



Environment & Society



White Horse Press

Full citation:

Prior, Michael, "Economic Valuation and Environmental Values."  
*Environmental Values* 7, no. 4, (1998): 423-441.  
<http://www.environmentandsociety.org/node/5758>

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## Economic Valuation and Environmental Values

MICHAEL PRIOR

*Planning for Energy and Environment*  
*Woodlands, Savile Road*  
*Hebden Bridge, West Yorkshire, HX7 6BY, UK*

**ABSTRACT:** The origins of both economic and philosophical value theory are examined and shown to be closely related. The status of neo-classical value theory is that it is internally flawed in any attempt to describe the real world. Cost-benefit analysis as it applies to the valuation of environmental agents relies upon the claim that this neo-classical theory has a particular status in optimal welfare maximisation and, therefore, suffers the same problems of internal consistency. Economic valuation of the environment is not a scientific process derived from external law but a social process relying upon social agreement. Alternatives to economic valuation are considered and may possess a more plausible social base. However, all environmental valuation is at odds with beliefs based upon the existence of objective and intrinsic values.

**KEYWORDS:** Economics, axiology, values, cost-benefit analysis, environmental assessment.

*Hector:* Brother, she is not worth what she does cost  
The keeping.

*Troilus:* What is aught, but as 'tis valued?

*Hector:* But value dwells not in particular will;  
It holds his estimate and dignity  
As well wherein 'tis precious of itself  
As in the prizer. 'Tis mad idolatry  
To make the service greater than the god;  
And the will dotes that is attributive  
To what infectiously itself affects,  
Without some image of th' affected merit.

*Troilus and Cressida* II ii

## INTRODUCTION

The theory and practice of economic valuation of environmental assets has come in for sustained and heavy criticism from environmentalists. An issue of this journal (*Environmental Values*, 1994) devoted to the topic was almost entirely negative and, although there have been attempts made by economists to rebut the criticism, it is probable that most environmentalists are suspicious of efforts to value the environment in economic terms. Parallel to this suspicion, however, environmental economists continue to develop and refine their techniques. Their response to criticism is usually based on twin pedestals: that the usage of economic valuation is misunderstood and that, whatever its flaws, economic values are so widespread and dominant, particularly in decision-making, that for environmental issues to be excluded from their domain actually harms the environmental cause. This paper is in three parts:

- a summary of the origins of value theory in economics and philosophy;
- a critique of standard economic valuation theory;
- discussion of the three value systems which are, in practice, used in environmental valuation.

## PART 1: THE ORIGIN OF 'VALUE'

The problem of value is as old as philosophy if one accepts that human values are linked to ethics and moral behaviour. However it was only in the second half of the nineteenth century that philosophical work on 'value' as a separate category began to form an accepted branch of philosophy graced with its own name, axiology. Up to that point values such as beauty or justice were established without reference to each other. Frondizi suggests that 'each value, rather, was studied in an isolated fashion' (Frondizi, 1963). The topic flowered in the first third of the twentieth century when several books whose titles rang the changes on combinations of 'theory', 'value' and 'general' were published. Since then value theory in philosophy has spread out into a very large tree whose branches seem, at least to a non-specialist, to be very widely separated. But however wide the gap between different theories, they all address the issue of relativity: of how different values relate to each other; of categories of value derived from different premises and not compatible; or, alternatively, of a common source of all values.

The broad chronology of value theory's development is interesting for the coincidence it provides with the growth of theories in economics which have strong links with certain aspects of axiology. In particular, economic theories of value may have provoked the idea of a set of general values which can be compared in some way, each with the other. Kraft confirms the initial connection

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with economics writing in 1937:

It [value theory] is the newest of the philosophical disciplines; it was founded in Austria, only at the end of the nineteenth century, by Meinong, Ehrenfels, and Kreibitz, its origin being not unrelated to the treatment of value in economics. (Kraft, 1981)

Rescher observes that:

This school, often called the 'Second Austrian School of Values', included Christian von Ehrenfels, Alexius Meinong and Anton Marty, ... The 'First Austrian School of Values' was a school of *economic* value theorists (Menger, Wieser, Bohm-Bawerk). (Rescher, 1975)

*Economic values*

Classical economists were interested in a general theory of value at least a hundred years before philosophers. In 1776, Adam Smith asserts:

The word VALUE, it is to be observed, has two different meanings, and sometimes expresses the utility of some particular object, and sometimes the power of purchasing other goods which the possession of that object conveys. The one may be called value-in-use; the other value-in-exchange. (Smith, 1776)

Although expressed in a prosaic way, Smith's distinction contains the same intrinsic/extrinsic, objective/subjective divide which has dominated the field ever since (and which seems to have suggested itself to Shakespeare even earlier). Classical economists (including Smith) never overcame the problem of separating value as an objective, embodied property (which was their project) and as a property dependent upon human perceptions. The problem of separating objective and subjective aspects of utility dogged classical economists until, at the end of the nineteenth century, the neo-classical transformation supposedly cut the knot by locating value firmly inside the individual head and rejecting any theory of embodied value.

The interest in studying the origin of human values in aggregate (as distinct from considering particular values or virtues) took a decisive turn in the second half of the nineteenth century in both economics and philosophy in that the former formalised a previously rather inchoate set of ideas whilst the latter set up an entirely new branch of the field; both were based upon the supremacy of individual human desire and of a wholly subjective interpretation of value. And both, because of the primacy given to subjective human desire, could lay claim to being universal and to include all human activity within their scope.

This claim of universality was, to some extent, clouded in the case of economic theories of value by the fact that the problem with which economists were apparently grappling, that of how the price of commodities was deter-

mined, appeared much more restricted than the problems which philosophers were setting themselves. This restriction was a valid one for the classical economists who attempted, though with internal confusions and contradictions, to base their theory of value upon the quantity of some measurable input to any specific commodity. The neo-classical revolution in economics at the end of the nineteenth century, by asserting that the heart of value lay in human gratification, essentially removed the definition of economic commodities as those things which embodied, for example, human labour or corn and extended it to include anything which could form the focus of human desire. In Marx's labour theory of value, questions about the relative value of a beautiful sunset and a chocolate ice-cream simply made no sense in that a sunset is not created by human labour. However, as soon as value became rooted in human preference, questions such as how many chocolate ice-creams have the same value as a beautiful sunset became, theoretically, admissible however much they may have been, in practice, avoided – at least initially.

#### *Axiological theory*

Axiology, on the other hand, never had any difficulty in claiming universality, that being its chosen point of origin. Most of its problems arose in the reverse direction; that of the perceived need to theorise practical distinctions between the value of chocolate ice-cream and of artistic beauty. The new theory of values, axiology was, at least initially, based upon a psychological explanation. The original proponent of the theory was Brentano, who

saw the basis of valuation in man's emotions – specifically in the contrast between the complex of favourable emotions (loving, liking, being pleased about, favouring etc.) on the one hand, and of negative emotions (hating, disliking, being displeased about, etc.) on the other. The former class of emotions he characterised very broadly as love and the latter as hate. (Rescher, 51)

Meinong developed this broad characterisation into a more sophisticated analysis which formed the basis for future work along these lines.

The key twist to the theory was produced by Ehrenfels who in 1897 described a system of valuation based not upon love or affection but upon *desire*. In the Brentano-Meinong approach

we desire something because we love it. Ehrenfels (followed in this regard by R.B.Perry in the United States) saw the matter in reverse: we value something because we desire it. Desire is the basic thing: it governs value since pleasure is subsequent to desire; once we desire something we desire pleasure from the contemplation of its realisation or its acquisition. (Rescher, p.52)

The twist is a crucial one because although both interpretations operate within the area of human pleasure, they lead in quite different directions. Love

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as an emotion requires something 'out there' which is available to be loved, something extrinsic to the valuer, which does not require the existence of the valuer or a 'value experience' between subject and object. At least that is the interpretation placed on it by Meinong in his later writing according to Kraft (Kraft, p.1) and Rescher (Rescher, p.52). Like Shakespeare's Hector, he appears to have believed that to love something means giving it a value which is independent of the valuer. Desire, on the other hand, is wholly subjective emerging from the valuer and ascribing value to the object of desire. It is essentially this divergence which has remained as the central difference in subsequent philosophical work on value.

Those who took on the desire theme were able to develop a theory of value which could be put to work throughout the behavioural sciences. It is relevant that Ehrenfels, who conducted a vigorous debate with Meinong over the two bases for value theory at the end of the nineteenth century, shortly afterwards abandoned philosophy and turned towards the study of human psychology. The geographical focus of this theory of value was Anglo-American philosophy and, in particular, Dewey and Perry who, though differing in a number of respects, proposed a thoroughly subjectivist theory of value (Dewey, 1939). Perry advanced the famous definition of value 'That which is an object of interest is *eo ipso* invested with value. Any object whatsoever it be, acquires value whenever any interest, whatever it be, is taken in it' (Perry, 1950, p.115). Dewey encapsulated the entire position in his pithy comment 'There is no value except where there is satisfaction' (Dewey, 1929, p.267).

This is the standard position of subjectivist value; that value is created by the valuer and *only* by the valuer. If any object ceases to be of interest to some valuer then it loses all value. It follows that the only way to investigate value is to inquire about the interests of valuers; their intensity, preference and extent according to the criteria adopted by Perry. An interest-based theory of this kind goes some way beyond desire, though it has obvious links with it, in that the interest displayed by the valuer is not named; it exists insofar as the valuer suggests it does. As Bond describes the theory:

Value, insofar as it is granted any existence at all, is the product of an agent's motivational propensities, that which determines his aims, goals or purposes. (Bond, 1983, p.4)

An interest-based theory of value has obvious links with economic value theory based upon consumer-preference and attempts to measure value in these terms have proliferated throughout this century. (See Handy, 1969 and the large bibliography in Rescher). There are, of course, some important differences between neo-classical economic value theory and preference-based axiological systems. One crucial one is the apparent absence of any budget constraint in the latter as well as no systematic equivalents to the technical cost-based supply curves of the former. But despite these differences, it is striking just how close

modern preference-based axiological theories are to neo-classical theories of value. Indeed, it is probable that hidden inside the logical assumptions of the former there is some kind of budget constraint. Implicitly, individual human desire is assumed not to be infinite and if finite then it is constrained in the choices it may make. But this possible constraint appears to be unused. Neo-classical economics, because it makes explicit use of a budget constraint, is able to claim that it provides an operational procedure for *maximising* the satisfaction of human desire.

*Objective values and environmental values*

Such subjective preference-based axiological schemes do not, of course, exhaust modern philosophical ideas about value. However they do seem to be dominant, at least in the Anglo-American world, to the point where any view of values as objective has to overcome what amounts to philosophical derision. Thus Bond, in defending an objectivist theory of value, acknowledges that he has to

... [d]isarm the so-called 'argument from queerness', summarised as follows by Mackie:

*This has two parts, one metaphysical, the other epistemological. If there were objective values, then they would be entities or qualities or relations of a very strange sort, utterly different from anything else in the universe. Correspondingly, if we were aware of them, it would have to be by some special faculty of moral perception or intuition, utterly different from our ordinary ways of knowing everything else.*

Mackie is, of course, talking about moral values in particular, but the argument from queerness is usually thought to apply to the claim that any sort of value is objective. What sort of entity, property, or relation could this funny kind of thing, a value, be? (Bond, p.84)

The key importance of the main environmental position on value is that it has buttressed objectivist theories of value from this kind of attack by the very simple 'head-on' defence that, yes, there is something 'out there' which is a repository of value and that, no, it does not require any '*special faculty of moral perception or intuition*' to be aware of it. Environmental philosophers point to a common human experience in the form of a relationship with 'nature' and claim that it is this relationship which provides an objective 'out there'. The way in which humans and nature relate has provided an extensive literature and some keen disagreements, which cannot be considered here, but the common feature is clearly there. They return, possibly not knowingly, to the original roots of axiology by asserting that humans 'love' nature or life rather than 'desiring' them and that this is not something which can be argued away on the grounds of general oddness. It is not a matter of '*entities or qualities or relations of a very*

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*strange sort, utterly different from anything else in the universe*'. In a sense, it is the universe itself, whether perceived in a flower or in a galaxy, which forms the source of objective value in environmental philosophy.

## PART 2: NEO-CLASSICAL ECONOMIC VALUE

In classical economic value theory, whether Marxist or Ricardian, the status of value is clear. Value is embodied into any economic entity by the amount of labour or corn or whatever required for its production and this 'tends' to define its price. However, neo-classical economics famously discards this crude supply-cost procedure and replaces it by an interplay between supply and demand. Moreover, not only was supply cost abandoned as a sole determinant but so was any constancy or independence in a good's value. Demand is relative. It depends upon the availability of other goods and their price and upon the tastes of all other consumers. Any specific value is determined by the value of all other goods in a constantly changing matrix of desire and technology. As Mirowski has pointed out, (Mirowski, 1989) in neo-classical economics, the specification of individual economic entities fades away to be replaced by a view in which value ceases to be embodied in a specific good but becomes a property of the economy as a whole. It becomes in his terminology, a field rather than a set of parameters. This fading leads some neo-classical economists to deny the very existence of 'value' as a useful concept though it remains in common use (as in the title of Debreu's seminal book; Debreu, 1959).

This way of specifying value, whilst satisfying theoreticians, bothered many in the economics profession as well as seeming a total mystification to many outsiders. For one thing, the early neo-classical economists simply did not have any complete theorisation of their simple supply/demand balances with value/price being determined by the intersection of two lines, one upwards sloping, one downward. Although still the dominant pedagogic tool of economics, it requires little thought to appreciate that such partial analysis is of limited use. The simple static lines can only exist if every other factor in the economy affecting general demand is frozen. It took around three-quarters of a century for a complete and internally consistent general theory of value, albeit one based on very restrictive conditions, to be published as late as 1959.

This mathematical edifice now defines economic value as commonly used and it provides the theoretical foundation for subsequent work on 'environmental values' conducted by mainstream economists.

*The consistency of neo-classical economics*

The first question which one might ask of economic value theory is does it make sense in its own terms; is it internally consistent and can it be developed using



reasonably plausible assumptions about normal social life? This question is one which is and always has been widely discussed by economists as much as by those hostile to the dominant position of economics in the area of values. However, it is only relatively recently that a fully fashioned critique of neo-classical economic theory based upon its internal consistency and realism has emerged. In part this is due to the late flowering of the full theory. Although the foundations of neo-classical ideas were laid in the decades around the turn of the century by Walras, Marshall, Jevons, etc., as was noted above, it was not until the late-50s that Arrow and Debreu were able to present what was claimed as a full and consistent general theory of competitive equilibrium culminating in Debreu's *Theory of Value*. (Debreu, 1959) This relatively late presentation of what could be claimed to be a complete formulation of neo-classical economics meant that general critiques were confined to relatively isolated and sometimes arcane sources, for example the neo-Ricardian critiques from Cambridge, England directly mainly at Samuelson and his collaborators in Cambridge, USA. (See Harcourt, 1982 for a summary of this long drawn-out Cambridge Capital Controversy.) It is only recently that such criticism has become widespread.

Neo-classical economics has been attacked from a number of quarters. The one considered here derives from inside the economics profession and consists of a sustained attack upon the technical premises of neo-classical theory showing that it is neither consistent nor comprehensive nor in any obvious way relevant to the real world. The importance of this type of criticism lies in the fact that it seriously damages the theory's claim that it is a uniquely defined and generally applicable view of an optimal economic state. Much of this work has been presented in specialist and technical journals but it has been recently summarised in Ormerod's *The Death of Economics*, a relatively non-technical work, whose preface asserts:

...the most devastating criticisms of conventional economics have come from within the profession itself, from talented and gifted people who have looked deeply into the implications of the assumptions underlying orthodox [that is neo-classical] economics, and in so doing have exposed its limitations on its own terms...Good economists know, from work carried out within their discipline, that the foundations of their subject are virtually non-existent. (Ormerod, 1994)

The main criticisms are of two kinds. The first is that the neo-classical system has huge and probably insuperable problems in coping with the future and with uncertainty. Conventionally, the way in which the future is introduced into neo-classical theory is to allow for contingent commodities equivalent to futures contracts which cover all commodities for all time periods. As such futures can be traded alongside transactions for current goods '...the future may be collapsed into the present, and so does not need to be considered explicitly' (Allingham, 1983).<sup>1</sup> This is a straightforward restatement in words of an original mathematical proof by Arrow but it omits the point that the future may only be so collapsed

if all agents have exactly the same perceptions of the future prices of all commodities, in other words if all uncertainty is removed from the scene. Unless this is true, the convenient removal of the future cannot be undertaken. As Ormerod points out (Ormerod, p.89) this restriction can be lifted but only if it is assumed that all agents have access to theoretically unlimited computing power or have infinite time in which to make decisions, an obviously unrealistic assumption.

The second general area of problems is how economies reach the state of equilibrium described by neo-classical theory. Although the theory describes a perfect equilibrium once market-clearing prices have been found, it has to invent external mechanisms whereby the equilibrium is achieved. In Allingham's words 'it requires there to be no actual exchanges of commodities at any disequilibrium price, but only the making of provisional plans by each agent, plans which are consummated only if they are all possible, that is if the price is an equilibrium' (Allingham, p. 87). Not only does this require total foreknowledge, it also requires that the theoretical economy should possess only one equilibrium with no local equilibrium points. It can be shown that such local equilibria can exist under many, very plausible, conditions. To overcome such problems, neo-classical theory has to invent one of its strangest devices, a kind of theoretical auctioneer who receives bids for goods without ever allowing trade to take place and who can hoist the market out of local equilibria and nudge it towards the true equilibrium.

The difficulties associated with this have been pointed out by Arrow, himself one of the acknowledged originators of modern neo-classical theory:

Even if we make all the structural assumptions needed for perfect competition (whatever is needed by way of knowledge, concavity in production, absence of sufficient size to create market power, etc.) a question remains. How can equilibrium be established? The attainment of equilibrium requires a disequilibrium process. What does rational behaviour mean in the presence of disequilibrium? Do individuals speculate on the equilibrating process? If they do, can the disequilibrium be regarded as, in some sense, a higher-order equilibrium process? Since no one has market power, no one sets prices; yet they are set and changed. There are no good answers to these questions and I do not pursue them. (Arrow, 1988)

In summary, neo-classical theory, in its own terms, only works if the future does not exist and if the economy never changes except in ways which are totally foreseeable. It would, of course, be helpful to the neo-classical cause if it could be demonstrated rigorously what is often implied in practice; that whilst no real economy exists under the stringent conditions which specify the theoretical fully-competitive market economy in general equilibrium, any effort to move the real economy closer to the theoretical model will also move general welfare and efficiency closer to the optimum levels of the theory. Unfortunately and famously, ever since Lipsey and Lancaster's paper on the 'second best problem',

(Lipsey, 1956) no such conclusion can be drawn despite strenuous subsequent theoretical efforts. This causes critical damage to the practical relevance of neo-classical theory.

In view of these problems, it might be wondered why neo-classical theory retains its hold over economists. Ignoring venal ideological reasons, one powerful intellectual attraction stems from the demonstration of two results derived from the basic model which have fascinated intellectuals ever since their original promulgation (though not general proof) around the turn of the century. The first of these is that

free-market, competitive equilibrium is efficient, in the important sense that demand equals supply in every market, so that all the resources of an economy are fully utilised, and none lie idle.

Second, in such equilibrium, no individual or company can be made better off by altering the allocation of resources in any way whatsoever, without making at least one person or company worse. In other words, the distribution of income and wealth which emerges in the equilibrium cannot be altered by policies of taxation without making someone worse off. (Ormerod, p.71)

The economic Holy Grail of the best of all possible worlds seems to stem directly from application of a relatively simple theory. Debreu appeared in 1959 to have provided final and complete proof of these results and subsequent curtailment of any practical relevance of his simple mathematics has done little to dim the enthusiasm of many economists.

Does environmental economics need neo-classical theory?

In the company of critiques such as these, it is of little surprise that environmentalists of a non-economic persuasion have found it comparatively easy to find ammunition with which to attack environmental economists who have not only attempted some form of economic valuation of environmental assets but have tried to claim special virtues for the general application of such economic valuation. A prominent example of this is Sagoff (see Sagoff, 1988 and Sagoff, 1994) but many others could be cited. In fact so shaky is the foundation of neo-classical theory that our initial question might better be phrased: 'does economic valuation really need a demonstrably inconsistent neo-classical base?' rather than any effort to prove the consistency of such methods by appealing to general economic theory.

Indeed, in recent years, there has been a clear attempt to move the methods of environmental valuation away from reliance on general economic theory and into a less contentious area. Although it is quite possible to find expositions of economic valuation of the environment which contain a full background of neo-classical theory (e.g. Freeman, 1993), much of the current literature attempts a breezy commonsensical approach to economic valuation which is proposed as something rather obvious. An example is in Pearce's 1993 book *Economic*

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*Values and the Natural World*. (Pearce, 1993). In the chapter entitled 'What is economic valuation' Pearce writes

The economic value of something is measured by the summation of many individuals' willingness to pay for it. In turn, this willingness to pay (WTP) reflects individuals' preferences for the good in question. So, economic valuation in the environmental context is about 'measuring the preferences' of people for an environmental good or against an environmental bad. (Pearce, 1993, p.13)

This, of course, is disingenuous. In its own terms, such valuation is relative to something else – this is what 'preference' means – in effect, embedding environmental values into the general matrix of value covering the whole economy. There are, in principle, several, perhaps an infinity of ways in which such preference valuations could be carried out. Arrow, for example, describes a perfectly reasonable theory of choice based upon habit-formation. (Arrow, 1987) What privileges the form of valuation used by Pearce is the implicit claim that the neo-classical value matrix is a unique optimisation of human welfare as expressed in value terms.

Some twenty five or thirty years ago, academics specialising in cost-benefit analysis (CBA), the precursor of environmental economics and its theoretical mainstay,<sup>2</sup> were less reluctant to deploy economic theory. Keen to bring their speciality into the full stream of theoretical economics they were anxious to demonstrate its links with basic neo-classical precepts. They did this by showing that CBA was a way of correcting distortions to a fully competitive market and thus moving closer to an optimal allocation of resources. These efforts were exemplified in Dasgupta and Pearce's standard text *Cost Benefit Analysis: Theory and Practice* published in 1972 in which the full armoury of neo-classical economic theory is used to provide CBA with a respectable foundation. Unfortunately, the conscientious application of neo-classical methods uncovered all the problems which have been noted above. These include difficulties with defining Pareto optimality, the notorious Arrow 'impossibility' theorem and, perhaps, most problematic of all, the fact that if the actual market is far from optimum then there is no guarantee that use of price adjustments to compensate for externalities will move society closer to this optimum. There is even the implication, though this is not explicitly discussed, that the very existence of externalities, that is non-traded goods outside the market which nevertheless alter market preferences, mean that the economy can never reach its optimum and that, therefore, neo-classical theory can never apply.

Possibly, the emergence of these kind of difficulties led CBA analysts to veer away from efforts to ground their subject in theoretical rigour. Even so, environmental economics requires some kind of social grounding and for Pearce this was, if not full-blown neo-classical theory, then at least *the kind of social formation which neo-classical theory attempts to analyse*. Dasgupta and Pearce set out their world as follows:

For a systematic language to exist at all there must be 'primitive notions' of 'basic concepts'. The meaning of these concepts is known intuitively: they may be analysed in detail and their relationships with other concepts shown, but such analysis, it is argued, would add little or nothing to our understanding of the concepts. The economist adopts as a basic concept the notion of 'preference' ... The implicit judgement is that individual preferences should count. In a sense this is very 'democratic': it is equivalent to obeying the maxim of consumers' sovereignty. CBA is a way of recording these preferences, either as they are revealed directly in the market, or, where no market exists, as the cost-benefit analyst sees them revealed indirectly through other means... In general, preferences are assumed to be 'selfish', that is, individuals behave such that they choose on the basis of the outcome of a policy as it affects them and not as it affects others... The preferences which CBA in its standard form attempts to measure and aggregate are 'market' preferences: a vote recorded in a competitive market place, or the vote which the cost-benefit analyst infers (as best he can) would be expressed if there was a competitive market place. Clearly these votes are not equally allocated between individuals: those with larger incomes have more market votes compared to those with smaller incomes. Compare this to a democratic political voting system in which each man has one vote, regardless of his income. Ethical arguments can be adduced for either system. 'One man, one vote' appears to serve the principle of equity, or 'distributive justice'. If, on the other hand, it could be argued that each individual is paid according to his marginal social product, and that he deserves to receive the value of his marginal product, then the market voting system has some ethical force.

This has been quoted at length because it serves to show just how far-reaching are the apparently simple assumptions made by Pearce in his more recent summation of the theory of economic valuation quoted above. Kneese put the matter rather succinctly when he stated the basic value judgement underlying environmental economics:

The value judgement is that the personal wants of the individual in the society should guide the use of society's resources. This is also the premise which is at the root of Anglo-American political theory. (Kneese, 1977)

Such frankness about the underpinnings of CBA expressed not in the form of obscure equations but in terms of social and political assumptions is, in one respect, refreshing. However it does open up a can of worms in terms of whether such a social stance can encompass the concerns raised by current perceptions of environmental problems. What if a large part of one's society does not speak the same basic language nor share the same core concepts?

This is very far from being a theoretical problem for economic valuation. Consider a standard contingent valuation exercise, say an attempt to value some woodland through which could run the route of a bypass. Using a contingent value questionnaire, a sample of the population is asked to put a figure on what

they would pay to preserve the wood. A certain proportion of the sample will reply 'everything' or 'infinity' or 'nature is too valuable to be treated like this' or similar formulations.<sup>3</sup> This always happens and such questionnaires are always discarded along with all others deemed to be incomplete or wrongly completed. They have to be dropped because the computational procedure used to analyse the questionnaires cannot cope with such formulations nor can the underlying theory of contingent valuation. What is happening is that these respondents are rejecting the '*primitive notions*' and '*basic concepts*' of the questionnaire. They no longer share a common '*systematic language*' with the compilers of the survey though this is obscured by the surveyors classifying such questionnaires as incomplete or non-compliant.

The key power of neo-classical theory, and the reason why CBA has to be underpinned by it, is that it enables those who undertake such surveys to reject the 'invalid' questionnaires on the grounds of their irrationality. Irrational because not to value the wood according to the rules of the survey is to deny the over-arching benefit of bringing all social activity into the framework of Pareto optimality where any change can only cause greater harm than good. If this kind of rationale is not available then the possibility has to be acknowledged that the survey is simply aborted when the proportion of those rejecting its basic concepts reaches some arbitrary level, 10%, say, or perhaps 20%. The problem is that, as Arrow demonstrates, the assumption of rationality does not get one very far even in neo-classical theory. Indeed it may even be totally misleading. As Arrow puts it:

Rationality in application is not merely a property of the individual. Its useful and powerful implications derive from the conjunction of individual rationality and the other basic concepts of neo-classical economics – equilibrium, competition and completeness of markets...When these assumptions fail, the very concept of rationality becomes threatened, because perceptions of others and, in particular, of their rationality become part of one's own rationality. (Arrow, 1987, p.27)

All the claims of neo-classical valuation to be rational and general and optimal stand or fall together. If only one of the technical assumptions underlying such claims are breached then all, fatally, fall. The ironic and, for neo-classical environmental economists, perturbing fact is that the very acknowledgement of the problem they are tackling – that environmental 'externalities' cause conditions of market failure – creates just the circumstances in which the technical assumptions *are* breached.

This really brings us to the foundations of the issue and to the fundamental problem of economic valuation. Economics, despite the complex smoke screen cast around it, is not and cannot be a scientific theory capable of generating rigorous and unchanging laws about social action which cannot be gainsaid. Both neo-classical and Marxist economics claimed this; both were in fact an attempt to elaborate 'acceptable' rules for conducting economic affairs in

different social formations. In reasonably stable societies, complex patterns of economic conduct do harden into the form of rules and these rules can be subject to forms of analysis which are apparently similar to those conducted by physicists. Economic 'laws' can emerge which are like physical laws. Mirowski is probably correct in asserting that these 'laws' are more like metaphors but it is still possible for them to have wide-ranging and relatively stable application provided the '*systematic language*' of Dasgupta and Pearce is relatively stable. There is nothing inherently wrong in efforts to carry out generalised economic valuation. Indeed it is probable that all social groups have developed some kind of rule structure for accommodating the intrinsically unstable but necessary process of economic competition. The rules for economic valuation provided by neo-classical preference theory are valid, as Pearce implies, so long as they are socially accepted by a broad enough group. However they cannot be privileged by appeals to the results of an allegedly 'scientific' theory of general equilibrium. Just what 'broad enough' means in practice is a difficult problem but the theory cannot be elevated to the status of any kind of scientific law.

### PART 3: IF NOT ECONOMICS THEN WHAT?

#### *General preference based evaluation?*

Even if the supremacy of neo-classical economics as a scientific form of valuation is demolished, it still remains a valid question to inquire as to whether any satisfactory aggregative form of valuation can be devised which includes environmental values. In the final part of this paper, I want to argue that the two streams of philosophical thought noted at the start provide, as one might expect, opposite and rather unequivocal answers to this query. This may be thought an unfortunate conclusion as it suggests that the problem of environmental valuation may be deeper and less reconcilable than is suggested by a common tendency to gang up on the economists.

The first line of philosophical thought discussed in Part 1 led to subjective preference-based theory exemplified by Dewey's aphorism that 'There is no value except where there is satisfaction'. It is a fundamental mistake to believe, as Norton appears to (Norton, 1994) along with Sagoff, that preference theory and neo-classical economics are essentially identical. Although it is true that the economic theory is a form of preference theory, there is a far wider set of options available once the concept of consumer-based preferences and economic budget constraints are abandoned. This does not mean that economic considerations are banished. As Keat has noted, (Keat, 1994) not only is it quite possible but also inevitable that economic preferences along with other social preferences are incorporated in any practical decision making process. Sagoff's view that 'America is not a nation of consumers: its people are not bundles of preferences

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in search of a perfect market' (Sagoff, 1988, p.224) is only comprehensible with the insertion of 'only' after the two 'not's. What is banished is any conception of economic valuation maximising social benefit.

In this context, economic valuation forms just one possible component of the wider preference-based systems commonly deployed in the Environmental Assessments (EA) now widely carried out throughout Europe and America. These have proliferated over the past thirty years into a veritable sub-discipline of their own complete with university departments, academic and professional qualifications and journals, a discipline which has the distinction of being legally required to be used in the majority of countries in the world. Although EA has its foundations in practical problems of decision-making and little is written on its fundamental theory, there is no doubt that its philosophical base is the wider preference-based ideas noted above in which the source of value is firmly based in subjective individual belief. EA lives in the same philosophical universe as CBA. However, it essentially starts from the '*one man, one vote*' base which Pearce counter-posed to the market-based principles of CBA.

CBA offers critics like Sagoff a rather easy target. What would be a good deal more interesting would be to discover whether a preference-based process of EA using all the appropriate tools of consultation, background research, information dissemination and, ultimately, a democratic form of decision-making expressed as preference-based 'votes' could ever measure up to Sagoff's requirements. One of the problems of deploying such lethal and vigorous modes of argument *against* a particular form of appraisal is that it is difficult to make out just what form of practical decision making is being advocated.

*Or the use of intrinsic values?*

The point is, that although EA may be regarded as a more satisfactory procedure of general valuation than CBA, it is still based upon a philosophical position which is rejected by many prominent environmental philosophers – that of a wholly subjective value system. As noted above, environmental philosophy revived the somewhat embattled belief in an intrinsic value system separate from humans by pointing to the position of the natural world in which humans are embedded and on which they depend. The idea of intrinsic values in nature has certainly permeated much environmental thought and has both excited and validated a good deal of environmental activism.

It would be far too big a task even to summarise such ideas of intrinsic values in nature. Suffice it to say that a key starting point of such positions and one of their main strengths is the observation that human life is usually accorded an intrinsic value which separates it from virtually all other human values. This commonplace observation provides a real problem for CBA and, probably, for all preference-based value systems. The usual gloss put on the problem within



CBA is the assertion that the amount spent on life-saving measures – road-calming and kidney machines are common examples – are strictly rationed in budget terms and that coherent estimates of the ‘value’ of a life can be adduced from this. The faulty logic in the argument is glaring. It can be exposed by the simple act of asking, in the CBA context, ‘How much do I have to pay to kill someone?’ To which the simple answer is that no monetary payment is possible either to purchase the right to or exonerate from an intentional act of murder. It is simply forbidden. How many kidney machines a country chooses to purchase and the translation of this purchase into a money-value per life-saved has no relevance to this straightforward prohibition.<sup>4</sup> Saving life is not equivalent to killing.

One of the initial breakthroughs in environmental activism came with the recognition that many acts causing environmental damage can be seen as causing foreseeable loss of life. As risk analysis techniques mature, the calculation of just how many lives will be lost as a consequence of a road, a nuclear waste site or a dam can be made, statistically, more and more precise. The development in society of an understanding of this moves the lives lost as a result of any particular activity out of the ‘kidney-machine zone’ beloved of CBA and into a much more morally complex area of partial criminalisation. There is little doubt that environmental activism has been at least partially responsible for social recognition of this problem. The perception that the builders of, say, a nuclear power plant will be statistically ‘responsible’ for the deaths of a certain number of people cannot be balanced by any facile claim that each of these lives is only ‘worth’ so many tens of thousands of pounds and that the benefits of the power plant exceeds the aggregated ‘value’ of the lives lost.

A second breakthrough, though socially a much more partial one, is to extend this criminalisation to the killing of other animals, even plants and, finally, species. An implicit assumption of intrinsic value allows the prohibitions and taboos associated with taking human life to be carried over into activities which knowingly cause the death of non-human organisms and, by further extension, the elimination of species. Again, by a similar logic, this excludes the possibility of such activities being included into a CBA framework. Indeed any preference-based system depending upon subjective values would appear to be ruled out just as they would be for judging the ‘value’ of any human murder.

There can be little doubt, firstly that a view of values based upon the existence of intrinsic and objective values external to humans is widely, if sometimes implicitly, prevalent in the environmental movement and, secondly, that it has been of great value in promoting environmental activism. But two major problems exist in this philosophy.

First, the very nature of the theory suggests that no general aggregation or comparative analysis of environmental and other values is possible. They simply

stand alone and of themselves with their only possible incorporation into decision-making being that of applying vetoes. In a limited number of cases this may be acceptable, but a widespread application of apparently numberless environmental vetoes, each similar in weight to the ultimate edict that 'Thou shalt not kill', may prove insupportable to many environmentalists. The lack of any facility to weight individual intrinsic values one with another simply flies in the face of most human experience.

Second, the assumption of non-human intrinsic value inevitably renders the environmental cause undemocratic. This is a vary complex problem and can only be crudely summarised here.<sup>5</sup> Essentially the problem arises because non-human entities, even if granted 'standing',<sup>6</sup> cannot argue their own case. Like young children and some handicapped adults, they need human advocates. Standing implies advocacy and advocacy implies a privileged human intervention. It is a common enough sentiment, and one which can be very attractive, for environmental activists to claim they are speaking for the oil-soaked birds or the threatened trees. Taken as a rhetorical stance this is fair enough but the logic of the 'intrinsic-value of nature' position is that it is more than rhetoric, that it is a simple statement of advocacy rights which have a precedence over simple human democracy. When the Sierra Club filed in a US court for trees to have independent standing it was with the implicit assumption that *they* would represent the trees.

Put it rather more directly. In the conflict over the Newbury bypass, was there *any* process of human democracy that would have convinced the tree-dwellers to come down and cease to defend their adopted trees? Or is the claim for the intrinsic value of trees sufficient to outweigh any democratic process in the same way as it might be claimed that no democratic vote can ever validate human murder? Substituting the word 'foetus' for 'animal' or 'species' immediately highlights the issue in a context which is quite similar to the problem of claiming intrinsic values for non-human entities.

This paper set out to diminish the role of economic valuation in judgements about environmental assets. But in a sense it has arrived at a much more fundamental problem, which is the possible lack of any way of making decisions which could, even in principle, arouse consensual social support. In part there is no doubt that this situation has arisen because of the wilful arrogance of many environmental economists. But alongside this all-too-precise statement of ambition, one has to place an equally dogmatic though far less well argued 'environmental' stance on intrinsic values. Although important in stimulating activism, the clear discrepancy between adherence by environmentalists to democratic ideals in the wider social world and the inevitable breakdown of democracy within any estimation of the role of claimed external intrinsic values in decision-making may lead to irreconcilable conflicts in this area.

## NOTES

This paper has benefited greatly from comprehensive critiques by two referees who did not really agree with it and from detailed and thoughtful editing by Alan Holland who kept his own counsel on the content.

<sup>1</sup> Allingham's book is useful in that it is an attempt by a firmly neo-classical economist to put in words what is normally presented in equations.

<sup>2</sup> Cost/benefit analysis has dropped out of fashion as a phrase at least in environmental circles. Even the word order has shifted to benefit/cost analysis, the phrase indexed in Pearce's 1993 book. The text only reverts to the old order at one place when Pearce, rather sadly, observes '*Outside the USA, very little actual influence has been exerted by cost-benefit analysis.*' However, any comparative reading of Pearce in the early 70s and the early 90s makes it plain that his environmental economics is just CBA with a new name.

<sup>3</sup> Sagoff states that in one contingent-value exercise on the 'value' of visibility in Wyoming, over 50% of respondents replied in this fashion. (Sagoff, 1988)

<sup>4</sup> Of course the absolute prohibition of any monetary recompense for murder is socially determined and comparatively recent. But almost all perceptions of intrinsic value appear to have altered over time and between societies.

<sup>5</sup> In a recent issue of *Environmental Values*, Krebs (Krebs, 1997) and Mason (Mason, 1997) have written about these problems.

<sup>6</sup> Although it has a legal resonance, I use the word here to mean a wider equivalency with humans based upon a common intrinsic value.

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