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Introduction

A central point of contention between social ecological economics and standard environmental economics concerns the question how far, if at all, markets and market mimicking procedures are appropriate for solving environmental problems. Standard neo-classical environmental economics claims that the source of environmental problems lies in the fact that preferences for environmental goods are not reflected in monetary prices, and correspondingly that their solution requires the pricing of all environmental goods and bads. The extension of markets can take place directly through the construction of markets (e.g., tradable emissions permits). Alternatively, it can occur indirectly by calculating shadow prices for environmental goods for the purposes of cost-benefit analysis (CBA), employing either preferences revealed in market behaviour (e.g. travel costs or property markets), or stated preferences about hypothetical changes (e.g. contingent valuation).

Social ecological economists argue that environmental problems reveal the limits of market based approaches to policy making. A clear statement of this view is that of Kapp:

The formulation of environmental policies, the evaluation of environmental goals and the establishment of priorities require a substantive economic calculus in terms of social use values (politically evaluated) for which the formal calculus in monetary exchange values fails to provide a real measure [...] [E]nvironmental values are social use values for which markets provide neither a direct measure nor an adequate indirect indicator. (Kapp, 1974: 38)

An important strand of argument in the debates between these different views concerns value commensurability, and in particular whether the measuring rod of money could capture all the different dimensions of value at stake in environmental decision-making.

This chapter opens with an account of commensurability and the assumption of mainstream economists that money can serve as a universal measure for valuation. It then considers the meaning of value monism and value pluralism and their relationship to commensurability. The final sections outline the central problems with the mainstream economists' approach and consider alternative approaches to environmental decision-making that do not assume monetary commensurability.

Commensurability, ethics and economics

One central argument for use of markets and market-mimicking procedures in environmental policy is that it offers a single metric for measuring the value of different policy options. It brings the value of different options under 'the measuring rod of money'. Pearce and his colleagues offer a typical formulation: CBA is the only [approach] which explicitly makes the effort to compare like with like using a single measuring rod of benefits and costs, money" (Pearce et al., 1989: 57). Other approaches fail to offer "a common unit of measurement" to gauge the relative importance of environmental goods "to each other and non-environmental goods and services (Pearce et al., 1989: 115).

The view that rational decision-making requires a single measure of the value of different options has its basis in the utilitarian background to welfare economics. The classical utilitarian approach to ethics argues that the right action is that which maximises the welfare of affected agents. The approach has three components:

1. welfarism: the only thing that is good in itself and not simply a means to other goods is the welfare of individuals;
2. consequentialism: whether an action is right or wrong is determined solely by the consequences of the action;
3. aggregation and maximisation: the best action is that which results in greatest total value.

The third component is typically taken to require a common measure of value, so that the value of different outcomes can be calculated and the option with the greatest total value ascertained. The first component requires that this be a measure of welfare. Ideally, then the utilitarian approach requires that there be a measure of welfare that can be used to calculate the total value of different options.

The founders of utilitarianism assumed a hedonic account of well-being, according to which well-being consists in pleasure and absence of pain, and suggested a direct measure of their value or disvalue. Bentham, for example, argued that pleasures could be measured through their intensity, duration, certainty and propinquity (Bentham, 1970 [1789]: chapter 4). The hedonic account of well-being and its direct measurement has seen a revival under the influence of hedonic psychology (Kahneman et al., 1997). However, in economic theory monetary measures remain predominant. In the early development of marginal economics, willingness to pay for a good at the margin was still understood as an indirect measure of expected pleasure (O'Neill, 1998: Chapter 3). In more recent economic literature willingness to pay measurements are combined with a commitment to a preference satisfaction theory of well-being. Well-being consists in the satisfaction of preferences; the stronger the preferences satisfied the greater the improvement in well-being: "the entire body of 'welfare economics' centres round the formal identity of the statement 'X prefers A to B' and the statement 'X has higher welfare in A rather than B' " (Pearce et al., 2003: 121). Willingness to pay at the margin for a good is a direct measure of the strength of the preference for that good. Well-being is directly brought under the measuring rod of money.

Given this assumption, rational choices about the environment require the extension of the measuring rod of money to include preferences for environmental goods which are unpriced in actual markets.

The preferences for the environment, which show up as gains in welfare to human beings, need to be measured [...] In benefit estimation money is used as a measuring rod, a way of measuring preferences. (Pearce et al., 1989: 52–3)

Money offers a way of measuring the welfare gains and losses of environmental changes by capturing the preferences for environmental goods. This view makes three assumptions.

1. Value commensurability: There is a common measure of value through which different options or states of affair can be ordered;
2. Welfarism: The value in question is welfare understood in terms of preference satisfaction;
3. Monetary commensurability: Changes in welfare can be measured by money.

Value commensurability is the claim that there is a common measure of value through which different options can be ordered. Classical utilitarians assumed a *cardinal* scale; that is, a scale that provides information on precisely how much value different options offer. A cardinal scale needs to be distinguished from an *ordinal* scale; i.e. a scale that simply ranks 1st, 2nd, 3rd and so on—the value that different options offer without assigning them any specific value that would indicate how much they differ. Monetary valuation promises a cardinal scale of measurement for comparing the welfare value of different options.

The term commensurability is used in a variety of different ways. A cardinal scale of measurement is sometimes taken to define commensurability (Chang, 1997; Aldred, 2006). On this account commensurability should be distinguished from comparability which promises only an ordering of options according to some covering value. This usage is not uniform and sometimes the terms commensurability and comparability are used interchangeably (Raz, 1986: chapter 13). I have previously distinguished between weak and strong commensurability to mark the difference between ordinal and cardinal scales and between weaker and stronger forms of comparability (O'Neill, 1993: chapter 7). This chapter focuses on monetary commensurability and, for the purposes of this chapter, I use the term commensurability to refer to strong forms of commensurability that assume a single cardinal scale.

Value monism and pluralism

Classical utilitarian proponents of value commensurability were also value monists. Value monism is the view that there is only one kind of good that is valued for its own sake and is intrinsically valuable in this sense. Value monism contrasts with value pluralism, the view that there are a number of distinct intrinsically valuable goods, such as autonomy, knowledge, justice, equality and beauty which are irreducible either to each other or to some other ultimate value. For classical utilitarians, the only thing that is intrinsically valuable is pleasure. All other goods, social and environmental, have only instrumental value as a means to pleasure. If one assumes, as did Bentham, that this ultimate value can be measured by a single cardinal measure, then value monism offers one route to commensurability: different outcomes of actions can be compared by measuring how much total pleasure they produce.

Why assume value monism? One argument offered for value monism is that a single standard of value is required to make rational choices. John Stuart Mill offered an influential argument of this kind:

There must be some standard to determine the goodness and badness, absolute and comparative, of ends, or objects of desires. And whatever that standard is, there can be but one; for if there were several ultimate principles of conduct, the same conduct might be approved of by one of those principles and condemned by another; and there would be needed some more general principle, as umpire between them. (Mill, 1884, Book 6)

Mill argues that, given a number of different standards of value, where these conflict another principle invoking a distinct standard of value is required to adjudicate that conflict. Hence a rational resolution of the conflict will always require an appeal to some single ultimate principle that calls upon a single standard of value.

There are a number of problems with this argument. First, even given the assumption that all value conflicts require some single umpiring principle to adjudicate conflicts between values, the conclusion does not follow that this principle must call upon just one standard value. An umpiring principle could for example appeal to many standards of value, $v_0, v_1 \dots v_n$ but have some ordering principle to decide which has priority. It might appeal to a lexicographic ordering amongst values $v_0, v_1 \dots v_n$, such that v_1 comes into play only after v_0 is satisfied, and in general any standard of value v_n can be considered only if values $v_0, v_1 \dots v_{n-1}$ are already satisfied (Rawls 1972: 42ff. and 61ff).¹

Second, the argument commits a logical error involving a shift in the scope of a quantifier. One might grant Mill that the following is true:

UE. Rationality requires that, for any practical conflict, there is a principle that resolves the conflict.

Mill's claims that there must exist a single general umpiring rule that resolves any conflict does not follow. This is to make a distinct claim:

EU. Rationality requires that there is a principle such that for any practical conflict the principle resolves the conflict.

The inference of **EU** from **UE** involves an invalid shift in the scope of the quantifiers. There is no reason to conclude from Mill's argument that there is some single umpiring principle that resolves all conflicts (Wiggins, 1980; O'Neill et al., 2008: Chapter 5).

While value commensurability and value monism were both defended by classical utilitarians, there is no necessary relationship between the two claims. On the one hand, one might hold a version of value monism but deny commensurability. For example, one might hold that pleasure is the only ultimate intrinsic value but deny that there is a single cardinal measure that can capture the variety of different pleasures (Neurath, 1983 [1912]). On the other hand, one might reject value monism for some version of value pluralism, but still hold there is a single measure of value through which the value of different options can be ascertained. A significant argument for this view appeals to the claim that different values can be traded off with each other in a particular sense of trade-off.

The argument from trade-offs runs as follows: There is a plurality of ultimate intrinsic values - beauty, knowledge, autonomy, achievement, pleasures, relationships to friends and kin, etc. - but we can make comparisons across different values by considering how much a loss in one dimension of value can be compensated for by a gain in another. In making comparisons of this kind we could arrive at a trade-off schedule that says that a loss of so much in one value is equal to a gain of so much in another. Indeed, when making choices between different options individuals are implicitly trading off different values, whether or not they recognise this. The existence of such trade-offs allows the possibility of commensurability back in. One can posit a currency through which such exchanges across different dimensions of value can be made. This currency is not a different value to which others are reduced. It is a measure through which losses and gains across different dimensions of value can be measured and compared. What might this currency be? Economists generally claim it is money. As Pearce et al. (1989: 115) put it, money is "a

¹ For a discussion of lexicographic preferences in the context of environmental valuation see Spash (2000).

common unit of measurement” through which it is possible to gauge the relative importance of environmental goods with “each other and non-environmental goods and services”. In the next section I critically examine this argument.

Commensurability, money and trade-offs

There are two grounds for criticism of the trade-off position just presented. First, there are arguments specifically against monetary commensurability—the claim that money could offer a universal currency for measuring losses and gains across different dimensions of value. Second, there are reasons for suggesting that the very concept of a trade-off in values might be mistaken.

What happens if one asks people to use the ‘measuring rod of money’ to value environmental goods and bads? One response is that people protest. Here is a protest by a person over the attempt to put a price on the place where they live in the Narmada Valley, India, for the purposes of calculating the compensation for their being displaced by a dam:

You tell us to take compensation. What is the state compensating us for? For our land, for our fields, for the trees along our fields. But we don’t live only by this. Are you going to compensate us for our forest? [...] Or are you going to compensate us for our great river—for her fish, her water, for vegetables that grow along her banks, for the joy of living beside her? What is the price of this? [...] How are you compensating us for fields either—we didn’t buy this land; our forefathers cleared it and settled here. What price this land? Our gods, the support of those who are our kin—what price do you have for these? Our adivasi life—what price do you put on it? (Bava Mahalia, 1994)

The point of the question ‘what is the price of this?’ is rhetorical. The possibility of putting a price on the goods involved is being rejected. Note that rejecting the possibility of pricing a good is not the same as saying that it has a zero or infinite price. Indeed, to say that a good has a price of zero or infinity would contradict the claim that a price could not be put on the good.

What rules out the possibility of putting a price on an environmental good or bad? One reason is what Raz (1986: 345ff.) calls constitutive incommensurability (see also O’Neill, 1993: 118–122). Certain relationships and commitments are constituted by a refusal to treat them as tradable commodities that can be bought or sold. For example, given the nature of relationships of love and friendship, and given the nature of market exchanges, it is not possible to buy love or friendship. A person who tried to buy a friendship would not understand what friendship is. A person who could say to his putative lover ‘I love you so much it would take a £1000 to pay me to leave you’ would not express love but its absence. Similarly, ethical value-commitments are also constituted by a refusal to price them. To show that strength of one’s ethical commitments by saying how much it would take to break them would not be to show the extent of one’s commitments, but rather to reveal their limits.

The protests in the case of Narmada valley in part express constitutive incommensurabilities. The place embodies relationships to past and present kin and community which are constituted by a refusal to put a price on them. More generally, to the extent to which relationships to environments embody, in particular places, our relation

to the past and future of communities to which we belong, or express ethical commitments, then they will be constituted by a refusal to put a price on those goods.

A problem here lies in the treatment of monetary prices as a 'measuring rod' for welfare gains and losses akin to metres as a measure of gains or losses in length, or grams as a measure of gains and losses in mass. Putting a price on an object is a social act with a social meaning in a way that is different from measuring length and mass. Money is not simply a 'measuring rod'. It embodies particular kinds of social relationships which are incompatible with other social relationships and ethical commitments.

These arguments point to the limits of monetary measures of gains and losses for the purposes of trade-offs between different values. They point to a problem with monetary commensurability. They do not rule out the possibility of trade-offs between different values, nor that some other universal measure might do the job of supplying a suitable metric. However, they give us reason to pause about how far the very idea of a trade-off between values is the appropriate way of thinking about conflicts between them. The concept of a 'trade-off', as Lukes (1997: 187) notes, uses a particular commercial metaphor to approach conflicts. What is implied by this commercial framing of choice?

The idea of a common currency for trading off values suggests a particular maximising consequentialist framing of choices. Rational choice should aim to bring about that state of affairs which has the greatest total value. Given value pluralism, this cannot be done through some single value like pleasure that can be measured and then maximised. However, by comparing the gains and losses of different dimensions of value and trading these off one can still calculate the outcome that produces the greatest gains in values over losses in value and hence has the greatest value.

There are problems with approaching choices in this manner. One cannot always trade off different dimensions of value in the manner suggested. Consider again well-being. An approach to well-being distinct from both hedonic and preference satisfaction approaches is the objective state account. On the objective state account, well-being is to be understood in terms of the ability to realise particular objective states—physical health, personal relations, autonomy, knowledge of the world, aesthetic experience, accomplishment and achievement, sensual pleasures, a well-constituted relation with the non-human world, and so on. Needs-based accounts of wellbeing (Wiggins, 1998) and capabilities-based accounts (Sen, 1987, 1993; Nussbaum, 2000) offer influential examples [see also Chapter 24].

Two features of this kind of approach are of importance here. First, they are typically pluralist: there a number of different dimensions of well-being that are not reducible to each other or to some other value. Second, the concepts of needs and capabilities are threshold concepts: if a person falls below thresholds on some dimensions then she or he will be harmed. Together these rule out certain kinds of trade-offs across different dimensions of value. If someone suffers a loss that takes them below the threshold of minimal levels of physical health, it is not the case that there is a trade-off to be made such that a gain well above the threshold in another dimension, say pleasure, can compensate for loss and keep total well-being unchanged. In such cases, restoring a person to well-being can only be properly addressed by the provision of goods in that dimension. To the extent

there are measures of well-being in these different dimensions, they are unconvertible into some single currency through which gains and losses in different dimensions can be calculated and compared.

Second, the trade-off model assumes a consequentialist framing of choices that can be contested. A deontological framing for example would be different: a choice is a matter of what obligations for an individual or community have greater stringency in a particular context. An environmental activist who takes an evening off activism to spend time with her children does not necessarily approach this in terms of which action produces the state of affairs with greatest value. Rather her obligations to her children as their mother in some cases over-ride her other obligations as an activist and citizen. In other contexts, where the risks to community are great, she might reasonably decide obligations as a citizen take priority. Outcomes matter in all of this. However, the idea of trading off values in order to arrive at the outcome with the highest value does not adequately describe her deliberations in making those comparisons. Rather she will be considering the *relationships* in which she stands with respect to different individuals and groups and the competing obligations they impose.

Another framing might appeal to virtues. This asks: What kind of person do I want to be? What kind of community are we? Consider cases in which members of a fishing community risk their lives and resources to save fellow workers lost in a storm at sea. From a cost-benefit approach, such actions can make little sense in terms of the additional lives and resources put at risk. However, what is at stake in the choice cannot be captured by some trade-off schedule which produces the greatest total value. Rather, individuals act in accordance with values of solidarity that define their relationships to each other as a community. There are limits to what this requires and outcomes do matter. If the risks are extreme and likelihood of success is low then attempts at rescue are no longer courageous but foolhardy. However, the choice is not simply a matter of calculating the expected values of outcomes. Self-understandings about the kinds of individuals and communities to which we belong do work here.²

Future research directions

There is great pressure for research into techniques to make larger ranges of social value commensurable. Some of the effort should rather be devoted to learning—or learning again, perhaps—how to think intelligently about conflicts of value which are incommensurable. (Williams, 1972: 103)

The promise of monetary valuation and commensurability more generally is the possibility of a method for rationally choosing between options through a calculative process. One is able to calculate which of a set of policy options produces the state of affairs with greatest value. It promises what Max Weber (1978 [1921–22]: 85) called ‘formal rationality’:

The term ‘formal rationality of economic action’ is used to designate the extent of quantitative calculation or accounting which is technically possible and which is actually applied.

² For more detailed discussion of the difference between consequentialist, deontological and virtues framings of choices see O’Neill et al. 1998 Chapter 5

However, as Weber recognised, it is a mistake to confuse formal rationality with rationality as such.

How is rational choice possible in the absence of commensurability? The arguments in the preceding section point to some possible answers. Consider the objection that, given different dimensions of well-being with minimal thresholds, a loss in one dimension of value cannot be compensated for by a gain in another. Kapp (1970) offers a 'substantive' concept of rationality that is more sensitive to these dimensions of well-being. Environmental choices require an appeal not to "formal welfare criteria" but rather "concepts defining a substantive rationality reflecting actual human needs and requirements of human life" (Kapp, 1970: 847). Kapp borrows the concept of substantive rationality from Weber. In contrast to formal rationality, substantive rationality is defined as:

the degree to which the provisioning of a given group of persons (no matter how delimited) with goods is shaped by economically orientated social action under some criterion [...] of ultimate values, regardless of the nature of these ends (Weber, 1978 [1921–22]: 85).

Kapp employs a needs based account of well-being to fill this account out. In contrast to the monetary measures invoked for formal rationality, substantive rationality requires the definition of "existential minima representing minimum adequate levels of satisfaction of essential human needs" (Kapp, 1965: 77). Given the plurality of needs, and the minimal thresholds associated with them, choice requires not a single measure of value to trade-off across different dimensions of value, but distinct measures associated with those different dimensions.

The other arguments of the last section also point to distinct dimensions of rational choice. Consider the claim that some social relations and value commitments are constituted by a refusal to trade. Refusing to trade is a way of expressing an evaluative or relational commitment. Actions are not just instrumental means to ends, but also ways of expressing attitudes to people and things. This suggests that rationality also governs the ways relations are expressed: "Practical reason demands that one's actions adequately express one's rational attitudes towards the people and things one cares about" (Anderson, 1993: 18). Protests to monetary valuation of environmental goods can rationally express the values put at risk in environmental choices.

Finally, consider the way that choices can be a matter of considering competing claims that individuals in different relations make on us. This is not a matter of calculation. It is a matter of judging which competing claims have significance in the context of choice. A general point can be made here. In most decisions agents are faced with competing reasons or grounds that tell for or against conflicting options. The problem is that of ascertaining which reasons make the strongest claim in that choice. This involves public deliberation not calculation. Rational action is that which is justified by deliberation that meets appropriate norms of reason. Rational public choice requires deliberative institutions that allow citizens to transform preferences through reasoned dialogue, rather than measuring through money given preferences for the purposes of aggregating them to arrive at an 'optimal' outcome (Elster, 1986; Smith, 2003; O'Neill, 2007). Indeed monetary measurement captures only the intensity of preferences not the soundness of the reasons for them. As such it precludes rational choice rather than enables it.

Once one moves beyond a narrow formal account of rationality, value commensurability in general and monetary commensurability in particular are not conditions of rational choice. Correspondingly research needs to shift from the development of techniques and procedures that assume value-commensurability to the development of multicriteria and deliberative procedures and institutions that enable participants to deliberate across the plural values that inform environmental choices (Martinez-Alier et al., 1998; Burgess et al., 2007).

Concluding remarks

The view that environmental choices require monetary valuation of unpriced environmental goods informs a great deal of current environmental economics and policy. It is founded in part on the assumption that rational choice requires value commensurability. This assumption is false. Rational environmental policy requires the development of procedures and institutions that recognise that values are plural and incommensurable.

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