Ranger, S., Kenter, J.O., Bryce, R., Cumming, G., Dapling, T., Lawes, E., Richardson, P., 2016. Forming shared values in conservation management: an interpretive-deliberative-democratic approach to including community voices. *Ecosyst. Serv.* 21, 344–357. <http://dx.doi.org/10.1016/j.ecoser.2016.09.016>.
- Raymond, C.M., Brown, G., 2011. Assessing conservation opportunity on private land: Socio-economic, behavioral, and spatial dimensions. *J. Environ. Manag.* 92 (10), 2513–2523.
- Raymond, C., Kenter, J.O., 2016. Transcendental values and the valuation and management of ecosystem services. *Ecosyst. Serv.* 21, 241–257. <http://dx.doi.org/10.1016/j.ecoser.2016.07.018>.
- Raymond, C.M., Kenter, J.O., Plieninger, T., Turner, N.J., Alexander, K.A., 2014. Comparing instrumental and deliberative paradigms underpinning the assessment of social values for cultural ecosystem services. *Ecol. Econ.* 107, 145–156. <http://dx.doi.org/10.1016/j.ecolecon.2014.07.033>.
- Reed, M., Evely, A.C., Cundill, G., Fazey, I.R.A., Glass, J., Laing, A., Newig, J., Parrish, B., Prell, C., Raymond, C., 2010. What is social learning? *Ecol. Soc.* 15, (online).
- Rivera-Ferre, M.G., Pereira, L., Karpouzoglou, T., 2013. A vision for transdisciplinarity in future earth: Perspectives from young researchers. *Journal of Agriculture, Food Syst. Commun. Devel.* 3, 249–260. <http://dx.doi.org/10.5304/jafscd.2013.034.028>.
- Ryan, A.M., Spash, C.L., 2011. Is WTP an attitudinal measure? Empirical analysis of the psychological explanation for contingent values. *J. Econ. Psychol.* 32, 674–687. <http://dx.doi.org/10.1016/j.joep.2011.07.004>.
- Sagoff, M., 1998. Aggregation and deliberation in valuing environmental public goods: a look beyond contingent pricing. *Ecol. Econ.* 24, 213–230.
- Satterfield, T., Gregory, R., Klain, S., Roberts, M., Chan, K.M., 2013. Culture, intangibles and metrics in environmental management. *J. Environ. Manag.* 117, 103–114. <http://dx.doi.org/10.1016/j.jenvman.2012.11.033>.
- Scholte, S.S.K., van Teeffelen, A.J.A., Verburg, P.H., 2015. Integrating socio-cultural perspectives into ecosystem service valuation: a review of concepts and methods. *Ecol. Econ.* 114, 67–78. <http://dx.doi.org/10.1016/j.ecolecon.2015.03.007>.
- Schwartz, S.H., 1992. Universals in the Content and Structure of Values - Theoretical Advances and Empirical Tests in 20 Countries. *Adv. Exp. Soc. Psychol.* 25, 1–65.
- Schwartz, S.H., 1994. Are There Universal Aspects in the Structure and Contents of Human Values? *J. Soc. Issues* 50, 19–45.
- Schwartz, S.H., Bilsky, W., 1987. Toward a universal psychological structure of human-values. *J. Pers. Soc. Psychol.* 53, 550–562.
- Sia, A., Hungerford, H., Tomera, A., 1985/86. Selected predictors of responsible environmental behavior. *J. Environ. Educ.* 17 (2), 31–40.
- Spash, C.L., 2006. Non-economic motivation for contingent values: rightsrights and attitudinal beliefs in the willingness to pay for environmental improvements. *Land Econ.* 82, 602–622. <http://dx.doi.org/10.3368/le.82.4.602>.
- Spash, C.L., 2008. Deliberative monetary valuation and the evidence for a new value theory. *Land Econ.* 84, 469–488.
- Steg, L., Vlek, C., 2009. Encouraging pro-environmental behaviour: an integrative review and research agenda. *J. Environ. Psychol.* 29, 309–317. <http://dx.doi.org/10.1016/j.jenvp.2008.10.004>.
- Stern, P.C., 2000. New environmental theories: toward toward a coherent theory of environmentally significant behavior. *J. Soc. Issues* 56, 407–424. <http://dx.doi.org/10.1111/0022-4537.00175>.
- Stern, P.C., Dietz, T., Abel, T.D., Guagnano, G.A., 1999. A value-belief-norm theory of support for social movements: the case of environmentalism. *Res. Hum. Ecol.* 6, 81–97.
- Szabó, Z., 2011. Reducing protest responses by deliberative monetary valuation: improving the validity of biodiversity valuation. *Ecol. Econ.* <http://dx.doi.org/10.1016/j.ecolecon.2011.09.025>.
- UK National Ecosystem Assessment, 2011. *UK National Ecosystem Assessment: Synthesis Report*. UNEP-WCMC, Cambridge.
- UK National Ecosystem Assessment, 2014. *UK National Ecosystem Assessment Follow-on phase: Synthesis Report*. UNEP-WCMC, Cambridge.
- Uram, K.C., Hodge, I., 2006. Participatory environmental education and willingness to pay for river basin management: empirical evidence from Nigeria. *Land Econ.* 82, 542–561.
- Vatn, A., 2009. An institutional analysis of methods for environmental appraisal. *Ecol. Econ.* 68, 2207–2215.
- Young, I.M., 1996. *Communication and the other: Beyond deliberative democracy*. In: Benhabib, S. (Ed.), *Democracy and Difference: Contesting the Boundaries of the Political*. Princeton University Press, 120–136.
- Zografos, C., Howarth, R.B., 2010. Deliberative ecological economics for sustainability governance. *Sustainability* 2010, 3399–3417.