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UFZ Discussion Papers

Department of Economics

2/2017

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March 2017

Publisher:
Helmholtz-Zentrum für Umweltforschung GmbH – UFZ
Permoserstr. 15
04318 Leipzig

ISSN 1436-140X

Existence value, biodiversity, and the utilitarian dilemma

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Abstract

Existence value has been argued to be a significant part of the total economic value of some ecosystems. However, its compatibility with the welfare economic foundations of economic valuation is very limited – it is difficult to logically conceive of changes in existence. Moreover, when applied to biodiversity, the concept of existence value gives rise to an instance of a more fundamental problem of economic valuation, termed here the utilitarian dilemma: it can be argued conceptually that biodiversity cannot have existence value; yet the results of empirical studies suggest that people in stated preference studies can be expected to assign existence value to it. The utilitarian dilemma arises as the analysing economist must deal somehow with 'erroneous' preferences. There seems to be no simple solution to the dilemma, but deliberative monetary valuation has the potential to alleviate it.

Keywords: axiology, biodiversity, economic valuation, existence value, utilitarianism

1 Introduction

Conceptually, economic valuation of the environment is usually based on the total economic value (TEV) framework. Its main element is the distinction between use values and non-use values, which goes back to Krutilla (1967). The distinction is controversial for numerous reasons. On the one hand, many economists claim that non-use values (or, as they are sometimes called, passive-use values (Arrow et al., 1993)) are an important component of the economic value of ecosystems, and that they make the scope of economic valuation decisively broader than the often-criticised focus on use-derived values only (e.g. Pascual et al., 2010). On the other hand, non-use values can only be captured by means of stated preference methods, which many consider highly problematic for both methodological and ethical reasons (Diamond and Hausman, 1994; McCauley, 2006; Sagoff, 1988; Spash, 2008). Some economists have even argued to therefore restrict economic valuation to analysis of use values only (e.g. Cannon and Surjadi, 2004). Moreover, it is often not entirely clear what exactly belongs in these two categories, especially in non-use values (Chan et al., 2012), and whether they are the only components of TEV (Bartkowski, 2017; Davidson, 2013). However, this paper takes the standard and

widespread version of TEV with the basic distinction between use values and non-use values as its starting point.

The non-use values category can itself be divided in three sub-categories: (i) existence value, (ii) bequest value and (iii) altruistic value. Roughly, these are the result of people deriving utility from (i) knowing that an ecosystem, a species, a population etc. *exists*, (ii) knowing that *future generations* will be able to derive utility from a given (part of an) ecosystem, and (iii) knowing that *people elsewhere* derive utility from a given (part of an) ecosystem. Categories (ii) and (iii) are consistent with what Sen (1977) called 'sympathy' and with broader versions of rational choice theory (e.g., Becker, 1996; Jolls et al., 1998). The focus of the present paper, however, is on (i) existence value, which can be argued to constitute a significant portion of the TEV of some ecosystems (Kontogianni et al., 2012; Krutilla, 1967). However, it is also quite controversial in many respects, including its conventional welfare-economic interpretation (Aldred, 1994), its sensitivity to social norms and values (Martín-López et al., 2008) or the so-called warm glow effect (Andreoni, 1990; Kahneman and Knetsch, 1992). In fact, as will be argued below, its very consistence with economic theory is debatable, even beyond the warm glow effect. The question is whether existence value is compatible with the welfare-economic axiom that economic value derives from trade-offs and, thus, from (marginal) changes in the supply of a good. The main focus of the present paper, however, is on a phenomenon called here the *utilitarian dilemma*: preference utilitarianism, which welfare economics and, consequently, economic valuation is based on, dictates that all preferences are to be accounted for when calculating the economic value of a good. It has already been pointed out repeatedly that this is problematic because it admits obviously 'perverse' preferences (e.g. Sagoff, 1988; Sen, 1977). A different, important yet less prominent problem, however, is that sometimes the preferences expressed violate logic and/or similar first principles, or they result from misguided perception of facts.[1] A striking example is biodiversity, which, as will be argued below, cannot have existence value – however, respondents in stated preference studies can be expected to assign existence value to it, as will be shown on the basis of the results of a qualitative focus groups study.

Another debate pertaining to existence value tackles the question whether the (explicit or implicit) claim by some economists is justified that existence value is a way to account for the intrinsic value of nature. Different answers have been given to that question; mostly, the argument has been that since intrinsic value is independent of human preferences, it is beyond

[1] Note that the idea of preferences being influenced by misguided perception of facts does not imply a narrowly positivist understanding of 'truth' (though it rejects radical constructivism). What it does imply is that *some* beliefs of human beings are objectively right or wrong. On this, see, in the context of ecological economics, Spash (2012); in a more general context, e.g. Trigg (1973).

the reach of economic analysis (Eser et al., 2014; Spangenberg and Settele, 2016), though Davidson (2013) argues that economic valuation can account for intrinsic value (assuming that it is reflected in human preferences, despite being independent of them) (see also Dasgupta, 2001, p. 260). Overall, the judgement seems to be against the economists (McShane, 2017a). In the present paper, existence value is understood as the result of preferences towards simply knowing about the existence of something, without any claims regarding the relationship between existence value and intrinsic value. However, some of the arguments used to show that biodiversity cannot sensibly have existence value are based on similar argumentation about its intrinsic value, derived especially from the excellent analysis by McShane (2017b).

The paper is structured as follows: since biodiversity is the 'case study' used throughout the paper, section 2 briefly defines the term. Section 3 discusses the issue of the apparent conflict between valuing existence and the marginalist foundation of economic valuation. Section 4 presents the utilitarian dilemma in three steps: first, it presents a number of arguments showing that biodiversity cannot sensibly have existence value; second, it presents evidence that people nevertheless ascribe existence value to biodiversity; third, the implications of this conflict and possible ways out are discussed. Section 5 concludes.

2 What is it? Defining biodiversity

> It is important to be clear about what is meant here by 'diversity'. People frequently cite conservation of diversity as a reason for mounting extraordinary efforts to preserve, say, the whooping crane. What they often really mean is that the whooping crane should be preserved because it is beautiful, or majestic, or inspiring, or because its presence confers some other direct benefit. I would say that these qualities, while important, do not really concern the value of 'diversity' per se (Weitzman, 1993, p. 159).

The point made by Weitzman is closely related to the observation made by Potthast (2014) that biodiversity is an 'epistemic-moral hybrid,' therefore being used in a rather vague manner in many contexts, including conservation (Jax and Heink, 2015) and economic valuation (Bartkowski et al., 2015; Farnsworth et al., 2015). This is a consequence of biodiversity being a highly abstract, multidimensional concept (Meinard and Grill, 2011) and it results in a number of different approaches to its definition (Meinard et al., 2014). Yet to be able to analyse biodiversity, one needs a clear picture of the concept's meaning; furthermore, since the focus here is on biodiversity *value*, it would be problematic if already its definition would imply normative components – one cannot sensibly analyse the value of something that is defined with reference to normatively laden categories. Of course, it can be argued that an entirely non-normative

definition is elusive in the present context. Even if this is true, it is necessary to start with a *possibly* value-neutral definition of biodiversity and then to proceed by trying to find out whether it can be identified as something valuable.[2] Otherwise we would pre-determine any valuation exercise already while defining the valuation object.

Biodiversity is, first and foremost, a form of *diversity*. So, it is important to ask: What is diversity in general terms? According to Stirling (2007), it is a combination of three properties of systems: variety (number of items in a category; the more items, the higher diversity, ceteris paribus), balance (distribution of elements across items in a category; the more even the distribution, the higher diversity, ceteris paribus) and disparity (degree of difference between items in a category; the less similar the items, the higher diversity, ceteris paribus). All three properties are relevant for and constitutive of diversity. They can be easily matched with ecological concepts (Table 1).[3]

Table 1 Correspondence between the dimensions of diversity in Stirling (2007) and ecological concepts

Stirling	ecology/biodiversity research
variety	richness
balance	evenness
disparity	phylogenetic distance

There exist a lot of competing approaches to defining and measuring biodiversity (see Gotelli and Chao, 2013; Meinard et al., 2014 for overviews), yet the most common and popular definition is still the one provided by the UN Convention on Biological Diversity:

> Biodiversity is the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems. (CBD, 1992)

The 'CBD definition and its reformulations' (Meinard et al., 2014, p. 88) are mostly quite general, yet they exclude the increasingly influential notion of functional diversity (Kinzig et al., 2002), effectively focusing on structural diversity only. Furthermore, they do not explicitly account for all three dimensions of diversity as proposed by Stirling (2007).

[2] There is an important difference between how value is perceived in ethics and economics, respectively, which should be mentioned here: while ethics seeks answers to questions what and why is valuable, which is a prescriptive approach, economics limits itself to identifying what is valued, which at least prima facie is a descriptive approach. However, neoclassical economic theory of value is based on the normative assumption that there is one valuable thing, namely utility (usually framed as preference satisfaction). On this, see McShane (2017a).

[3] Interestingly, it was pointed out by Baumgärtner (2007) that while ecologists tend to put more emphasis on balance/abundance, environmental economists focus more on disparity/phylogenetic distance, which can be traced back to the philosophical 'pre-analytic visions' of the two disciplines.

In the most general sense, biodiversity can be framed as the multiplicity or richness of kinds 'in biotic and biota-encompassing categories' (Maier, 2012, pp. 76–7; see also Faith, 2017); more specifically, it can be viewed as a combination of three main dimensions: taxonomic, structural and functional (Lyashevska and Farnsworth, 2012), which loosely correspond with the three diversity elements identified by Stirling (2007), since taxonomic diversity combines variety and disparity, while structural diversity is a combination of variety and balance. Functional diversity cannot be easily matched up with Stirling's concept, but it is widely argued to be an essential component of biodiversity (Farnsworth et al., 2012) and should thus be taken into account.

Importantly, biodiversity is not an entity but a property or quality of ecosystems.[4] It is not a 'thing,' it cannot be touched, smelled or seen. It is just a characteristic of ecosystems. Therefore, contrary to the term's use in many contexts, it is not equivalent to 'life on Earth' and must not be used as a synonym for 'nature,' lest it lose any analytic relevance.

3 Existence value vs. marginalism

This paper is about the existence value of biodiversity. In the previous section, we discussed the ambiguous nature of the concept of biodiversity in an attempt to clarify its meaning as basis for further discussion. Existence value is not an uncontroversial concept as well (Aldred, 1994; Davidson, 2013; McShane, 2017b). In what follows, we focus briefly on a rather understudied issue, i.e., the compatibility of existence value with one of the cornerstones of economic theory of value, viz., marginalism.[5]

When economists are talking about the value of ecosystems, they usually refer to the TEV framework (Pascual et al., 2010). At the same time they stress that economic value can be sensibly calculated only for (marginal) changes in quantity or quality of the good in question (Bockstael and Freeman, 2005).[6] But there is conflict between at least one of the TEV categories, viz., existence value, and the marginalist perspective. If something has existence value – supposedly an economic category – it provides utility or, more generally, generates preferences because it exists,[7] independent of any use. But existence is a binary category: either something exists or it does not. There can be no more or less existence of a thing. But how can existence value be captured

[4] 'At root, diversity is an attribute of any system whose elements may be apportioned into categories' (Stirling, 2007, p. 708).

[5] Actually, the argument developed here holds generally if economic value is identified with changes in good supply, including non-marginal changes.

[6] This is so despite the by far most widely cited and influential economic valuation study (Costanza et al., 1997) having violated this principle. For critiques of its juxtaposition towards basic principles of economic theory, see Toman (1998), Pearce (1998) and Bockstael et al. (2000).

[7] Aldred (1994) argues in the context of existence value, in line with Sen (1977), that linking economic value to preferences and the preferences to utility leads to circularity; therefore, he argues for dropping the welfarist link to utility.

within the economic valuation framework, then? How can it be estimated in terms of willingness to pay (WTP), if there is no change, be it marginal or discrete?

The only way in which existence value can be aligned with economic value being inherently linked to (marginal) changes is to think of existence in probabilistic terms. This interpretation of existence value is related to Stern Review's (Stern, 2007) treatment of discounting: there, it was argued that the pure time preference component of the social discount rate should be based on an (inherently arbitrary) estimate of the probability that humanity will cease to exist. Similarly, existence value can be estimated on the basis of a (not inherently arbitrary) estimate of the probability that the land-use change in question will lead to a total loss of the ecosystem/species/ecosystem service in question. For instance, if respondents in a stated preference survey are asked to evaluate a change in an ecosystem, if it can be linked to a change in the probability of collapse of this ecosystem (i.e., the end of its existence), then the WTP for this could be interpreted as an expression of existence value. But other than this probabilistic interpretation, existence value does not really work well within a welfare economic framework, where value can be captured only as a result of change.

Of course, existence value in a non-probabilistic interpretation can still be viewed as a sensible category. It may even be considered economic, as it does result from the existence of something being an argument in the utility function of an individual (or at least, people exhibit preferences for the existence of natural entities). However, except for the probabilistic perspective, existence value cannot be estimated, at least not within the conventional welfare economic framework. But this is the framework within which stated preference methods operate, whose main raison d'être is their potential to capture non-use values, including existence value. There is an inconsistency here between the considered-important concept of existence value and the way conventional economics, but also much of ecological economics, perceives value, i.e., in terms of trade-offs between scarce goods.[8]

4 Biodiversity and existence value: the utilitarian dilemma

Above, it was shown that existence value is a problematic category of economic value. To reconcile it with economic theory (without changing the theory itself, an option beyond the scope of this paper), one has to reinterpret it in probabilistic terms, as otherwise it does not fit the marginalist approach to valuation. However, biodiversity, the 'case study object' of the present paper, creates problems that go beyond this; especially, it does not really lend itself to such a

[8] For a critique of this preoccupation of economic valuation with trade-offs, see Aldred (2006). In the present paper, the economic approach to value is taken as given, and existence value (of biodiversity) is analysed against this premise.

probabilistic interpretation. In fact, it is a prime example of a deeper problem of economic valuation, which is not restricted to existence value, but for which the existence value of biodiversity provides a particularly illuminating example. It is called here the *utilitarian dilemma* and means, in a nutshell, that valuation economists have to face the problem that people may express preferences that are inconsistent or based on misguided perception of facts.

4.1 Biodiversity and existence value: theoretical arguments

Many different arguments have been advanced for biodiversity having intrinsic value (e.g. Deliège and Neuteleers, 2015; Ehrenfeld, 1988; Eser et al., 2014, chap. 8.1.2; Lee, 2004; Nehring and Puppe, 2002; Soulé, 1985). Given the definition of biodiversity presented in Section 2, most of these arguments are easy to refute, as they do not really relate to biodiversity, but some broader or just different concepts, such as 'life on Earth' or 'nature' (Deliège and Neuteleers, 2015; Ehrenfeld, 1988; Soulé, 1985), wilderness, or pristineness (Lee, 2004).[9] But even if we focus on biodiversity stricto sensu, it seems safe to say that it does not have and cannot sensibly have intrinsic value (Faith, 2017; Maier, 2012; McShane, 2017b). Even though intrinsic value and existence value are distinct (McShane, 2017a), they are closely related, so the arguments against attributing intrinsic value to biodiversity are also relevant to attempts to link existence value to it. Since there is no perfect correspondence, however, between the arguments advanced in the cited papers and those applying to existence value, this section discusses a few arguments directed specifically against the idea of biodiversity having existence value.

The most basic argument is related to the discussion in the previous section – that something has existence value implies that it can cease to exist. But if biodiversity is a (dynamic) characteristic of ecosystems, it cannot really cease to exist. Even the most 'unlively' places on Earth, like deserts, eutrophicated lakes, hot springs, have some biotic inhabitants. Thus, biodiversity can be driven to extremely low levels, but it can hardly be 'eradicated,' not even locally – at least in a world in which we are still around to think about values. Furthermore, since it is the property of ecosystems, it can be argued to be inherently linked to a specific ecosystem – thus, if the ecosystem is lost for whatever reason, it is no longer sensible to speak of its biodiversity (nor of changes in it). To put it differently: ecosystem loss cannot be framed in terms of this ecosystem's biodiversity. This, however, means that the binariness of existence (value) does not really apply to biodiversity. Even the probabilistic interpretation proposed above does not help here, as it, too,

[9] Note that this does not imply a claim that the biodiversity definition presented here is the only 'correct' or 'proper' one, independent of purpose. Arguably, such a definitive, one-size-fits-all definition is not possible (Meinard et al., 2014). Nonetheless, the argument here is that in the context of economic valuation of biodiversity, this kind of definition is the proper one (see also Bartkowski, 2017).

implies the possibility of an ecosystem with biodiversity level of zero (which is, actually, a contradiction).

Moreover, the existence value category is only sensibly applicable to things or categories: species can be valued because of their existence; populations and individuals most certainly can, too. The necessary condition is that these 'entities' are specific and in some sense unique. But biodiversity is not. While it would be somewhat exaggerated to say that it is just a number (cf. Lyashevska and Farnsworth, 2012), it can well be argued that it is simply a dynamic property of ecosystems. Ecosystems can be more biodiverse or they can be less biodiverse, but they cannot have 'zero biodiversity,' as this would imply no living entities at all and thus violate the definition of 'ecosystem' (see above). Furthermore, biodiversity levels change constantly, so it is not clear what it would imply if one would claim that it has existence value: does it mean that some particular level of biodiversity should be preserved? Which level should that be? Ecosystems are dynamic; they do not have a 'specific', inherent biodiversity level. Therefore, it seems that biodiversity cannot have existence value, even though it is 'existent', as far as this can be said of properties. It has significant instrumental value (Bartkowski, 2017), but that is it.

Of course, the argument developed here is based on the biodiversity definition proposed in section 2. However, there seems to be no apparent way to define biodiversity in such a way that it would (i) be an analytically clear concept, different from others (e.g., nature), (ii) refrain from arbitrary attributions (as when there is a distinction between native and non-native biodiversity) and (iii) still have existence value.

4.2 Biodiversity and existence value: some empirical findings

In the previous section, it was argued that biodiversity cannot sensibly have existence value. This section will briefly report the findings of a focus groups study that aimed at confronting conceptual arguments regarding the value of biodiversity to humans with the respective opinions of laypeople in an ecosystem-specific context. The study was conducted in June 2015 in a German Biosphere Reserve; 43 participants took part in three focus groups conducted in three different towns. Following the focus group discussions, questionnaires were distributed to capture the views of the participants. The question relevant for the purpose of the present paper read:

> Regarding biological diversity generally, which statements are applicable? Note that they are not about nature in general, but only about its diversity.

Four statements followed which were meant to represent four general motivations for valuing biodiversity:

- Self-interest: 'I think that biological diversity is important mainly when it is useful for me.'
- Altruism: 'I think that biological diversity is also important when it is only useful for other people (e.g. in other parts of the world).'
- Intergenerational concerns: 'I think that biological diversity is also important because of [the needs of] future generations.'
- Existence: 'I think that biological diversity is important independently of whether it is useful for anybody.'

Respondents were asked to rate each of the statements on a Likert scale ranging from 'Strongly agree' to 'Strongly disagree'. The results are summarised in Figure 1, which was generated in R (R Core Team, 2015) using the HH package (Heiberger and Robbins, 2014).

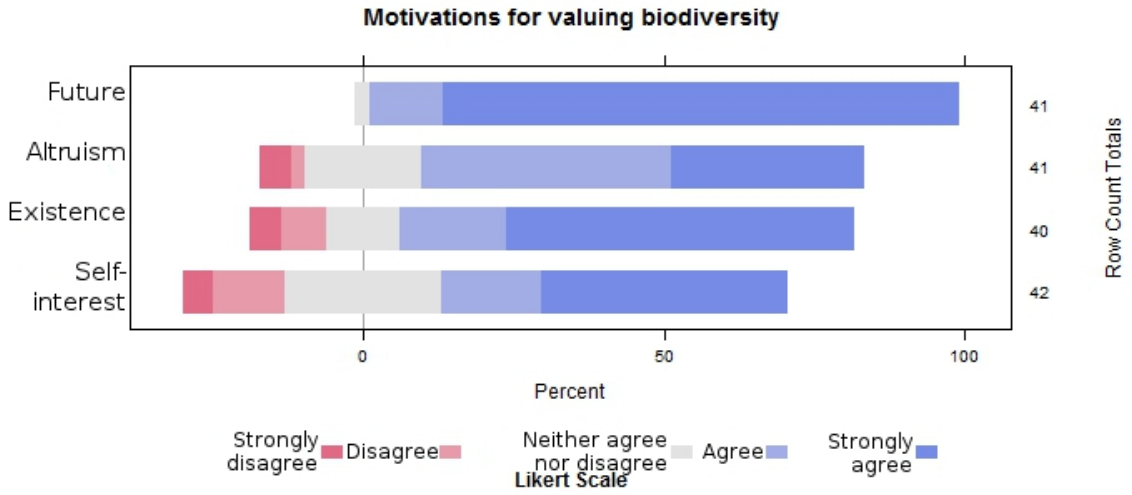

Figure 1: Motivations behind the appreciation of biodiversity.

In light of the argument developed in the previous section, the results are problematic: according to the answers to the questionnaire question, many participants value biodiversity for its own sake (which can be interpreted as an expression of existence value). This dissonance is potentially problematic since economic valuation is based on preference utilitarianism, i.e. it is up to the valuing stakeholders what and why they value (see next section). Note that this focus groups study is not the only one suggesting this conflict: for instance, in Bakhtiari et al.'s (2014) bottom-up study of laypeople's perception of biodiversity values, it was found that '[e]xistence value was a motive found implicitly in many parts of lay people's wordings' (p. 32).

It is important to keep in mind that the argument advanced in section 4.1 is rather abstract and dependent on a clear and specific understanding of what biodiversity is and what it is not. Although it was explained to the participants of the focus groups what understanding of biodiversity is underlying the analysis, it cannot be assumed with certainty that all participants were entirely clear about that matter (especially given that 'biodiversity' is often understood much more broadly in public discussions, on which their pre-understanding was likely based). Furthermore, it is not perfectly certain whether participants interpreted the Likert question in the way it was intended. It could have been interpreted as implying direct use only and not necessarily excluding indirect influences on human well-being (which are arguably the main source of biodiversity's economic value). Moreover, participants of the groups were not confronted with the arguments speaking against ascribing existence value to biodiversity, as this would have gone beyond the scope permitted by time and cognitive constraints.

Nonetheless, the fact that (i) conceptual reasoning dictates denying biodiversity any existence value and, at the same time, (ii) potential respondents to stated preference surveys seem to ascribe existence value to it, creates a problem. This problem, which may be called the *utilitarian dilemma*, is discussed in the next section.

4.3 The utilitarian dilemma

In the previous two sections, a particular instance of a problem was introduced which pertains to preference utilitarianism in general and economic valuation in particular: in some cases, there is a conflict between the preferences of sovereign consumers and what the analysing economist deems 'correct preferences'. Traditionally, this conflict has been discussed especially in the context of public policy – for instance, some modern utilitarians have called for using paternalistically 'corrected' preferences as basis of public policy (e.g. Harsanyi, 1977; Mirrlees, 1982). They have believed that because people do not have perfect knowledge and understanding of their actions, their imperfect preferences should not be taken at face value in analyses of public policy. However, it was pointed out that such proposals usually leave unanswered the question of how to correct preferences and who is to take on this task (Hahn, 1982). In more recent discussions, especially regarding 'libertarian paternalism' (Thaler and Sunstein, 2009), the proposed solutions have become less invasive, but the starting point remains: preference utilitarianism and the model of a sovereign consumer is highly problematic because people act 'irrationally' in many contexts, due to various cognitive biases, social dilemmas etc. (see also Aldred, 2010, chap. 2; Kahneman, 2012).

The utilitarian dilemma introduced in the previous section is related but distinct: here, the conflict is not between actual preferences and an (elusive) ideal of perfectly informed and rational preferences. Rather, the conflict behind the utilitarian is due to the expression of preferences which are based on erroneous thinking, including logical errors or misperception of reality.[10] Of course, in practice the difference between the two problems is not clear; for instance, one of the interpretations of the results of the focus groups study offered above – that participants might have responded differently if confronted with the conceptual arguments speaking against assigning existence value to biodiversity – could be interpreted as falling into the category of 'uninformed preferences.'

The utilitarian dilemma leads to a similar conundrum as the one discussed in the modern utilitarianism debate: should the economist accept the preferences that can be argued to be based on misguided presumptions or perhaps reflect a different interpretation of the valuation object from the one actually underlying the analysis? Or should she 'correct' or otherwise manipulate them? There seems to be no right answer to this question.

One might argue that in the specific context discussed in this paper – economic valuation of biodiversity in survey-based valuation studies – the problem can be circumvented by providing more information to respondents. However, even assuming that when confronted with the arguments presented above, respondents would deny biodiversity existence value, it is unlikely that it would be possible in an actual valuation study to go so deep into such specific and demanding a question as this.

Another possible way out of the conundrum could involve a reinterpretation of existence value.[11] Instead of focusing on existence as such, one might interpret existence value in the light of virtue ethics, i.e. link it to the idea of eudaimonistic value. According to this interpretation, existence value of biodiversity would simply imply that biodiversity is for some reason a condition for a good human life (Muraca, 2011). The problem with this interpretation, however, is that it seems quite arbitrary: why should biodiversity be constitutive of a good life? When we look at existing influential proposals of the constituents of a good human life (e.g., Nussbaum, 2003, 1997), we will find intact nature there, but no explicit mention of diversity.[12] Furthermore, we encounter a similar problem here as was already discussed above: what does it mean that 'biodiversity is constitutive of a good human life'? Specifically, what does it mean beyond the rather trivial

[10] Hammitt (2013), in his discussion of positive versus normative interpretations of cost-benefit analysis (CBA), refers to a similar problem, originally formulated by Portney (1992); however, their focus is on the use of CBA in decision-making processes, while the utilitarian dilemma as discussed here is a more general problem, pertaining to different uses of economic valuation, not only to CBA.

[11] The author would like to thank Katie McShane for pointing out this possibility to him.

[12] Of course, intactness of nature implies some minimum level of biodiversity.

realisation that ecosystems have eudaimonistic value? Does a specific level of biodiversity have eudaimonistic value? If yes, which level is it? How can it be determined? One could argue that a 'natural' level of biodiversity is constitutive of a good human life[13] – but this does not really solve the problem, but rather creates new ones. For what does it mean 'natural' in a world in which there is hardly any pristine nature left (Davis et al., 2011; Ellis et al., 2013; Kareiva et al., 2007)? And what does this mean in terms of economic valuation? How can changes towards a more 'natural' level of biodiversity be identified in the first place? Linking existence value with virtue ethics and eudaimonistic value does not seem particularly helpful in resolving the utilitarian dilemma after all. Moreover, it does not solve the underlying problem, namely, that preference utilitarianism and the sovereign consumer principle actually dictate accepting expressed preferences at face value.

So, what is to be done about the utilitarian dilemma, particularly in the context of economic valuation? One option would be, of course, to abandon economic valuation. However, this appears overly radical: There are hardly any perfect tools for communicating the value of nature (or for anything else, for that matter); we always have to live with some weaknesses and limitations of the tools we use. Nonetheless, we should at least be aware of these weaknesses and limitations, and acknowledge them while using these tools, so that we are clear about what they can tell us and what they cannot. Thus, a less radical approach that is meant to overcome some limitations of the sovereign consumer assumption without opening the 'Pandora's box' (Hahn, 1982) of defining ideal or 'correct' preferences is deliberative monetary valuation (DMV).[14] DMV has multiple advantages related to the utilitarian dilemma: (i) it does not assume pre-existing preferences and thus does not take them at face value – by encouraging discussion it improves the quality of preferences without dictating them (Bartkowski and Lienhoop, 2016); (ii) since preference elicitation follows extensive group discussions, the researcher has the opportunity to hear and understand the motives and reasoning of the participants; (iii) DMV is a flexible, non-dogmatic approach and can actually be viewed as part of a continuum of approaches, from conventional economic valuation to non-monetary deliberative approaches, which are useful in different contexts (Lienhoop et al., 2015). DMV does not have the potential to definitely resolved the problems posed by the utilitarian dilemma, but it offers some help; particularly, the emphasis on public/group deliberation is essential in contexts in which cognitive mistakes and misunderstandings are possible (cf. Habermas, 1981; Sen, 2010).

[13] For a recent approach in this vein, see the concept of 'appropriate fit' advanced by Maier (2012).

[14] As understood here, the term spans a number of different approaches, including those based on individual or social willingness-to-pay elicitation (Orchard-Webb et al., 2016). For a review, see Bunse et al. (2015). Furthermore, there are other valuation approaches that are motivated similarly to DMV (Meinard et al., 2017; Schläpfer, 2016; but see Bartkowski and Lienhoop, 2017).

5 Conclusions

This paper presented two problems pertaining to the economic valuation of environmental goods. Both problems are related to the concept of existence value. First, it was shown that existence value is only limitedly compatible with the marginalist, trade-off-based theory of value of modern neoclassical welfare economics – it requires a probabilistic interpretation to be made compatible with this theoretical foundation of economic valuation. Second, the issue of the existence value of biodiversity was used to introduce a more general problem, termed here the utilitarian dilemma: it was shown that (i) biodiversity, properly defined, cannot have existence value, while (ii) it can be assumed that participants in stated preference studies might nevertheless express it. The dilemma faced by the economist is: what should be done about similarly mistaken preferences? Should they be accepted as dictated by a literal interpretation of preference utilitarianism and the principle of consumer sovereignty? Or should they rather be corrected? If yes, in what way and by whom? It was argued that even a seemingly helpful reinterpretation of existence value as eudaimonistic value does not resolve the utilitarian dilemma. Rather, deliberative monetary valuation and related approaches appear to have the potential to alleviate the utilitarian dilemma in the context of economic valuation. However, there is a need for further theoretical and empirical research in this direction; it may be necessary to earnestly consider the question whether the benefits of economic valuation do outweigh the costs in terms of theoretical and practical problems.

Acknowledgments

The author would like to thank Katie McShane and Jess Goddard for very helpful comments on earlier drafts. The usual disclaimer applies.

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