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Beyond rationality, towards reasonableness: Enriching the theoretical foundation of deliberative monetary valuation

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Abstract

Economic valuation is often deemed an important source of information for land-use decisions. Stated preference (SP) methods are a particularly potent class of economic valuation methods, but they are also particularly controversial. In response to accumulating criticism of SP, deliberative monetary valuation (DMV) has been proposed as an alternative approach and has gained considerable attention in recent years. However, being a combination of elements from two theories – neoclassical welfare economics and theory of deliberative democracy – it lacks a convincing, consistent theoretical foundation. In our paper, we propose some clarifying adjustments regarding rationality assumptions and aggregation issues by drawing upon the work of Amartya Sen. We find that many of his ideas lead to a harmonisation of DMV's theoretical foundations, e.g. meta-rankings of preferences, impartial spectator and the plurality of impartial reasons.

Keywords: deliberative monetary valuation, Amartya Sen, rationality, reasonableness, aggregation.

1 Introduction and aims

Despite growing interest in monetary estimates for all sorts of land-use changes, the most popular valuation methods for non-market costs and benefits¹ – stated preference methods – yet exhibit considerable deficiencies. The critique evolves from two avenues of concern (Lo and Spash, 2013): methodological issues relating to the validity of valuation outcomes (i.e. respondents’ willingness-to-pay), and political–ethical issues pointing at the unsatisfactory ethical foundations of the rationality assumptions underlying economic valuation. The methodological concerns primarily relate to the economic assumptions that respondents of stated preference (SP) surveys have predefined preferences for any environmental change and are able to translate these into monetary amounts in a one-shot survey (Kahneman et al., 1999; Lienhoop et al., 2015; Spash, 2007). It is argued that they usually do not have predefined preferences: As a result, instead of constructing their preferences, respondents may be influenced by decision heuristics and framing effects, thus providing an inaccurate picture of how much they value the environmental change at stake (Tversky and Kahneman, 1974). Political–ethical concerns are twofold. One relates to the so-called consumer–citizen dichotomy (see Ami et al., 2014; Sagoff, 1988; Soma and Vatn, 2014): According to welfare economic theory, preferences elicited in SP studies are based on personal needs and interests, that is, respondents are supposed to maximise their individual welfare (known as *consumer* preferences). Critics claim that this assumption discourages respondents from taking account of the needs of society and future generations (and thus to act as *citizens*), and regard consumer preferences to be contradictory to the public nature of many environmental goods (Niemeyer and Spash, 2001; Vatn, 2009).² While consumer preferences are expressed in social isolation, public goods are used and shared by many, are indivisible among individuals, and may also affect future generations. Hence, according to critics, it is indispensable for

¹ See, e.g., de Groot et al. (2012), especially Table 1.

² The consumer–citizen dichotomy can be interpreted as a clash between consequentialist (including utilitarian) reasoning, which focuses on the consequences of actions, and deontological (e.g. Kantian) reasoning, which frames ethical problems in terms of duties and rights. See Spash (2006).

public policy-making that people go beyond their personal needs and consider what might be good for society, the environment, and future generations (Dietz et al., 2009; Niemeier, 2004; Sagoff, 1988). Moreover, contrary to theoretical assumptions, empirical research shows that respondents in SP studies often ‘fail’ to focus solely on their self-interest and do indeed take other aspects into consideration (Spash, et al., 2009, Kahnemann, et al., 1999). The second political–ethical concern relates to the fact that SP methods force respondents to express their preferences, irrespective of their motivational source, in one number. Thus, information on arguments for or against policies is not revealed, and incommensurabilities are glossed over. However, in order to reach good decisions about projects or policies it is important to understand the reasons why certain stakeholder groups advocate or oppose a particular environmental change (Sen, 1995). SP applications only supply, if at all, very restricted information about respondents’ motives, although such additional information would give policy-makers important insights into the reasons why a particular outcome is preferred (cf. Söderholm, 2001).

The political–ethical concerns regarding SP methods are frequently voiced by advocates of deliberative institutions, which form a completely different approach to evaluating public policies and have a different theoretical underpinning. In deliberative institutions participants are involved as citizens with the task to reach a mutual understanding and common solution about an environmental change through group interaction and exchange of arguments (Vatn, 2009). Furthermore, the opportunity to discuss and sufficient time to think in deliberative institutions are supposed to enable participants to discover and affirm their preferences on the environmental issue at stake (cf. Braga and Starmer, 2005).

In the past years, deliberative institutions gained increasing interest in the field of economic valuation because of their potential to address the limitations of SP methods (Spash, 2007). From this, deliberative monetary valuation (DMV), a hybrid of SP methods and deliberative

institutions, evolved³. From a theoretical perspective, two approaches to DMV can be distinguished, depending on their closeness to deliberative democracy theory vs. neoclassical economics. On the one hand, there is what Orchard-Webb et al. (2016) call Deliberative Democratic Monetary Valuation, in which usually the goal is to reach mutual consent in the form of social WTP, i.e. collectively elicited monetary values (see also Brown et al., 1995; Kenter et al., 2011; Kenyon and Nevin, 2001; Lo, 2013; Wilson and Howarth, 2002). On the other hand, there is the approach leaning more heavily towards conventional SP methods (elicitation of individual preferences and aggregation of individual WTP), but incorporates important elements of deliberative institutions, especially preference learning through discussion and time to think. While still relying on questionnaire-based SP surveys, the latter approach includes deliberation as an important component in the process of preference formation and elicitation (e.g. Álvarez-Farizo and Hanley, 2006; Christie et al., 2006; Lienhoop and Völker, 2016; MacMillan et al., 2006, 2002). Most empirical studies belong to the second category (Bunse et al., 2015).

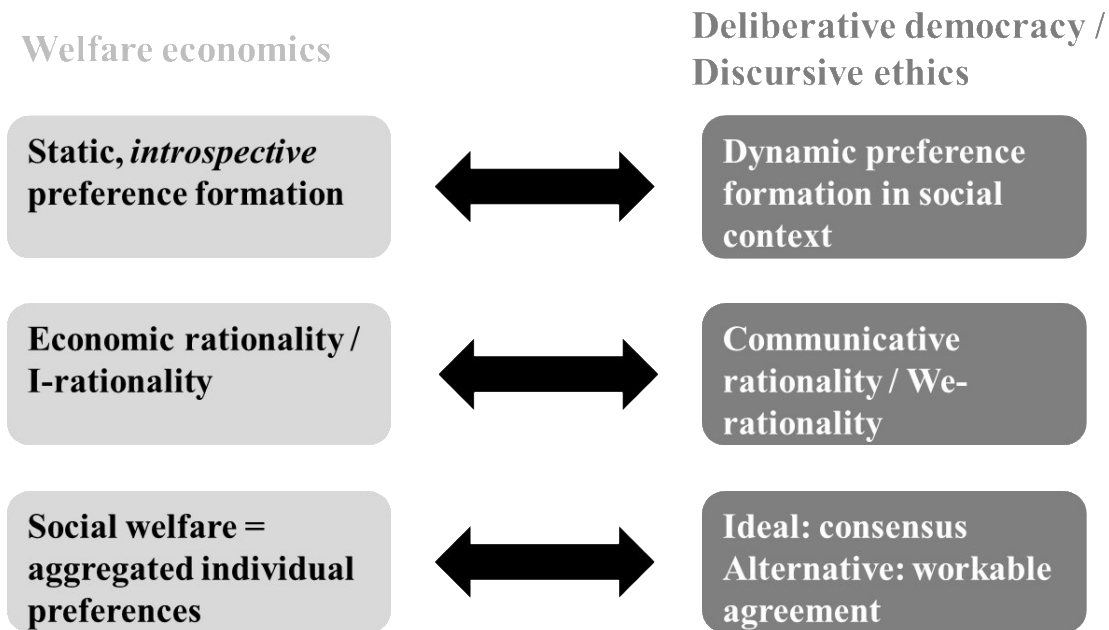
There exist practical arguments in favour of DMV. For instance, a number of studies investigated the role of discussion in DMV either by comparing valuation results prior and after discussion or by comparing DMV with standard SP approaches. Many of these studies show that deliberation leads to an improved model fit in terms of the influence of independent variables on willingness-to-pay and robustness (Álvarez-Farizo and Hanley, 2006; Christie et al., 2006; Christie and Rayment, 2012; Lienhoop and MacMillan, 2007a; MacMillan et al., 2006; Robinson et al., 2008). In comparison to conventional SP approaches, there is evidence that DMV generates fewer non-responses to the WTP question (Szabó, 2011) and that respondents regard the exercise less demanding and confusing and are more certain about

³ Examples of deliberative institutions are: Citizens' jury, Consensus conference, Focus groups. Exemplary deliberative monetary valuation methods are: Market Stall, Valuation Workshop, Value Jury.

their WTP bids (Lienhoop and MacMillan, 2007b; MacMillan et al., 2006). Most studies comparing WTP or choices before and after discussion found a change in WTP or implicit prices (e.g. Lienhoop and MacMillan, 2007a; Robinson et al., 2008), indicating that respondents refine their preferences. A recent study found that respondents continuously learn about their preferences in a setting involving group discussion and a weeklong interval to think about the environmental change under investigation (Lienhoop and Völker, 2016). At the same time, DMV is vulnerable to exclusion and power dynamics within discussion groups (Vargas et al., 2017, 2016; Völker and Lienhoop, 2016).

While existing research made important contributions to understanding the role of DMV in terms of valuation outcomes, the theoretical underpinnings of this novel approach remain under-investigated (Bunse et al., 2015; Kenter et al., 2016). Particularly, given the tension between theoretical papers, which exhibit high scepticism towards conventional economic valuation and more closeness to deliberative democracy theory, and empirical studies, which usually lean more towards mainstream economics, it is not clear what DMV actually stands for. The attempt to combine ‘the best of both worlds’ (Spash, 2007, p. 691) entails that two contrasting theories are entangled in one method (see Figure 1). This has attracted criticism from both economists and advocates of deliberative democracy (Lo, 2013; Lo and Spash, 2013; Spash, 2007). In this paper we take a new perspective on this criticism and suggest a way to bridge the gap between the two seemingly incompatible theories underlying DMV. To this end we carefully explore Amartya Sen’s theory of rationality (e.g. Sen, 2010) and identify relevant ideas that help harmonise ‘the best of both worlds,’ including the identification of elements of both worlds that are worth keeping. Thus we hope to provide a firmer theoretical footing for DMV than it has now. Our main focus is on the issue of rationality assumptions behind DMV, but we also discuss the similarly unclear question of how individual preferences of DMV participants are to be aggregated.

Figure 1 The two contrasting rationality assumptions of DMV



The remainder of the paper is organised as follows: Section 2 provides an overview about the theoretical foundations of DMV, with a focus on (economic and communicative) rationality assumptions. Section 3 presents insights from Amartya Sen’s work that are potentially relevant for DMV, and section 4 draws implications for DMV from the previously discussed tenets of Sen’s work. The paper ends with a conclusion (section 5).

2 Theoretical assumptions underlying DMV: between neoclassical economics and deliberative democracy

Being a hybrid between SP methods and deliberative institutions, DMV is based on two contrasting theories. Furthermore, as mentioned above, different things have been called DMV, which can be located in different areas of the spectrum between deliberative democracy (with its typical institutions, such as citizens’ juries) and neoclassical welfare economics (SP methods). In this section we elaborate on these differences, with a focus on rationality assumptions and aggregation of individual preferences, and identify specific questions that must be answered to enrich DMV’s theoretical foundation and contribute to more consistency within this research field.

A respondent participating in a SP survey is assumed to act as *homo oeconomicus* with the following typical characteristics: (i) she holds full information about the environmental good or service at stake; (ii) she is self-interested (society's and future generations' interests are hardly regarded); and, consequently, (iii) she holds predefined preferences (Spash, 2007). Conversely, deliberative institutions are based on deliberative democracy theory involving the assumption of communicative rationality, i.e. open and reasoned exchange of arguments with the goal of reaching an agreement. Thus, a respondent participating in a deliberative institution is assumed to (i) be a reflexive citizen; (ii) consider society's and future generations' interests; and (iii) socially construct her preferences (Vatn, 2005). Vatn (2009) describes the difference between economic and communicative rationality assumptions as I-rationality (self-interested consumer) and We-rationality (other-regarding citizen); it may also be framed as the difference between consequentialist and deontological reasoning (see fn. 2). These two viewpoints differ also regarding their views of the preference formation process: While preferences are assumed to be static in SP methods (preferences are pre-existing, complete and stable), they are the result of a dynamic process in deliberative institutions, where respondents learn about their preferences that are embedded in their socio-cultural context (Lo, 2013; Vatn, 2009).

Oftentimes, Jürgen Habermas's discursive ethics is called as the main source of inspiration for deliberative institutions. Habermas (1981) describes an 'ideal speech situation' of free and equal discussion without time constraints, and refers to a 'transcendental quality' of deliberation, in which participants consider their individual interests, and through deliberation transcend these interests to adopt other-regarding perspectives and seek a common solution. For participants to discover and affirm their preferences on the issue at stake the following deliberative aspects need to be considered: (i) they must be educated and informed about the issue; (ii) they must have the opportunity to extensively reflect on their preferences; (iii) they

should be encouraged to ask questions; and (iv) they should be spurred to express arguments for one outcome over another (Fishkin, 1993; Habermas, 1981). Eventually, deliberation based on communicative rationality aims to reach a ‘workable agreement,’ which involves that participants agree on a course of action without requiring a convergence of preferences supporting the course of action (Dryzek, 2000).

Differences between economic and communicative rationality have implications for how social welfare is interpreted. In conventional economic theory, social welfare is defined in terms of (mostly additive) aggregation of individual preferences over the relevant population. This leads to a call for statistical representativeness in survey-based economic valuation studies. Advocates of deliberative institutions argue that *political* representativeness should be assured by recruiting participants that represent a diversity of social characteristics and a plurality of viewpoints towards the environmental change under investigation (Goodin and Dryzek, 2006). They do not consider statistical representativeness as necessary because, contrary to neoclassical economics, they do not assume that individuals are unable or unwilling to include considerations of other people’s (and non-human organisms) interests in their calculus (see also Gregory et al., 2012).

As shown in Table 1, DMV can be considered a hybrid of two different approaches (see also Figure 1). In many cases, it is unclear towards which of these seemingly incommensurable approaches DMV leans more. For instance, while the focus of deliberative institutions and some forms of DMV is on transcendental, context-independent values (Raymond and Kenter, 2016), others consider contextual values only. Important questions are also rationality assumptions and the question of value aggregation (as well as the related question of representation). For instance, in most applications of DMV, Habermas’s communicative rationality is an archetype (Lo, 2013; Orchard-Webb et al., 2016) and the requirements on deliberation are adapted to suit economic rationality, i.e. rather than being a means of

reaching mutual consent, deliberation can be seen as a means to help participants refine their individual preferences. The opportunity to discuss with other people facilitates important social processes of value formation and makes respondents ‘more confident regarding what should be valued and why’ (Svedsäter, 2003, p. 125).

Because of these differences, it is often not clear what really counts as DMV, which therefore receives considerable criticism from both economists and proponents of deliberative democracy/communicative rationality. On the one hand, critics with background in neoclassical economics claim that the procedural approach for preference learning⁴ in DMV is not necessary thanks to pre-defined preference sets in respondents’ minds. Furthermore, exposure to other participants’ arguments and viewpoints might influence preferences and also lead to unwanted consideration of overarching societal goals. The latter would supposedly not be compatible with cost-benefit analysis due to the risk of double counting in the aggregation process. On the other hand, advocates of deliberative institutions criticise that the isolated elicitation of preferences via anonymous questionnaires yet leads to too self-centred preference statements, thus ignoring society’s needs (Howarth and Wilson, 2006).

Table 1 Theoretical assumptions of economic valuation, deliberative institutions and DMV (Own creation based on Niemeyer and Spash (2001), Orchard-Webb et al. (2016)).

Assumptions	Economic valuation	Deliberative institutions	Deliberative monetary valuation
View of individual	Informed consumer	Reflexive citizen	Uninformed consumer–citizen
Rationality	Instrumental	Communicative	Instrumental, communicative
Preferences	Pre-defined	Socially constructed	Partly given, partly constructed
Values	Contextual	Transcendental, contextual	Contextual, transcendental
Orientation	Result	Procedural	Procedural
View of society	Sum of self-regarding	Citizens within social	Sum of self- and

⁴ In the literature one also finds the terms ‘preference formation’ (e.g., Sagoff, 1998; Vatn, 2004) and ‘preference discovery’ (Braga and Starmer, 2005). We take them as synonymous for the purposes of this paper.

	individuals (consumers)	context	other-regarding individuals
Representation	Statistical	Political	Statistical
Outcome	Aggregated individual WTP	Consensus	Aggregated individual or social WTP

It is sometimes said that DMV should combine ‘the best of both worlds’ (Spash, 2007, p. 691); however, where exactly the ‘proper’ or ‘optimal’ combination is and what is to be preserved, is not clear (Lo and Spash, 2013; Orchard-Webb et al., 2016). In the next section, we will present selected elements from Amartya Sen’s work, including his approach to rationality, and show that it has the potential to bridge the gap between the two conflicting theoretical foundations of DMV.

3 DMV-relevant insights from Amartya Sen’s work

Amartya Sen’s work encompasses many different subjects and themes, including social choice theory, welfare economics, development economics, measurement of progress, theory of justice. In what follows, we mainly draw from his criticism of the rationality assumptions of neoclassical economics and from his theory of justice. In fact, he combined these and many other tenets of his work in his magnum opus *The Idea of Justice*, first published in 2009.

In our view Sen’s work can inform DMV research and helps to combine ‘the best of both worlds’ (Spash, 2007, p. 691). Being both a critic of neoclassical economics ‘from the inside’ and a philosopher with a strong, though for a long time rather implicit focus on deliberation (Scholtes, 2010), Sen has been active in both worlds and has put major efforts in consistently combining the two (Sen, 1987, 2001, 2010). Thus, we aim to extract those elements of Sen’s work that are relevant for DMV and help to achieve more coherence among the different theoretical assumptions associated with DMV.

We start by introducing Sen’s approach to rationality. After that, we focus on his thoughts on plurality and the aggregation of individual preferences.

Sen's approach to rationality has its roots in a firm critique of rational choice theory (RCT), which defines the neoclassical concept of rationality. There are two strands within RCT, both addressed by Sen in his critique: the *substantive* RCT *sensu stricto*, in the tradition of the Chicago school and game theory, which emphasises utility maximisation by fully informed, self-interested individuals; and the more *formal* theory of rationality as promoted within the revealed preference theory (Samuelson, 1938), which describes rationality in terms of internal consistency of choices.⁵ Different parts of his RCT critique were presented by Sen in different publications over the last more than 40 years. The approach advanced by Sen has two major components, which might be called 'positive' and 'normative,' respectively. The positive part centres around two major concepts: (i) sympathy and commitment, and (ii) meta-rankings of preferences, also called 'second-order volitions' (Frankfurt, 1971), 'metapreferences' (Hirschman, 1982) and 'preferences over preferences' (Elster, 1982) elsewhere. The normative part consists mainly of a definition of rationality as 'primarily a matter of basing our choices – explicitly or by implication – on reasoning that we can reflectively *sustain* if we subject them to critical scrutiny' (Sen, 2010, p. 180, emphasis in original). We present these two parts of Sen's approach successively.

Drawing upon the work by Adam Smith (1759), Sen distinguishes between sympathy and commitment in his critique of 'rational fools,' i.e., the RCT's narrow picture of rationality as pursuit of self-interest (Sen, 1977). He argues that human actions are motivated not only by the pursuit of self-interest, even if the latter is defined as including everything that positively influences our utility. Accordingly, he defines sympathy as 'the case in which the concern for others directly affects one's own welfare' and argues that this notion is compatible with some more broad interpretations of RCT (cf. Becker, 1996; Jolls et al., 1998), whereas commitment,

⁵ For a discussion of the distinction between formal and substantive theories of rationality, see, e.g., Reiss (2013, chap. 3).

i.e., acting upon a sense of duty, obligation or social norm, contrary to own welfare, is not (Sen, 1977, p. 326). In his view, human action cannot be meaningfully explained (in positive analysis) while abstracting from motivations (see also Sen, 1976) – yet this is, in effect, the preference utilitarian approach behind neoclassical economics, in which the predominant principle of *consumer sovereignty* provides a rationale for ignoring motivations.

However, the relevance of the distinction between sympathy and commitment depends on the analytic context: if we want to *explain* behaviour, sympathy and commitment can be seen as distinct. However, even in this context, game-theoretic analyses of the evolution of altruism (Axelrod and Hamilton, 1981) and related publications that aim at introducing insights from evolutionary biology into ethics (e.g., de Waal, 2009) show that altruistic behaviour, including many social norms, may be in the (long-term) interest of individual human beings. Not to act upon a sense of duty or obligation can have negative repercussions such as ostracism and social exclusion, which can be interpreted as negatively influencing utility. Anticipating avoidance of these repercussions can well be viewed as compatible with maximisation of a broadly defined utility function, thus making Sen's distinction between sympathy and commitment disappear. Whether this interpretation is correct, is not the issue here. The analytic context we are concerned with is different – for *valuation purposes*, knowledge of the exact motivations behind behaviour is not essential, even though it is additional information that may be useful in decision-making contexts. In the next section, we will return to this issue in the context of DMV.

In addition to sympathy and commitment, Sen introduces in his critique of revealed preference theory the concept of meta-rankings of preferences (Sen, 1974, 1977). In a positive sense, this means that on top of a preference ranking constrained by one's situation (including environmental and social pressures, psychological features of the person considered etc.), one has a meta-ranking of such rankings, which 'can provide the format for expressing what

preferences one would have preferred to have' (Sen, 1977, p. 339), i.e., under different, *counterfactual* circumstances. In other words, the usual *first-order* preferences might be conceived as preference orderings under given constraints, while second-order preferences/meta-rankings are concerned with alternative hypothetical worlds, between which *constraints sets* vary. Sen's primary motivation in developing the concept of meta-rankings seems, however, to have been normative, as expressed by how he introduced it: '[a] particular morality can be viewed, not just in terms of the "most moral" ranking of the set of alternative actions, but as a moral ranking of the rankings of actions' (p. 337). In the following discussion, we are primarily concerned with the positive interpretation, as it provides a possibility to express one's 'deeper' preferences, transcending the constraints of the situation in which one currently is. Otherwise potentially crucial information is missed or there are distortions in the elicited preferences. For instance, looking only at first-order preferences makes it impossible to differentiate between adaptive preferences (Elster, 1983; Olson and Schober, 1993; Sen, 1985), which are shaped by current constraints so as to minimise individual frustration,⁶ and 'rational' preferences. Generally, when these two levels of preference are intermingled (within or across individuals), the elicited preferences are inconsistent, either already at the individual level or when aggregated:

If, in addition to information about the first-order preferences of individuals, we have information about their higher-order preferences, we may be able to get out of some of the paradoxes of rational choice theory. (Elster, 1982, p. 237)

Let us now turn to the normative part of Amartya Sen's approach to rationality. He identifies rationality not with maximisation of a utility function or with consistency of choices, like

⁶ 'Our mental reactions to what we actually get and what we can sensibly expect to get may frequently involve compromises with harsh reality. [...] The deprivations are suppressed and muffled in the scale of utilities (reflected by desire-fulfilment and happiness) by the necessity of endurance in uneventful survival' (Sen, 1985, p. 15).

conventional economics does, but with the ability to provide reasons for one's actions. Also, he distinguishes between *rationality* and *reasonableness* (Sen, 2010, p. 197). Behaviour is *rational* if the actor can justify it to herself, i.e., if she can provide convincing reasons to herself. It is *reasonable* if she can sustain this reasoning in front of others, i.e., provide 'reasons nobody could reasonably reject' (Scanlon, 1982). Obviously, Senian reasonableness is closely related to Habermasian *communicative rationality* (Habermas, 1981) and, also, to the pragmatist approach of Bromley (2008).

Furthermore, Sen draws upon a concept originally proposed by Adam Smith: the *impartial spectator*, a device that is meant to support reasoning. The idea behind the impartial spectator is that in justifying our actions, both individual and collective, we should 'not leav[e] out the perspectives and reasonings presented by anyone whose assessments are relevant, either because their interests are involved, or because their ways of thinking about these issues throw light on particular judgements – a light that might be missed in the absence of giving those perspectives an opportunity to be aired' (Sen, 2010, p. 44). Note that while the former part, i.e., including others 'whose interests are involved,' is closely related to the Rawlsian idea of deciding behind a 'veil of ignorance' (Rawls, 1971; see also Buchanan and Tullock, 1962), the consideration of perspectives of 'enlightenment relevance' (Sen, 2010, p. 132) goes explicitly beyond Rawls since it focuses on non-stakeholders. In Sen's and Smith's interpretation, the impartial spectator is primarily a thought experiment, not necessarily an actual person. The goal of applying this device is to go beyond the opinions and perceptions of facts that are co-determined by one's social environment, and to transcend them. From this perspective, a reasonable action is one that can be sustained in the light of the need to provide *impartial* reasoning.

In addition to his approach to rationality, an interesting point from the perspective of DMV in Sen's theory of justice is his insistence on the irreducible 'plurality of impartial reasons.' Sen

argues, contrary to many other political theorists who dealt with similar issues,⁷ that reasoning cannot and should not be expected to lead to unanimity and consensus (see also Dryzek, 2013). This goes beyond the sole diagnosis that consensus might not be practically feasible in many cases (Buchanan and Tullock, 1962, chap. 7) and is in line with the argument of Elster (1982, p. 237) that ‘unanimity, even if sincere, could easily be spurious in the sense of deriving from conformity rather than from rational conviction’ and that some mechanism for the aggregation of individual preferences is necessary (Elster, 1983, chap. I.5). In fact, an important part of Sen’s work on social choice theory is dedicated to finding ways to overcome Arrow’s Impossibility Theorem (Arrow, 1951; Maskin and Sen, 2014) and he argues in this context that it is necessary to expand the informational basis of social choice, e.g., by allowing for interpersonal utility comparisons (Sen, 2002). Also, he argues that both self-interested and commitment-driven reasons can survive impartial scrutiny, which is an argument in favour of taking both individual and social preferences into account (also Elster, 1983, p. 38; Lo and Spash, 2013). There is, thus, not one rational or reasonable course of action in each situation – even though there may be clearly identifiable irrational ones.

In the next section, we draw implications of Sen’s approach for DMV and discuss them.

4 Implications of Amartya Sen’s work for DMV

In previous section we presented a number of tenets from the work of Amartya Sen that we believe can be informative and useful for the theory of DMV: His distinction between sympathy and commitment and the emphasis on motivations as important source of information beyond choice-based preferences; the concept of meta-rankings of preferences, in which constraints sets are varied; the distinction between rationality and reasonableness and the concept of impartial spectator, which together offer an alternative to rational choice

⁷ Prominent examples are John Rawls (1971) and Jürgen Habermas (1981).

theory's narrow view of rationality; and the emphasis on the plurality of impartial reasons. In what follows, we discuss each of these elements of Sen's work and their implications for DMV. For each point, we briefly summarise its relation towards neoclassical economic theory.

Sympathy and commitment: the role of motivations

The Senian distinction between sympathy and commitment emphasises the role of motivations for human choices and behaviour. This distinction's relevance depends on the particular context. For instance, in valuation contexts it is of lesser importance than when the goal is to explain and/or predict human behaviour. Still, it can be argued that not distinguishing between different sources of motivation violates the economic rationality assumptions on which economic valuation is based (including, at least to some extent, most DMV applications). However, as shown by Spash et al. (2009) or Kahneman et al. (1999), respondents in SP studies regularly violate these assumptions anyway. From the perspectives of both conventional economic valuation and DMV, there are three ways of coping with this dilemma. First, one may recur to an extreme version of preference utilitarianism and ignore motivations entirely, thus focusing exclusively on choices. This, however, amounts to a serious loss of information. Second, one may try to move the elicited preferences closer to the utilitarian ideal, as called for by many proponents of (preference) utilitarianism in the context of social justice considerations (Harsanyi, 1977; Mirrlees, 1982). This, however, involves 'open[ing] a pandora's box' (Hahn, 1982, p. 188fn.) by implying a definition of these supposedly 'rational' or 'true utilitarian preferences,' or determining whether participants actually have arrived at them. On top of that, of course, there is the problem of practical application of such 'enhancement' of the 'quality' of the elicited preferences. The third way out, implicitly suggested by Sen, would be a middle way: we accept that there are different motivations, but (i) allow for deliberation so as to make the preferences more informed and

reasonable at least by procedural means (i.e. via the structure of deliberation; in line with the concept of an ‘ideal speech situation’ of Habermas (1981)), without substantive judgements having to be involved,⁸ and (ii) audio- or video-record the deliberations so as to at least qualitatively identify the motivations. Thus, we would acquire two complementary sources of information: WTP and qualitative data on the motives behind these values.

Accepting non-utilitarian motivated preferences would, of course, imply a departure from narrow neoclassical assumptions; however, as suggested above, since conventional economic valuation cannot distinguish between different motivations in practice, a more open approach is only realistic – and need not be overly problematic from a theoretical point of view, as shown by Aldred (1994).

Meta-rankings: understanding the importance of constraints

Based on our experiences from conducting DMV studies, we observe that participants do not always make a clear distinction between their (first-order) preferences given current constraints (institutional, budgetary, psychological...) and their second-order preferences over different hypothetical ‘worlds’ with differing sets of constraints.

It was pointed out by Sen himself in the context of contingent valuation that ‘[w]hat I am willing to contribute [to an environmental public good] must, given the nature of the task, depend on how much I expect others to contribute’ (Sen, 2000, p. 949), which is a possibly common issue involving meta-rankings, when the behaviour of others is included in the set of constraints one is facing. If designed properly, DMV is relatively well-suited to deal with such problems. On the one hand, it should be made clear to participants that they should not intermingle first-order and second-order preferences. In a deliberative setting, they have the

⁸ Which means that a Habermasian ideal speech situation is only a ‘benchmark’ for deliberative elements; in practice, they can only approximate this ideal.

opportunity to clarify for themselves which preferences belong to which category. An option would be to elicit both: in a first elicitation round, participants could be asked explicitly to make choices/state their WTP given the constraints they are currently facing (especially institutional constraints might be relevant). In a second round, the WTP elicitation could be extended by including factors which influence second-order preferences (to be derived from pre-testing and focus groups), such as legal options dictating the payment vehicle or the general national and supranational legal context. However, there is the danger of overtaxing participants if second-order preferences are to be co-elicited. Another, less demanding way of taking information on second-order preferences into account would be the application of ‘think aloud’ approaches in the preference elicitation phase (e.g. Schkade and Payne, 1994), so as to identify whether people take second-order preferences into account or not. Furthermore, the discussions themselves can provide qualitative insights into the constraints which shape participants’ second-order preferences.

As with non-utilitarian motivations, the consideration of preference meta-rankings would be a departure from neoclassical economic theory that would actually help to overcome a limitation that conventional economic valuation glosses over, viz. that participants in SP studies intermingle first-order and second-order preferences; if the two can be separated better, it would actually be an improvement even from the point of view of standard economics. Thus, by adding a layer to the analysis, DMV actually enhances preference elicitation from standard-economic perspective.

Impartial spectator and reasonableness: ensuring impartiality

The implication suggested by how Sen defines rationality/reasonableness and by his invocation of the figure of impartial spectator is of a more practical nature, namely that it might be sensible to include in deliberative formats impartial spectators, i.e. participants who do not have any vested interests in the issue at stake (non-stakeholders). Conventional

deliberative valuation approaches mostly rely on inviting groups limited to people who have a more or less direct relationship to the ecosystem change valued (stakeholders). This, however, carries the danger of what Sen calls ‘local parochialism’ (Sen, 2010, pp. 128–130), i.e. either ignoring repercussions of local collective actions for the outside world or overlooking important reasons because of limited collective experience, local norms etc. The participation of outsiders of ‘enlightenment relevance’ (p. 132) may help to bring about not only more rational/reasonable choices, but also choices that are less prone to hypothetical bias, because participants in deliberative valuation workshops can be expected to reason about their motivations more thoroughly. In practice, it might be difficult to find completely stake-less participants for valuation studies. Thus, the role of the impartial spectator might be taken by well-informed outsiders, e.g. a scientist not directly linked to the specific project. It should be noted that the role of the impartial spectator would be restricted to introducing ‘outsider’s’ arguments into the discussion.

In our view, of all implications of Sen’s thinking for DMV discussed here, this is the most serious departure from neoclassical economic theory. It explicitly moves beyond narrow instrumental rationality by including a broader perspective; at the same time, as discussed in the next subsection on plurality of impartial reasons, Sen does not go as far as communicative rationality – despite introducing the impartial spectator, he still relates both rationality and reasonableness to the individual, not the group/collective. Therefore, his approach can be viewed as bridging the rationality perspectives of neoclassical economics and Habermasian discursive ethics.

Plurality of impartial reasons: the case against consensus

Sen’s inherently pluralist approach calls into question the idea of some scholars, both philosophers and economists, that consensus/unanimity should be the goal of deliberation (Cohen, 1997; Wilson and Howarth, 2002). Within the field of DMV specifically, emphasis

has also been occasionally put on consensus, mostly with reference to the ‘model’ of court juries (e.g. Brown et al., 1995; Wilson and Howarth, 2002). Importantly, Sen’s point is that even if all participants in a debate are reasonable, they may still not be able to reach consensus. To put it in Habermasian terms, even an ‘ideal speech situation’ might not guarantee unanimity and consensus, e.g. due to ‘deep moral disagreement’ (Dryzek, 2013). Thus, forcing participants to agree on e.g. a social WTP may be contradictory to and suppress the ‘plurality of impartial reasons.’ Rather, one could see DMV as similar to negotiations: after arguments have been exchanged, there is a need to allow participants to express their preferences which might still diverge – they are then able to fall back on the ‘best alternative to a negotiated agreement’ in terms of modern negotiation theory (e.g., Raiffa et al., 2007, p. 110), if they are not convinced by the arguments of their deliberation partners. Nevertheless, this does not mean that DMV should be always based on individual elicitation of preferences/values. In some cases, deliberation can be sufficient to overcome controversies, so that e.g. social WTP elicitation is an option (e.g. Kenter et al., 2011). This has, however, to be decided on a case-to-case basis. In fact, in some contexts, in which the prior anticipation of deep moral disagreement cannot be ensured, it might be an option to use a flexible approach, being prepared to elicit either individual WTPs or social WTP (or even both). For a similarly flexible perspective on consensus seeking, see Lo (2013). However, in contrast to that study, we would expect that consensus seeking is problematic in most cases and may lead to ‘spurious unanimity’ (Elster, 1982), so caution is commendable when social WTP is to be elicited.

By allowing for a ‘plurality of impartial reasons’ one retains a central tenet of neoclassical welfare economics – the focus on individual preferences; this also implies departure from some more radical approaches to DMV by realising that even a Habermasian ‘ideal speech situation’ (which is usually not attainable) need not guarantee consensus.

Preference aggregation: if not social WTP then what?

If consensus is not an option in a specific context, how should diverging individual preferences be aggregated? In other words, is an aggregated WTP figure derived from a SP method (choice experiment or contingent valuation), even if combined with deliberation to facilitate reasonableness of preferences, a proper mechanism for preference aggregation? While it was argued (Dasgupta et al., 1972, p. 40) that, in principle, various non-consumption social policy objectives can be accounted for by correcting measures of aggregate consumption, i.e. the aggregated sum of individual WTPs, which is what DMV is effectively supposed to do, there remain objectives which cannot be easily factored in (see also Randall, 2002; Hammitt, 2013). Thus, it might be argued that economic valuation, especially of complex environmental goods, i.e. those arguably necessitating the use of DMV (Lienhoop et al., 2015; Meinard and Grill, 2011), is an imperfect information tool rather than a precise basis for comprehensive social choice. In fact, this might well be the proper interpretation of the preference utilitarian foundations of SP methods – they are more of a ‘status quo assessment’ that marks the beginning of a public debate than the end of such discussion.

Still, the question whether WTP elicitation is the right way to aggregate individual preferences cannot be easily answered by referring to Sen’s work, although his discussion of the ‘discipline of cost-benefit analysis’ (Sen, 2000) – including a pointer to the important problem of ‘warm glow’ (Andreoni, 1990) – and his earlier paper on contingent valuation (Sen, 1995) suggest that he is highly sceptical of at least the conventional valuation approach. His opposition seems, however, to derive mainly from concern about the consumer–citizen dichotomy (see also Sagoff, 1988) and the limited amount of information provided by economic valuation studies, especially when they are meant to decisively inform decision-making processes as e.g. via cost-benefit analysis (CBA), in line with the critique that ‘choices cannot be relied upon to reveal preferences, particularly in the absence of

information on agents' beliefs and how they conceive of the decision' (Aldred, 2006, p. 150). If, however, economic valuation is viewed as a useful yet imprecise and imperfect source of information, and further information about motivations can be collected during the deliberative process, individual WTP elicitation might still be a useful source of preference information. It certainly has the advantage over many other preference aggregation mechanisms such as voting schemes that it provides information about the relative intensity of preferences (Bartkowski and Lienhoop, 2016) – a point that was emphasised by Sen repeatedly in his criticism of Arrow's famous Impossibility Theorem (Arrow, 1951; Maskin and Sen, 2014).

Given the plurality of impartial reasons, there is a need for a preference aggregation mechanism. For lack of better alternatives, the additive approach behind conventional economic valuation can be useful, especially if enriched with additional information provided by the deliberative elements. As such, the results of DMV should be usable in CBA – however, it should be kept in mind that some decision-relevant information cannot be derived from aggregated preferences (including non-consequentialist ethical considerations or distributive concerns glossed over by the implicit application of the Kaldor-Hicks criterion). Thus, a CBA does not replace a political decision-making process, it can only inform such a process (see also Hammitt, 2013; Hockley, 2014).

5 Conclusions

DMV is an increasingly popular approach in the area of economic valuation of the environment. It has the potential to alleviate a number of problems of conventional economic valuation in general and SP methods in particular. Specifically, it responds to the two major points of criticism: First, that people do not have pre-defined preferences for complex and unfamiliar environmental goods, and that preferences are normally formed through social interactions; second, that conventional economics' perspective on human rationality is overly

narrow and restrictive. However, because DMV is a relatively new concept, it lacks a consistent theoretical foundation. Particularly, it is unclear what the relationship between economic rationality and communicative rationality should be within DMV; and how individual preferences should be aggregated.

We argued in this paper that Amartya Sen’s work can serve as a bridge between the two conflicting sources of theoretical inspiration on which DMV is based, viz. neoclassical welfare economics and the theory of deliberative democracy. We presented a number of elements of Sen’s work which can inform the theory of DMV and derived from them implications for DMV (see Table 2). These can be summarised as theses in the following way:

1. The deliberative part of DMV should be used to collect (qualitative) data on participants’ motivations.
2. Clear delineation between first- and second-order preferences is crucial; it can be achieved in numerous ways and can even enrich the informational outcome of DMV.
3. The inclusion of impartial spectator perspectives enhances the process of preference formation.
4. Consensus-based (e.g. social WTP) approaches are only of limited relevance; the plurality of impartial reasons calls for other preference aggregation mechanisms.
5. Individual elicitation of preferences is compatible with the ideals of DMV if economic valuation is interpreted as an imperfect information tool rather than generator of precise and comprehensive numbers.

Table 2: Summary of DMV-relevant insights from Amartya Sen’s work and their implications for DMV research

DMV-related issue	Sen’s contribution	Implication for DMV
economic vs. communicative	sympathy vs. commitment →	deliberation as means to

rationality	different motivational bases of behaviour	identify and disentangle motivations; value elicitation not differentiating anyway
	meta-rankings of preferences	clear delineation crucial; elicitation of both possibly interesting, though cognitively difficult
	reasonableness as result of reasoning with others + impartial spectator	inclusion of 'impartial spectator' in group discussions
preference aggregation (monetary? non-monetary? individual? social?)	plurality of impartial reasons	consensus-based approaches (including elicitation of social WTP) only limitedly applicable
	both individual and social preferences important + informationally rich aggregation mechanisms necessary	WTP elicitation a viable option; social WTP only of limited importance

Since our paper was mainly concerned with the theoretical underpinnings of DMV, it is too early to provide firm recommendations for the methodological implementation of Sen's thoughts. The practical ideas we presented with regards to the role of participants' motivation, meta-rankings, and the impartial spectator need to undergo careful empirical inspection before final conclusions can be drawn. For example, experimental designs exploring the impact of an impartial spectator on the deliberative valuation process and outcome as well as developing and testing suitable approaches to the elicitation of first- and second-order preferences in group settings would be relevant research tasks in order to transfer these theoretical ideas into practice. So far, our discussion is hopefully a fruitful contribution to a more coherent theoretical footing of DMV and it pinpoints open questions worthy of further research.

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References

- Aldred, J., 2006. Incommensurability and monetary valuation. *Land Economics* 82, 141–161. doi:10.3368/le.82.2.141
- Aldred, J., 1994. Existence value, welfare and altruism. *Environmental Values* 3, 381–402. doi:10.3197/096327194776679665
- Álvarez-Farizo, B., Hanley, N., 2006. Improving the process of valuing non-market benefits: Combining citizens' juries with choice modelling. *Land Economics* 82, 465–478. doi:10.3368/le.82.3.465
- Ami, D., Aprahamian, F., Chanel, O., Joulé, R.-V., Luchini, S., 2014. Willingness to pay of committed citizens: A field experiment. *Ecological Economics* 105, 31–39. doi:10.1016/j.ecolecon.2014.04.014
- Andreoni, J., 1990. Impure altruism and donations to public goods: A theory of warm-glow giving. *The Economic Journal* 100, 464–477. doi:10.2307/2234133
- Arrow, K.J., 1951. *Social choice and individual values*, Monograph / Cowles Foundation for Research in Economics at Yale University. Wiley, New York.
- Axelrod, R., Hamilton, W.D., 1981. The evolution of cooperation. *Science* 211, 1390–1396. doi:10.1126/science.7466396
- Bartkowski, B., Lienhoop, N., 2016. Democracy and valuation: A reply to Schläpfer (2016). *Ecological Economics*. doi:10.1016/j.ecolecon.2016.05.011
- Becker, G.S., 1996. *Accounting for tastes*. Harvard University Press, Cambridge, Mass.
- Braga, J., Starmer, C., 2005. Preference anomalies, preference elicitation and the discovered preference hypothesis. *Environmental and Resource Economics* 32, 55–89. doi:10.1007/s10640-005-6028-0
- Bromley, D.W., 2008. Volitional pragmatism. *Ecological Economics* 68, 1–13. doi:10.1016/j.ecolecon.2008.08.012
- Brown, T.C., Peterson, G.L., Tonn, B.E., 1995. The Values Jury to aid natural resource decisions. *Land Economics* 71, 250–260. doi:10.2307/3146505
- Buchanan, J.M., Tullock, G., 1962. *The calculus of consent: Logical foundations of constitutional democracy*. University of Michigan Press, Ann Arbor.
- Bunse, L., Rendon, O., Luque, S., 2015. What can deliberative approaches bring to the monetary valuation of ecosystem services? A literature review. *Ecosystem Services* 14, 88–97. doi:10.1016/j.ecoser.2015.05.004
- Christie, M., Hanley, N., Warren, J., Murphy, K., Wright, R., Hyde, T., 2006. Valuing the diversity of biodiversity. *Ecological Economics* 58, 304–317. doi:10.1016/j.ecolecon.2005.07.034
- Christie, M., Rayment, M., 2012. An economic assessment of the ecosystem service benefits derived from the SSSI biodiversity conservation policy in England and Wales. *Ecosystem Services* 1, 70–84. doi:10.1016/j.ecoser.2012.07.004
- Cohen, J., 1997. Deliberation and democratic legitimacy, in: Bohman, J., Rehg, W. (Eds.), *Deliberative Democracy: Essays on Reason and Politics*. MIT Press, Cambridge, MA, pp. 67–91.
- Dasgupta, P., Sen, A., Marglin, S., 1972. *Guidelines for project evaluation*, Project Formulation and Evaluation Series. United Nations, New York.
- de Groot, R., Brander, L., van der Ploeg, S., Costanza, R., Bernard, F., Braat, L., Christie, M., Crossman, N., Ghermandi, A., Hein, L., Hussain, S., Kumar, P., McVittie, A., Portela, R., Rodriguez, L.C., ten Brink, P., van Beukering, P., 2012. Global estimates of the value of ecosystems and their services in monetary units. *Ecosystem Services* 1, 50–61. doi:10.1016/j.ecoser.2012.07.005
- de Waal, F.B.M., 2009. *Primates and philosophers: how morality evolved*. Princeton Univ. Press, Princeton, NJ.

- Dietz, T., Stern, P.C., Dan, A., 2009. How deliberation affects stated willingness to pay for mitigation of carbon dioxide emissions: An experiment. *Land Economics* 85, 329–347. doi:10.3368/le.85.2.329
- Dryzek, J.S., 2013. The deliberative democrat's Idea of Justice. *European Journal of Political Theory* 12, 329–346. doi:10.1177/1474885112466784
- Dryzek, J.S., 2000. *Deliberative democracy and beyond: Liberals, critics, contestations*. Oxford University Press, Oxford.
- Elster, J., 1983. *Sour grapes: Studies in the subversion of rationality*. Cambridge University Press, Cambridge; New York; Paris.
- Elster, J., 1982. Sour grapes - utilitarianism and the genesis of wants, in: Sen, A., Williams, B. (Eds.), *Utilitarianism and beyond*. Cambridge University Press, Cambridge ; New York, pp. 219–238.
- Fishkin, J.S., 1993. *Democracy and deliberation: New directions for democratic reform*. Yale University Press, New Haven.
- Frankfurt, H.G., 1971. Freedom of the will and the concept of a person. *The Journal of Philosophy* 68, 5–20. doi:10.2307/2024717
- Goodin, R.E., Dryzek, J.S., 2006. Deliberative impacts: The macro-political uptake of mini-publics. *Politics Society* 34, 219–244. doi:10.1177/0032329206288152
- Gregory, R., Failing, L., Harstone, M., Long, G., McDaniels, T., Ohlson, D., 2012. *Structured Decision Making: A practical guide to environmental management choices*. Wiley-Blackwell, Chichester, West Sussex ; Hoboken, N.J.
- Habermas, J., 1981. *Theorie des kommunikativen Handelns*. Suhrkamp, Frankfurt am Main.
- Hahn, F.H., 1982. On some difficulties of the utilitarian economist, in: Sen, A., Williams, B. (Eds.), *Utilitarianism and beyond*. Cambridge University Press, Cambridge ; New York, pp. 187–198.
- Hammitt, J.K., 2013. Positive versus normative justifications for benefit-cost analysis: Implications for interpretation and policy. *Rev Environ Econ Policy* 7, 199–218. doi:10.1093/reep/ret009
- Harsanyi, J.C., 1977. Morality and the theory of rational behavior. *Social Research* 44, 623–656.
- Hirschman, A.O., 1982. *Shifting involvements: Private interest and public action*. Martin Robertson, Oxford.
- Hockley, N., 2014. Cost-benefit analysis: A decision-support tool or a venue for contesting ecosystem knowledge? *Environ Plann C Gov Policy* 32, 283–300. doi:10.1068/c1384j
- Howarth, R.B., Wilson, M.A., 2006. A theoretical approach to deliberative valuation: Aggregation by mutual consent. *Land Economics* 82, 1–16. doi:10.3368/le.82.1.1
- Jolls, C., Sunstein, C.R., Thaler, R., 1998. A behavioral approach to law and economics. *Stanford Law Review* 50, 1471–1550. doi:10.2307/1229304
- Kahneman, D., Ritov, I., Schkade, D.A., 1999. Economic preferences or attitude expressions?: An analysis of Dollar responses to public issues. *Journal of Risk and Uncertainty* 19, 203–35.
- Kenter, J.O., Bryce, R., Christie, M., Cooper, N., Hockley, N., Irvine, K.N., Fazey, I., O'Brien, L., Orchard-Webb, J., Ravenscroft, N., Raymond, C.M., Reed, M.S., Tett, P., Watson, V., 2016. Shared values and deliberative valuation: Future directions. *Ecosystem Services* 21, 358–371. doi:10.1016/j.ecoser.2016.10.006
- 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. *Global Environmental Change* 21, 505–521. doi:10.1016/j.gloenvcha.2011.01.001

- Kenyon, W., Nevin, C., 2001. The use of economic and participatory approaches to assess forest development: a case study in the Etrick Valley. *Forest Policy and Economics* 3, 69–80. doi:10.1016/S1389-9341(01)00055-7
- Lienhoop, N., Bartkowski, B., Hansjürgens, B., 2015. Informing biodiversity policy: The role of economic valuation, deliberative institutions and deliberative monetary valuation. *Environmental Science & Policy* 54, 522–532. doi:10.1016/j.envsci.2015.01.007
- Lienhoop, N., MacMillan, D.C., 2007a. Valuing wilderness in Iceland: Estimation of WTA and WTP using the market stall approach to contingent valuation. *Land Use Policy* 24, 289–295. doi:10.1016/j.landusepol.2005.07.001
- Lienhoop, N., MacMillan, D.C., 2007b. Contingent valuation: Comparing participant performance in group-based approaches and personal interviews. *Environmental Values* 16, 209–232. doi:10.3197/096327107780474500
- Lienhoop, N., Völker, M., 2016. Preference refinement in deliberative choice experiments. *Land Economics*.
- Lo, A.Y., 2013. Agreeing to pay under value disagreement: Reconceptualizing preference transformation in terms of pluralism with evidence from small-group deliberations on climate change. *Ecological Economics* 87, 84–94. doi: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. *Journal of Economic Surveys* 27, 768–789. doi:10.1111/j.1467-6419.2011.00718.x
- MacMillan, D.C., Hanley, N., Lienhoop, N., 2006. Contingent valuation: Environmental polling or preference engine? *Ecological Economics* 60, 299–307. doi:10.1016/j.ecolecon.2005.11.031
- MacMillan, D.C., Philip, L., Hanley, N., Alvarez-Farizo, B., 2002. Valuing the non-market benefits of wild goose conservation: a comparison of interview and group based approaches. *Ecological Economics* 43, 49–59. doi:10.1016/S0921-8009(02)00182-9
- Maskin, E., Sen, A., 2014. The Arrow impossibility theorem, Kenneth J. Arrow lecture series. Columbia University Press, New York.
- Meinard, Y., Grill, P., 2011. The economic valuation of biodiversity as an abstract good. *Ecological Economics* 70, 1707–1714. doi:10.1016/j.ecolecon.2011.05.003
- Mirrlees, J.A., 1982. The economic uses of utilitarianism, in: Sen, A., Williams, B. (Eds.), *Utilitarianism and beyond*. Cambridge University Press, Cambridge ; New York, pp. 63–84.
- Niemeyer, S., 2004. Deliberation in the wilderness: Displacing symbolic politics. *Environmental Politics* 13, 347–372. doi:10.1080/0964401042000209612
- Niemeyer, S., Spash, C.L., 2001. Environmental valuation analysis, public deliberation, and their pragmatic syntheses: a critical appraisal. *Environment and Planning C: Government and Policy* 19, 567–585. doi:10.1068/c9s
- Olson, G.I., Schober, B.I., 1993. The satisfied poor. *Soc Indic Res* 28, 173–193. doi:10.1007/BF01079657
- Orchard-Webb, J., Kenter, J.O., Bryce, R., Church, A., 2016. Deliberative Democratic Monetary Valuation to implement the Ecosystem Approach. *Ecosystem Services* 21, 308–318. doi:10.1016/j.ecoser.2016.09.005
- Raiffa, H., Richardson, J., Metcalfe, D., 2007. *Negotiation analysis: the science and art of collaborative decision making*. Belknap Press of Harvard Univ. Press, Cambridge, Mass.
- Randall, A., 2002. Benefit-cost considerations should be decisive when there is nothing more important at stake, in: Bromley, D.W., Paavola, J. (Eds.), *Economics, Ethics, and Environmental Policy: Contested Choices*. Blackwell Publishers, Malden, pp. 53–68.
- Rawls, J., 1971. *A theory of justice*. Belknap Press of Harvard University Press, Cambridge, MA.

- Raymond, C.M., Kenter, J.O., 2016. Transcendental values and the valuation and management of ecosystem services. *Ecosystem Services* 21, 241–257. doi:10.1016/j.ecoser.2016.07.018
- Reiss, J., 2013. *Philosophy of economics: a contemporary introduction*, Routledge Contemporary Introductions to Philosophy. Routledge, New York, NY.
- Robinson, J., Clouston, B., Suh, J., Chaloupka, M., 2008. Are citizens' juries a useful tool for assessing environmental value? *Environmental Conservation* 35, 351–360. doi:10.1017/S0376892908005213
- Sagoff, M., 1998. Aggregation and deliberation in valuing environmental public goods: A look beyond contingent pricing. *Ecological Economics* 24, 213–230. doi:10.1016/S0921-8009(97)00144-4
- Sagoff, M., 1988. *The economy of the earth: Philosophy, law, and the environment*, Cambridge studies in philosophy and public policy. Cambridge University Press, Cambridge; New York.
- Samuelson, P.A., 1938. A note on the pure theory of consumer's behaviour. *Economica* 5, 61–71. doi:10.2307/2548836
- Scanlon, T.M., 1982. Contractualism and utilitarianism, in: Sen, A., Williams, B. (Eds.), *Utilitarianism and beyond*. Cambridge University Press, Cambridge ; New York, pp. 103–128.
- Schkade, D.A., Payne, J.W., 1994. How people respond to contingent valuation questions: A verbal protocol analysis of willingness to pay for an environmental regulation. *Journal of Environmental Economics and Management* 26, 88–109. doi:10.1006/jeem.1994.1006
- Scholtes, F., 2010. Whose sustainability? Environmental domination and Sen's capability approach. *Oxford Development Studies* 38, 289–307. doi:10.1080/13600818.2010.505683
- Sen, A., 2010. *The idea of justice*. Penguin, London.
- Sen, A., 2002. The informational basis of social choice, in: Arrow, K.J., Sen, A., Suzumura, K. (Eds.), *Handbook of Social Choice and Welfare*, Handbooks in Economics. Elsevier, Amsterdam ; Boston, pp. 29–46.
- Sen, A., 2001. *Development as freedom*. Oxford University Press, Oxford; New York.
- Sen, A., 2000. The discipline of cost-benefit analysis. *The Journal of Legal Studies* 29, 931–952. doi:10.1086/468100
- Sen, A., 1995. Environmental evaluation and social choice: Contingent valuation and the market analogy. *Japanese Economic Review* 46, 23–37. doi:10.1111/j.1468-5876.1995.tb00003.x
- Sen, A., 1987. *On ethics and economics*. Blackwell, Oxford; New York.
- Sen, A., 1985. *Commodities and capabilities*. Oxford University Press, Delhi; New York.
- Sen, A., 1977. Rational fools: A critique of the behavioural foundations of economic theory. *Philosophy and Public Affairs* 6, 317–344.
- Sen, A., 1976. Liberty, unanimity and rights. *Economica* 43, 217–245. doi:10.2307/2553122
- Sen, A., 1974. Choice, orderings and morality, in: Körner, S. (Ed.), *Practical Reason*. Blackwell, Oxford, pp. 54–63.
- Smith, A., 1759. *The theory of moral sentiments*. London.
- Söderholm, P., 2001. The deliberative approach in environmental valuation. *Journal of Economic Issues* 35, 487–495.
- Soma, K., Vatn, A., 2014. Representing the common goods – Stakeholders vs. citizens. *Land Use Policy* 41, 325–333. doi:10.1016/j.landusepol.2014.06.015
- Spash, C.L., 2007. Deliberative monetary valuation (DMV): Issues in combining economic and political processes to value environmental change. *Ecological Economics* 63, 690–699. doi:10.1016/j.ecolecon.2007.02.014

- Spash, C.L., 2006. Non-economic motivation for contingent values: Rights and attitudinal beliefs in the willingness to pay for environmental improvements. *Land Economics* 82, 602–622. doi:10.3368/le.82.4.602
- Spash, C.L., Urama, K., Burton, R., Kenyon, W., Shannon, P., Hill, G., 2009. Motives behind willingness to pay for improving biodiversity in a water ecosystem: Economics, ethics and social psychology. *Ecological Economics* 68, 955–964. doi:10.1016/j.ecolecon.2006.09.013
- Svedsäter, H., 2003. Economic valuation of the environment: How citizens make sense of contingent valuation questions. *Land Economics* 79, 122–135. doi:10.3368/le.79.1.122
- Szabó, Z., 2011. Reducing protest responses by deliberative monetary valuation: Improving the validity of biodiversity valuation. *Ecological Economics* 72, 37–44. doi:10.1016/j.ecolecon.2011.09.025
- Tversky, A., Kahneman, D., 1974. Judgment under uncertainty: Heuristics and biases. *Science* 185, 1124–1131. doi:10.1126/science.185.4157.1124
- Vargas, A., Lo, A., Howes, M., Rohde, N., 2017. The problem of inclusion in deliberative environmental valuation. *Environmental Values* 26, 157–176. doi:10.3197/096327117X14847335385472
- Vargas, A., Lo, A.Y., Rohde, N., Howes, M., 2016. Background inequality and differential participation in deliberative valuation: Lessons from small-group discussions on forest conservation in Colombia. *Ecological Economics* 129, 104–111. doi:10.1016/j.ecolecon.2016.06.009
- Vatn, A., 2009. An institutional analysis of methods for environmental appraisal. *Ecological Economics* 68, 2207–2215. doi:10.1016/j.ecolecon.2009.04.005
- Vatn, A., 2005. Rationality, institutions and environmental policy. *Ecological Economics* 55, 203–217. doi:10.1016/j.ecolecon.2004.12.001
- Vatn, A., 2004. Environmental valuation and rationality. *Land Economics* 80, 1–18. doi:10.2307/3147141
- Völker, M., Lienhoop, N., 2016. Exploring group dynamics in deliberative choice experiments. *Ecological Economics* 123, 57–67. doi:10.1016/j.ecolecon.2016.01.006
- Wilson, M.A., Howarth, R.B., 2002. Discourse-based valuation of ecosystem services: establishing fair outcomes through group deliberation. *Ecological Economics* 41, 431–443. doi:10.1016/S0921-8009(02)00092-7