



Analysis

On the relation between ecosystem services, intrinsic value, existence value and economic valuation



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ABSTRACT

Various attempts have been made to amalgamate the concepts of intrinsic value and ecosystem services, often with a stop-over at the economic concept of existence value. These attempts are based on a confusion of concepts, however. In this article, two types of non-use values are distinguished: *warm glow value*, related to the satisfaction people may derive from altruism towards nature, and *existence value*, related to the satisfaction people may derive from the mere knowledge that nature exists and originating in the human need for self-transcendence. As benefits to *humans*, warm glow and existence values can be considered ecosystem services. Neither warm glow value nor existence value represents benefits to nature itself, however. Intrinsic value lies *outside* the scope of the wide palette of ecosystem services.

Although the concept of ecosystem services does not cover benefits to nature and the intrinsic value of such benefits, intrinsic value is not necessarily incompatible with economic valuation. Although a deontological ethics does not allow economic valuation of nature as an end in itself, consequentialism does. In consequentialism, however, intrinsic value is not attributed to nature itself, but to *benefits* to nature. These benefits can be economically valued on the basis of benefit transfer.

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1. Introduction

A long-standing debate exists between those who ground the conservation of nature primarily on our moral duties to protect nature for its own good (see e.g., McCaulay, 2006; Soulé, 1985) and those who ground it on nature's vital importance for ourselves as human species (see e.g., Daily, 1997; Fisher et al., 2008). The second group has often claimed that the moral appeal to nature's *intrinsic value* has proven incapable of slowing down, let alone stopping, the continuing decline of the world's ecosystems. Over the past 50 years, humans have changed ecosystems even more rapidly and extensively than in any comparable period in human history (MEA, 2005a: 16; see also Butchart et al., 2010). Central to the second approach is the concept of *ecosystem services*, defined by Fisher et al. (2008: 2051) as 'the aspects of ecosystems utilized (actively or passively) to produce human well-being'. The concept of ecosystem services is wide-ranging. It includes not only *provisioning services* such as food, water, timber, and fiber, but also *regulating services* such as the regulation of climate, floods, disease, wastes, and water quality; *cultural services* that provide recreational, esthetic, and spiritual benefits; and *supporting services* such as soil formation, photosynthesis, and nutrient cycling (MEA, 2005a). In line with this approach, economists have attempted to translate ecosystem services into monetary terms for both cost–benefit analysis and the development of economic instruments (see e.g., Kumar, 2010). Proponents of the ecosystem

service approach have often assured that it is only meant as an *additional* reason for conservation *on top of* any moral duties towards nature (see e.g., Costanza, 2006; Costanza et al., 1997; Fisher et al., 2008). Conservationists have not been convinced, however, and warn that increased public attention for nature's *instrumental value* may erode public attention for nature's intrinsic value (see e.g., Bowles, 2008; Kosoy and Corbera, 2010; McCaulay, 2006). Moreover, both ecologists and economists often believe that intrinsic value is a deontological concept, i.e., that something with intrinsic value ought never to be treated as mere means to other ends. Interpreted as a deontological concept, intrinsic value cannot be captured in monetary terms (see e.g., National Research Council, U.S., 2005: 38), and will therefore be overlooked entirely once cost–benefit analysis is applied (Redford and Adams, 2009).

In spite of the clear conceptual distinction between intrinsic and instrumental value, various attempts have been made to amalgamate the concepts of intrinsic value and ecosystem services in order to remove the objections of nature conservationists. According to Chan et al. (2012: 15), for example, "even though biocentric values are not considered to be measures of benefits for people, it is crucial that ecosystem services valuation provide space for their expression in a manner commensurate with anthropocentric values". Particularly, it has been tried to link the concept of intrinsic value to *cultural ecosystem services*, often with a stop-over at the economic concept of *existence value* (see e.g., Gee and Burkhard, 2010). The Millennium Ecosystem Assessment, for example, states that "many people do believe that ecosystems have intrinsic value. To the extent that they do, this would be partially

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reflected in the existence value they place on that ecosystem, and so would be included in an assessment of its total economic value” (MEA, 2003: 133–4). According to the Millennium Ecosystem Assessment, existence value is a cultural ecosystem service (Daily, 1999; MEA, 2005b: 34). Raymond et al. (2009) add intrinsic value under cultural ecosystem services in their assessment of community values and threats (see also Burkhard et al., 2009; Chan et al., 2012), while according to Reyers et al. (2012: 504) “it appears that it is often the complexity of intrinsic and instrumental values – and the narrow interpretations of the latter [i.e., by excluding existence value, MDD] – that makes the common ground they share appear smaller than it actually is.”

The purpose of this article is to argue that the present attempts to amalgamate intrinsic value and ecosystem services are based on a confusion of concepts, partly due to the wide variety of definitions of intrinsic and existence value available in the literature. I will define and delineate some of the central terms in the discussion differently from previous authors with the aim of obtaining a more logical and comprehensible breakdown of terms. The purpose of this article is twofold. First, to define intrinsic and existence value as mutually exclusive concepts and argue that while existence value can indeed be considered a cultural ecosystem service, intrinsic value is incompatible with any ecosystem service. Second, to argue that although intrinsic value is incompatible with ecosystem services it is not necessarily incompatible with economic valuation. Note that throughout this article the term economic valuation is synonymous with monetary valuation, while the term nature stands for non-human beneficiaries of conservation, although which entities are to be considered such beneficiaries depends upon one’s moral views. The setup is as follows. In Section 2, I first discuss the meaning of intrinsic value in deontological ethics and consequentialism, and the scope of such value. In Section 3, I discuss the options for including intrinsic value in economic valuation. In Section 4, I discuss the meaning of the concept of existence value. In Section 5, I discuss how the concepts of intrinsic and existence value are related to ecosystem services and economic valuation.

2. Intrinsic Value

In environmental economics and environmental philosophy, the concept of intrinsic value has often been related to a deontological ethics (see e.g., Barbier et al., 2009: 249; Callicott, 2006; Chee, 2004; National Research Council, U.S., 2005: 31; Spash, 1997; Jax et al., 2013). Consequentialism, on the other hand, has often been related to anthropocentrism, the normative view that the nonhuman world has value *only* because, and insofar as, it directly or indirectly serves human interests (Goulder and Kennedy, 1997; Sagoff, 1996).¹ The purpose of this section is to argue that this strict connection between the concept of intrinsic value and a deontological ethics is unfounded. See for detailed discussions of the concept of intrinsic value e.g., Elliot (1992), Rønnow-Rasmussen and Zimmerman (2005) and Zimmerman (2010).

Consequentialism is the view that normative properties depend only on consequences. The paradigm case of consequentialism is classic utilitarianism, the claim that an act is morally right if and only if that act maximizes utility, where utility can be defined as pleasure, happiness, desire satisfaction, or ‘welfare’ in some other sense. According to deontological ethics, in contrast, the rightness of an act is generally not determined by its consequences but by conformity with a moral norm, such as Immanuel Kant’s second formulation of the categorical imperative: ‘Act in such a way that you treat humanity, whether in your own person or in the person of any other, never merely as a means to an end, but

¹ Sometimes the term anthropocentric is not used to deny nature’s intrinsic value, but to indicate that what humans value will always be from a human (or anthropocentric) point of view (Hargrove, 1992). As Callicott (1989: 133) states: “The source of all value is human consciousness, but it by no means follows that the locus of all value is consciousness itself.”

always at the same time as an end.’ To illustrate the difference: according to consequentialism, a child may be tortured to force her father to tell where he has hidden a time bomb if doing so saves many lives; according to a deontological ethics, we are not allowed to do so whatever the number of lives we thus believe to save.

Because consequentialism holds that choices are to be morally assessed solely by the states of affairs they bring about, consequentialists must specify which states of affairs are *good*, i.e., intrinsically valuable (Alexander and Moore, 2012). Hedonistic consequentialists, such as Jeremy Bentham (1789) and Peter Singer (1974), attribute intrinsic value to *experiences* such as pleasure and the absence of pain. All sentient beings, such as humans and dogs, are able to experience pleasure and pain, but that does not mean humans or dogs themselves have intrinsic value; their pleasure and absence of pain do. For a perfectionist consequentialist, however, intrinsic value would not lie in experiences such as pleasure, but in objective goods such as development according to one’s nature and realization of one’s capacities (Hurka, 1993). Attfield advocates ‘biocentric consequentialism’, based on the idea that intrinsic value lies in the good or well-being of *all* living entities (Attfield, 1995, 1999, see also Varner, 1998).

In contrast to consequentialists, deontologists do not aim at optimizing or maximizing the good. The concept of intrinsic value therefore has no specific meaning within a deontological ethics. Nevertheless, the concept of intrinsic value is often connected to a deontological ethics when it is said that *people* have intrinsic value, for example. What is meant, however, is that people have *moral status* or *rights*, i.e., that they are entitled not to be treated as mere means to other ends. A deontologist would not claim that a world with *more* people is therefore a *better* world. Which entities have moral status or rights in a deontological ethics depends on the possession of certain properties. Kant believed this property to be rationality. According to Tom Regan (1983: 243), however, all ‘experiencing subjects of a life’ – animals with beliefs, desires, perception, memory, emotions, a sense of future, and the ability to initiate action – have intrinsic or inherent value. According to Regan, we are therefore not allowed to experiment on animals, whatever the benefits for humans. Paul Taylor (1986) attributes intrinsic value to all ‘teleological centers of life’, i.e., to *all* individual living entities (see also Goodpaster, 1978), while some deontologists attribute intrinsic value to ecological wholes such as species, populations, biotic communities, and ecosystems (see e.g., Callicott, 1980, 1989; Leopold, 1949).

The purpose of this short overview has been neither to defend a particular choice between deontology and consequentialism, nor to defend a particular scope of such theories. To what extent intrinsic value extends beyond human beings (deontology) or beyond human well-being (consequentialism) remains a controversial issue in environmental ethics. This short overview merely shows that it is not the case that consequentialism is inevitably anthropocentric while a biocentric view would only be compatible with a deontological ethics, as some authors seem to suggest. Biocentric consequentialism exists as well. Intrinsic value means different things for deontologists and consequentialists, however. When the term intrinsic value is used within a deontological context, what is meant in fact is *moral status*. What has moral status is not allowed to be harmed for the greater good to others. Within a consequentialist framework, it is not nature itself that has intrinsic value, but nature’s *well-being*, i.e., the *benefits* to nature. Dependent upon one’s moral views, these benefits may refer to pleasure and the absence of pain, meaning that all and only sentient beings can be benefitted, or to development according to one’s nature and realization of one’s capacities, meaning that all and only living beings can be benefitted. These benefits to nature may be weighed against, and thus outweigh or be outweighed by other goods such as human well-being.

3. Intrinsic Value and Economic Valuation

Whether the concept of intrinsic value is compatible with economic valuation depends upon one’s moral view. As has been argued in the

previous section, deontologists often speak of the intrinsic value of beings, while consequentialists generally attribute intrinsic value to states of affairs, such as experiences. Because deontologists do not mean by ‘intrinsic value’ an optimizing or maximizing value, but *moral status* such as having the right not to be treated as mere means to other ends, intrinsic value in this sense is incompatible with economic valuation.² After all, economic valuation implies that in principle there could be a benefit to humans that outweighs the ‘value’ of that organism. If that were the case, this would justify treating the organism merely as a means to a human end, an approach that is incompatible with a deontological ethics. Neo-classical economics defines deontological preferences as *lexicographic*: if people hold lexicographic preferences for biodiversity, for example, they would refuse to make trade-offs which require the substitution of biodiversity for other goods (Spash and Hanley, 1995). According to *consequentialism*, however, there is no principal objection against the weighing of consequences. On the contrary, most types of consequentialism consider an act morally right if and only if that act maximizes the good, i.e., if the resulting total amount of good outweighs the total amount of bad to all concerned.

In cost–benefit analysis this weighing is performed by means of economic valuation, where economic value is defined as *willingness to pay*. It is often assumed that such willingness to pay is restricted to self-regarding preferences only, i.e., that willingness to pay would be the amount that must be taken away from a person's income to keep his own well-being constant (see e.g., Barbier et al., 2009: 249; Goulder and Kennedy, 2011; Perman et al., 2003; Randall, 2007). Non-human organisms, however, have neither the cognitive capabilities nor the financial resources to pay. If economic value depended on willingness to pay for changes in one's own well-being only, then benefits to nature could have economic value only insofar as humans derive satisfaction from knowing that nature benefits. Such satisfaction of knowing that others or nature benefit(s) has been given many names in economics, such as ‘vicarious use value’ (Randall and Stoll, 1983; Turner et al., 2003) or ‘warm glow’ (Andreoni, 1989; Kahneman and Knetsch, 1992; see also Becker, 1974). Distinguishing possible beneficiaries, Pascual et al. (2010) label the personal satisfaction of knowing that other people have access to natural resources ‘altruist value’, that future generations will benefit from natural resources ‘bequest value’, and that nature itself will benefit ‘existence value’. Please note that I define ‘existence value’ differently in Section 4. Throughout the rest of this article, I will refer to any satisfaction from altruism as ‘warm glow value’.³

Not all willingness to pay originates in trying to increase one's own well-being, however. We may also act out of other-regarding preferences in which case one's own satisfaction is merely an unintended, although positive, *side effect*. This side effect may be small or negligible, meaning that acts out of such other-regarding preferences may ‘drive a wedge between personal choice and personal welfare’ (Sen, 1977: 329; see also Sen, 1973). Since warm glow is generally an unintended side effect, it is even dubious whether it will be expressed at all through willingness to pay. In other words, our willingness to pay may also directly reflect benefits to other people or nature instead of benefits to ourselves. We may have such willingness to pay out of deontological,

consequentialistic or wider other-regarding considerations, such as friendship and love. In total economic value, benefits to nature have thus to be accounted for separately from benefits to ourselves through ‘warm glow value’ (see e.g., Johansson-Stenman, 2006).⁴

We may make a comparison here to how benefits to children are included in cost–benefit analysis. It is after all not only non-human organisms that lack the cognitive capabilities and the financial resources to pay, but many humans too, including (small) children (Dockins et al., 2002; OECD, 2005). In the case of children, we believe just as little that their benefits should be equated with the accidental satisfaction (warm glow value) to their parents. If we take a consequentialistic point of view and acknowledge that benefits to children are of the same intrinsic value as benefits to adults, then these benefits to children ought to be given equal consideration, i.e., counted equally in cost–benefit analysis. Some studies, including guidelines by the US Environmental Protection Agency, therefore use *benefit transfers* from adults to children (see e.g., Agee and Crocker, 2004; Dockins et al., 2002; Prosser et al., 2007; US EPA, 2003). By ‘benefit transfer’ no literal transfer between people is meant, but “the transfer of existing estimates of non-market values to a new study which is different from the study for which the values were originally estimated” (Boyle and Bergstrom, 1992: 651). Note that including benefits to children in cost–benefit analysis on the basis of benefit transfer may in turn influence the valuation of benefits to adults that underlies the benefit transfer: if including benefits to children in cost–benefit analysis substantially lowers adults’ *ability* to pay, their willingness to pay for their own health would decrease as well.

Just as benefits to children can only be economically valued from the perspective of adults, benefits to nature can only be economically valued from a human perspective, i.e., by an *interspecies* benefit or value transfer. For example, if a certain act will harm an animal and willingness to pay to prevent a *similar* harm to humans would be X, then equal consideration would imply an economic valuation of the harm to the animal equal to X as well. Consequently, economic valuation of benefits to nature cannot be established through simply asking people about their willingness to pay for other species’ well-being (Vander Naald and Cameron, 2011). We have to make a comparison between harm to non-human organisms and ‘similar’ harm to ourselves. Of course, this is an extremely difficult and highly debatable procedure. Apart from the problem of imagining what it is like to be a non-human organism (see e.g., Nagel, 1974; Carruthers, 1989) such a comparison depends upon the unit of harm. After all, equal consideration does not automatically imply equal treatment (Singer, 1974). Hedonistic consequentialists, for example, believe pleasure and pain should be weighed equally for all species – humans and earthworms alike. However, on physiological grounds it is assumed that affecting bodily integrity will result in more pain for a human being than an earthworm. Moreover, Singer (1979) assumes that *killing* non-self-conscious beings does not harm them, for they lack the capacity to see oneself as a distinct entity with a future. From the perspective of perfectionist consequentialism, however, killing an animal would certainly harm it if the animal had not yet been able to lead a full life including at least *reproduction*.

It may be argued that economic valuation is not applicable to decisions such as land conversion, because land conversion is not about simple benefits or harms to nature, but about *active killing*. Countless non-human organisms – both plants and animals – will be killed in the conversion process. Even when *human* lives are at stake, however, we are not unfamiliar with monetary valuation. Although human life is generally considered priceless or immoral to put a price on, neither

² In this context, Immanuel Kant (1785) is often cited (see e.g., MEA, 2003: 142–3): “Everything has either a price or a dignity. Whatever has a price can be replaced by something else as its equivalent; on the other hand, whatever is above all price, and therefore admits of no equivalent, has a dignity. But that which constitutes the condition under which alone something can be an end in itself does not have mere relative worth, i.e., price, but an intrinsic worth, i.e., a dignity.” According to Sensen (2009: 324–5), however, Kant is not referring in this quotation to the intrinsic worth or dignity (*elevated worth*) of people, but of morality.

³ Johansson (1997) distinguishes four types of altruism: 1. *pure* altruism: A's well-being depends on B's well-being without any further conditions; 2. *paternalistic* altruism: A's well-being depends on specific elements of B's well-being; 3. *impure* (or egoistic) altruism: A's well-being depends on B's well-being, but only insofar B's well-being depends upon A's acts; 4. *genuine* altruism: A cares for B's well-being without A deriving any personal improvements in well-being from it. Note that Johansson relates the term ‘warm glow’ to improved well-being derived from impure altruism only.

⁴ Note that according to Milgrom (1993) warm glow is irrelevant for project evaluation, while willingness to pay for other people's well-being may lead to double counting if the beneficiaries' own willingness to pay is taken into account as well (see e.g., Bergstrom, 1982). Such double counting does not occur in the case of benefits to nature, however, since nature lacks any willingness to pay.

individuals nor governments spend unlimited resources to save lives. In the words of Calabresi (1965: 17):

“Our society is not committed to preserving life at any cost. In its broadest sense, this rather unpleasant notion should be obvious. Wars are fought. ... But what is more interesting ... is that lives are used up when the *quid pro quo* is not some great moral principle but “convenience.” Ventures are undertaken that, statistically at least, are certain to cost lives. ... We take planes and cars rather than safer, slower means of travel. And perhaps most telling, we use relatively safe equipment rather than the safest imaginable because – and it is not a bad reason – the safest costs too much.”

Well known are the concepts of the ‘value of a statistical life’ (VSL) and the ‘value of a quality adjusted life year’ (QALY). In developed countries the VSL lies in the order of *seven million dollars* (Viscusi and Aldy, 2003). Governments, for example, use QALYs in the decision which medical treatment to include in health care programs and which not. Now it may be opposed that societies only use VSL and QALYs in decisions concerning *saving* lives, but never in decisions concerning actively *taking* lives. We are not allowed to kill a particular person even if we expect society to benefit overall. The distinction between active killing and refusing to save fits in a deontological framework, however, and would not automatically convince a consequentialist (see e.g., Harris, 1975). From a consequentialistic point of view there is therefore no principled objection against the economic valuation of benefits and harms to nature, although such evaluation is highly complicated in practice. Since non-human organisms and ecosystems have neither the will nor the ability to pay for benefits or to prevent harms, economic valuation is necessarily based upon *human* willingness to pay.

4. Existence Value

The concept of existence value was first introduced by Krutilla (1967), who argued that people may value nature not only for its actual use or for having the option of using it in the future (Weisbrod, 1964), but also for its mere existence. According to Krutilla, such value

“may have only a sentimental basis in some instances. Consider the rallying to preserve the historical relic, “Old Ironsides.” There are many persons who obtain satisfaction from mere knowledge that part of wilderness North America remains even though they would be appalled by the prospect of being exposed to it” (781).

Krutilla distinguished such value from *bequest value*, “an interest in preserving an option for one’s heirs to view or use the object in question”. Bequest value is one of the three types of *warm glow value* as discussed in the previous section, the other two types originating in altruism towards other contemporaries and towards non-human nature. Existence value has been defined in many different ways since (see e.g., Brookshire et al., 1986; Weikard, 2005). Although Krutilla did not relate existence value to moral motivation, Pascual et al. define existence value as the satisfaction originating in *altruism* towards biodiversity (Pascual et al., 2010; see also Turner, 1999: 21; Turner et al., 2003). Other authors have equated the concept of existence value with the satisfaction originating in all three objects of altruism, i.e., towards one’s contemporaries, future generations or nature (see e.g., Randall, 1986). Perman et al. (2003: 402) equate existence value with any *non-use value*, i.e., any benefit arising “from knowledge that the service exists and will continue to exist, independently of any actual or prospective use by the individual”.⁵ Some authors define existence value as a

person’s willingness to pay to preserve a resource for which he has no current or future plans for use (see e.g., McConnell, 1997; Milgrom, 1993: 433; Randall and Stoll, 1983). This definition covers not only non-use value, but potentially also people’s willingness to pay for benefits to nature as described in the previous section. Aldred (1994: 394), on the other hand, defines existence value as “the value assigned by the agent to the good in addition to any expected changes in the welfare of the agent dependent on the good’s continued existence.” This definition exactly *excludes* non-use value, but takes existence value as synonymous with the concept of *intrinsic value* and people’s willingness to pay for benefits to nature (see also Atfield, 1998).

Although the concepts of existence value, non-use value and satisfaction originating in altruism (warm glow value) have become interchangeable in a large part of the literature, I here propose a clear distinction so as to retain a discriminating meaning for the concept of existence value that remains close to Krutilla’s original description of the term. I define non-use value as the benefit arising from knowledge that (part of) nature exists and will continue to exist, independently of any actual or prospective use by the individual. I divide such non-use value into *warm glow value* and *existence value*. Warm glow value is the satisfaction of knowing that future generations, other people or nature benefit; *existence value* is the satisfaction of knowing that nature exists but *not* originating in altruism.

At first sight, it may seem mysterious how one can derive welfare from something without actively using it. Such welfare is comprehensible, however, when considering the human need for *self-transcendence*. Self-transcendence is the process of including in one’s perception of personal identity objects or causes that lie beyond the purely individual self, such as our descendants, communities, locations, causes, artifacts or institutions, i.e., *identifying* with them. According to Heyd, “self-transcendence implies that what happens to our descendants, projects, political aspirations, and social ideals affects us, even after our individual extinction, albeit in a roundabout manner” (Heyd, 1992: 219). We may value, for example, the future existence of great-grandchildren, although we will not live to see them. We may wish the company we started to continue after our retirement, because we consider our personal identity connected to it. More generally, we may attach existence value to ‘external’ objects and causes because they are part of the world that shapes our identity and give meaning in life (see also Kumar and Kumar, 2008).

For many people, nature as wilderness plays an important role in the world to which they feel connected (see e.g., Brown, 2008; Chan et al., 2012; Swart et al., 2001). Robert Elliot elucidates nature’s existence value when explaining what no restoration of lost nature can ever recover: “what is significant about wilderness is its causal continuity with the past”, its *naturalness* (Elliot, 1982: 7; see also Belshaw, 2001; Katz, 1992). Pristine nature connects us to our *own* past, in a similar way to how antique and cultural heritage (Daniel et al., 2012) may do, and thus offers an anchor for our identity. As such, it gives us a sense of being part of the world. According to de Groot et al., “Natural ecosystems and natural elements (such as ancient waterfalls or old trees) provide a sense of continuity and understanding of our place in the universe which is expressed through ethical and heritage-values. Also religious values placed on nature (e.g. worship of holy forests, trees or animals) fall under this function-category” (de Groot et al., 2002, based on de Groot, 1992: 121–123; see also Tengberg et al., 2012). Krutilla may have meant such existence value originating in the human need for *self-transcendence* with his concept of *sentimental value*. See also Daily (1999; MEA, 2005b: 34), who gives existence value as an example of nature’s ‘life-fulfilling functions’. It may be noted that there is debate about whether people benefit from something’s mere existence, or from the *knowledge* that something exists (see e.g., Milgrom, 1993; Randall & Stoll, 1983). In the latter case, people would not be harmed through something’s destruction if they did not know about its existence, although they would have been willing to pay for its preservation had they known about it. See Elliot

⁵ The term non-use value does not mean that people do not derive welfare from it. Some authors therefore prefer the term *passive use value* instead, on the grounds that obtaining welfare from something – even through mere knowledge of its existence – by definition implies *use* (see e.g., Aldred, 1994: 394; Kopp, 1992: 124; Weikard, 2005: 9). Non-use or passive use values are distinguished from so-called *non-consumptive use values* in that the latter still require sensory experiences (Pagiola, 1996).

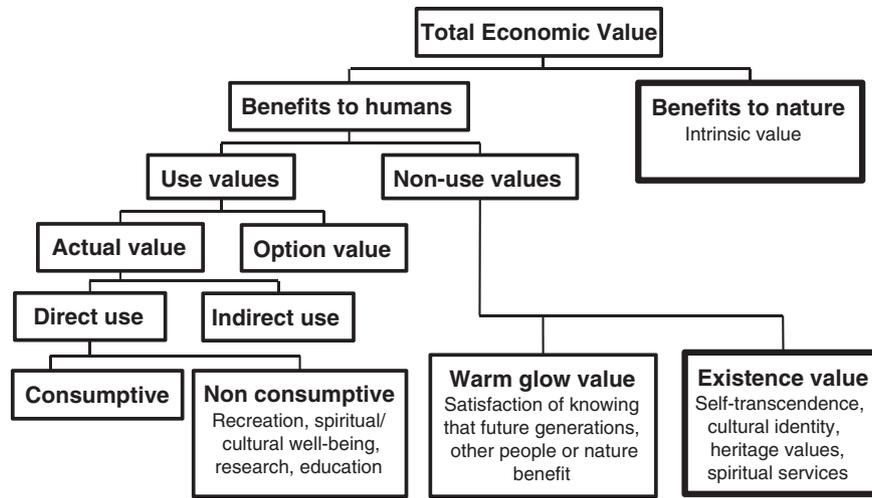


Fig. 1. Topology of values.
Adapted from Pascual et al. (2010): 195.

(1982) and Crisp (2006) on the discussion whether value lies in experiences (the hedonistic view) or actual states of the world.

The concept of existence value as I define it may appear to overlap with the deontological concept of intrinsic value (as *moral status*), but is fundamentally different. If an entity has *intrinsic value*, its existence exerts a moral duty on us to take its well-being into account. However, *we would not necessarily care if the entity had not existed in the first place*.⁶ In fact, we might have been better off. If something has intrinsic value, people may be willing to pay for its *continued* existence, but lack willingness-to-pay for its *coming into* existence had it not existed. In contrast, existence value is here defined as the (willingness to pay for the) *benefits* one derives from something's mere existence, although one has no current or future plans for its active use. Generally, this willingness to pay for something's existence will be equal to the willingness-to-pay for its coming into existence *had it not existed*. In the case of existence value, the entity's existence *does* make us better off. We can perceive something as having existence value, but without intrinsic value, such as the company you started. We can wish the company to continue to exist without having any moral duty *towards* the company. We can also perceive something as having intrinsic value without existence value (Callicott, 2006: 43–44), such as an uninvited rat in your kitchen. We may feel a moral duty not to harm it, but would have preferred the rat not to have existed in the first place. And of course, the same entity can have both existence and intrinsic value simultaneously, such as family, friends and nature.

5. Discussion and Conclusion

In this article, I have argued that people may derive satisfaction from altruism towards nature and may derive satisfaction from the mere knowledge that nature exists, originating in the human need for self-transcendence. I have defined these benefits as *warm glow value* and *existence value*, respectively. As benefits to *humans*, warm glow value and existence value can be considered ecosystem services. The Millennium Ecosystem Assessment is therefore justified in calling existence value a *cultural* ecosystem service, where the latter is composed of the six categories cultural identity, heritage values, spiritual services, inspiration,

esthetic appreciation of natural and cultivated landscapes, and recreation and tourism (MEA, 2005c: 457). In economic valuation, cultural ecosystem services are not only reflected in existence value, however, but also in use values. In their topology of values, Pascual et al. (2010) divide actual use values into direct and indirect use, and divide direct use into consumptive and non-consumptive use. As examples of such non-consumptive use Pascual et al. mention recreation, spiritual/cultural well-being, research and education, strongly resembling the cultural ecosystem services defined by the Millennium Ecosystem Assessment. Cultural ecosystem services thus include both (non-consumptive) use and non-use values (see also Chan et al., 2011). Non-consumptive use values differ from non-use values in that the first require sensory experiences (Pagiola, 1996) or behavioral evidence (McConnell, 1997). See Fig. 1 for a typology of values adapted from Pascual et al. (2010), showing how warm glow value, existence value and non-consumptive use values relate.

I have also argued, however, that the benefits to *humans* related to warm glow and existence value do not coincide with the benefits to nature itself. Concern for our own welfare through either warm glow or existence value does not express our moral duties towards nature. Since ecosystem services cover by definition only nature's *instrumental* values as a means to the end of human well-being (see e.g., Fisher et al., 2008; MEA, 2005a), benefits to nature and their intrinsic value lie *outside* the scope of the wide palette of ecosystem services. Stating that nature provides a *service* to us humans by putting moral constraints on our conduct would stretch the concept of ecosystem services too far. That ecosystem services do not cover intrinsic value does not necessarily make ecosystem services an *anthropocentric* concept in the moral sense, however. The concept of ecosystem services only becomes anthropocentric in the moral sense if accompanied by the *denial* that nature or benefits to nature have intrinsic value (see footnote 1).

Although the concept of intrinsic value cannot be covered by the concept of ecosystem services, I have also shown that the concept of intrinsic value is not necessarily incompatible with economic valuation. A deontological ethics does not allow economic valuation of nature as an end in itself. Consequentialism, however, attributes intrinsic value to *benefits* to nature and does allow these benefits to be economically valued on the basis of benefit transfer. In Fig. 1 these benefits to nature are therefore added as a separate category to be included in Total Economic Value (TEV). Benefit transfer is also used for other groups lacking cognitive capabilities and financial resources to pay such as small children. How to perform such benefit transfer in the case of non-human nature is as yet unknown territory, however.

⁶ I neglect the so-called 'total' view on consequentialism, according to which we would have a duty to produce beings if they would be happy or lead good lives (see Narveson, 1967).

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