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Welfare Economic Dogmas: A Reply to Sagoff

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ABSTRACT: This article examines Sagoff's criticisms of 'Four Dogmas of Environmental Economics' (*Environmental Values*, Winter 1994) and argues that none of them are fatal. Many of the criticisms appear to rest on general misunderstandings about welfare economics. One misunderstanding is that transaction costs are theoretically indistinguishable from regular production costs. The theoretical distinction is that transaction costs vary under alternative policies and institutions whereas production costs are fixed by tastes, technology and endowments. Another misunderstanding is that market failure concerns only *Pareto* efficiency. Market failure also concerns *social* efficiency with respect to the 'social welfare function', a device for making explicit ethical judgments about the interpersonal distribution of welfare. A third misunderstanding is that the 'rationality assumption' drives economic theory. In fact, the explanatory power of economic models comes mainly from explicit assumptions about the constraints facing economic agents. A fourth misunderstanding is that welfare economics is used as a mechanism for making legal and political decisions. Rather, welfare economics is used as a method for informing legal and political decisions by evaluating their outcomes on the basis of individual welfare. Used properly, it can improve the democratic process by bringing hidden costs and difficult issues to the attention of both policy-makers and the wider public.

KEYWORDS: Coase theorem, efficiency, transaction costs, utility, welfare economics

1. INTRODUCTION

Should welfare economics be repaired or replaced? This pragmatic question remains after Sagoff's vigorous philosophical criticisms of the application of welfare economic principles to environmental policy (Sagoff 1994a). The question cannot be avoided, because pluralistic societies like our own need widely acceptable principles or standards for political debate.¹ Despite the well-known philosophical shortcomings of the utilitarian tradition from which it grew, welfare economics currently provides the main 'grammar of argument

about policy' in the general arena of resource allocation issues.² Taking Sagoff's four criticisms in turn, I shall argue that they succeed only against dogmatic interpretations of welfare economics and hence that the possibility of repair is left open. This reply is intended to clear up some common misunderstandings between economists and philosophers, and is not an original contribution.

2. DOGMA 1: MARKET FAILURE

The first of Sagoff's 'four dogmas of environmental economics'³ is the welfare economic concept of 'market failure'. Sagoff's criticism is that, if the assumption that people are rational economic men is taken seriously, it is tautological that markets cannot fail. This attempted *reductio ad absurdum* of welfare economic theory takes as its starting point the so-called 'Coase theorem' (Coase 1960, Stigler 1966). Among other things, the Coase theorem predicts that if bargaining is costless it will continue until it is impossible to make any individual better off without making at least one other individual worse off. In technical terms, worlds with zero 'transaction costs' will always attain a 'Pareto efficient' allocation of resources. The new twist is Sagoff's claim that this idea must logically generalise to worlds, like our own, with positive transaction costs. This would guarantee Pareto efficiency to all markets and, indeed, to all other types of economic system.

Sagoff's argument is that rational economic men should be able to take transaction costs into account in the same way as regular production costs and hence exploit all possible efficiency gains by bargaining amongst themselves. In technical terms, 'unbounded rational utility maximisers' should always and automatically turn a 'potential Pareto improvement' into an 'actual Pareto improvement', paying the relevant transaction costs and negotiating the requisite side-payments on a private basis. Hence no public project should ever satisfy the 'Hicks-Kaldor' criterion or pass a hypothetical 'compensation test' based on the sum of individual 'willingness to pay'. Sagoff does not have to take a position on the empirical question of how far real people will, in fact, bargain amongst themselves in the absence of market prices.⁴ His is a purely theoretical point, which raises an important question. What is the welfare theoretic distinction between transaction costs – such as, information costs and legal costs – and production costs – such as, labour costs and transport costs? In other words, why should policy-makers seek to attain a hypothetical outcome which would occur in the absence of particular transaction costs any more than a hypothetical outcome which would occur in the absence of particular production costs?

A sensible place to look for an answer is in the writings of Kenneth Arrow, who is often considered to have contributed more than anyone else to the shape of modern welfare economics.⁵ Arrow defines transaction costs⁶ as follows: 'The distinction between transaction costs and production costs is that the former can

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be varied by a change in the mode of resource allocation, while the latter depend only on the technology and tastes, and would be the same in all economic systems' (Arrow 1970).⁷ Arrow identifies three main sources of transaction costs: (1) exclusion costs, (2) costs of communication and information and (3) costs of disequilibrium. The distinction between transaction costs and production costs is crucial because it allows market failures to be assessed relative to the failures of alternative modes of economic organisation. A basic principle of welfare economics is that the value of a thing is determined by its next best alternative, that is, its 'opportunity cost'. The concept of transaction costs allows this basic principle to be applied to policies and institutions as well as to products and factors of production.

Modern microeconomic theorists sometimes use the modifier 'constrained' before the term 'Pareto efficient' in order to emphasise that transaction costs – in particular, information constraints – should be borne in mind in when assessing Pareto efficiency (Greenwald and Stiglitz 1986). Following the work of the 'public choice' school, they pay explicit attention to 'government failure', as well as market failure, and are becoming ever more explicit about the role of special transaction costs such as asymmetric information and incomplete contracts (Vickers 1995, Grossman and Hart 1986). Modern welfare economics is a 'theory of the second-best' which uses the 'first-best' world without transaction costs only as a useful polar case (Atkinson and Stiglitz 1980, Blackorby 1990). It is no longer easy (if it ever was) for a public economist to be what Coase has called a 'blackboard economist', who assumes that the transaction costs facing government are no higher than the cost of writing equations on a blackboard.⁸ Efficiency is something to be examined on a case-by-case basis, and public economists can no more assume that public policies or institutions are always more efficient than free markets than Sagoff can assume the converse.⁹

Once the distinction between transaction costs and production costs is understood, it is not clear what Sagoff means when he recommends a 'turn towards institutional economics'. Perhaps Sagoff means that economists should study institutions. No economist would disagree. Arrow, for example, describes welfare economics as 'the theory of how and by what criteria economists and policy-makers make or ought to make their choices between alternative policies and between good and bad institutions'. (Arrow and Scitovsky 1969: 1). Perhaps Sagoff means that economists should shift their focus of attention. He would presumably recommend more attention to institutions, as well as policies, to history, politics, sociology and psychology, as well as economics, and to political theory, as well as the normative theory of perfectly competitive markets. In other words, perhaps Sagoff is calling for a return to political economy. Several economists, including some great dead ones, would be sympathetic.

Or perhaps Sagoff means that economists should change their research methods altogether. If so, he does not tell us what the new research methods

should be. He gives a clue when he writes: 'No market ever fails to be efficient. Different institutional arrangements and moral norms, however, may make one society more productive than another.' So presumably Sagoff hopes that institutional economics will develop new methods of measuring productivity which, unlike those of welfare economics, do not rely on people's preferences. But no-one has yet explained how this might be possible. It is extremely hard to see how a measure of productivity which is entirely independent of people's preferences could retain any normative content. After all, what is the point of producing more and more of something that nobody wants?

It is also worth mentioning that Sagoff uses the terms 'market failure' and 'efficiency' in a peculiarly narrow sense. Consider the hypothetical world that Sagoff describes, in which transaction costs do not vary between different modes of economic organisation and in which rational economic men bargain privately in the manner he assumes. In such a world, Sagoff is right that government intervention could never deliver a potential Pareto improvement. In the narrow sense of failure to reach a *Pareto* efficient allocation, it is true that markets could never fail in this world. However, markets could still fail in the broader sense of failure to reach a *socially* efficient allocation according to an 'individualistic social welfare function'.¹⁰ The device of a social welfare function allows the welfare economist to compare Pareto efficient allocations on the basis of an explicit ethical judgment about the interpersonal distribution of welfare (see Atkinson and Stiglitz 1980: 338). The full sense of market failure, which underpins the notions of 'social efficiency' and 'social opportunity cost', embodies a utilitarian¹¹ concept of equity in addition to the concept of Pareto efficiency.

This point may be made more precise by considering the two 'fundamental theorems' of welfare economics (an authoritative textbook exposition is Varian 1993: 323-329). Sagoff challenges the Paretian aspect of market failure defined in contrast to the first theorem, but not the distributional aspect defined in contrast to the second theorem. The 'first fundamental theorem' of welfare economics says that perfectly competitive markets succeed in the sense that they are always Pareto efficient.¹² Sagoff claims that imperfect markets also succeed in this sense. The 'second fundamental theorem' of welfare economics says that perfectly competitive markets succeed in the sense that they can attain *any* Pareto efficient allocation given suitable initial endowments.¹³ But Sagoff does not claim that imperfect markets also succeed in this sense. He does not attempt to argue that, in his hypothetical world, imperfect markets could attain any socially desirable Pareto efficient allocation given a suitable initial endowment.

Since much of the best work in welfare economics has focused upon distributional issues, any critique which focuses on Pareto efficiency is, at best, incomplete. Sagoff avoids these issues by focusing on the Hicks-Kaldor criterion of potential Pareto improvement and the associated idea of a hypothetical 'compensation test'. This old-fashioned approach to making judgments of social

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efficiency avoids making an explicit ethical judgment about the interpersonal distribution of welfare. Instead it adopts the convention that ‘a dollar is a dollar is a dollar’ no matter to whom it accrues. Of course, for a variety of reasons, most mainstream welfare economists now reject this approach (see, for example, Scitovsky 1942, Boadway 1974, Layard and Walters 1978, Dreze and Stern 1987, Blackorby and Donaldson 1990). The difficulty of finding methods for making explicit interpersonal judgments which can command general agreement,¹⁴ and the language of ‘willingness to pay’ used by environmental economists, should not be taken to mean that welfare economics ignores issues of distribution or is intrinsically biased in favour of the rich.

A final point about Sagoff’s ‘market success’ argument concerns the use he makes of the ‘rationality assumption’ that people are unbounded rational utility maximisers. Most of the explanatory power of economic models flows from the supplementary assumptions which are made about the constraints facing agents, and not the rationality assumption *per se* (see, for example, Deaton and Muellbauer 1980, Arrow 1986). Sagoff’s argument works the other way round: most of the explanatory power comes from the rationality assumption and he fails to specify the constraints facing agents. No wonder his model leads to absurd conclusions – and no wonder he fails to acknowledge that some of the constraints facing agents can vary between alternative policies and institutions. Economists should not take the rationality assumption too seriously, and nor should Sagoff.¹⁵

3. DOGMA 2: REVEALED PREFERENCES

Dogma two is that ‘choices, particularly within markets, reveal preferences’. In this connection Sagoff rightly points out that, because behaviour can be described in an infinite number of ways, preferences are only revealed if individual behaviour is correctly interpreted.¹⁶ He then makes much of the problem that interpreting choice data leaves room for judgment and disagreement. But this is only a fatal criticism against a dogmatic positivist view about the methodology of the social sciences which claims that human behaviour can be investigated without making any judgments about its meaning. In fact, of course, the art of interpreting other people’s behaviour is an accepted part of economics as much as it is an accepted part of everyday life. As with all the humanities and social sciences, economics is not paralysed in the face of alternative interpretations of human behaviour, but can and does permit judgment about which interpretation is more natural or reasonable. For the purposes of economics, the interpretation of most ordinary economic transactions is beyond reasonable disagreement, and it is not credible for Sagoff to suggest otherwise.

What is true, of course, is that environmental damage is often not taken into consideration in ordinary economic transactions – so much so that many forms

of environmental protection are classified as 'nonmarket goods'. For this reason, environmental economists sometimes resort to survey methods, such as 'contingent valuation', which describe a specific hypothetical transaction involving environmental protection (Fischhoff and Furby 1988). Despite careful survey design, it remains extremely difficult to reach agreement about the proper interpretation of people's responses. In particular, people's implied preferences appear to violate the axioms of 'transitivity' and 'invariance' which are essential to the classical model of rational choice that underpins welfare economic theory (Diamond and Hausman 1994).¹⁷

Sagoff takes this problem of disputed interpretation about nonmarket environmental goods as a sign that people's most important values for such goods are unintelligible from the point of view of economic theory. An alternative view is that people's preferences regarding unfamiliar goods are not as well worked-out and fully articulated as their preferences regarding familiar goods (Fischhoff 1991). Existing survey-based methods may be tapping into the wrong values and running into various confounding factors. If so, it may be possible to re-construct people's preferences about unfamiliar environmental goods from their preferences about more familiar components using a theory about the structure of preferences (Broome 1994). It may even be that future survey-based methods of value-elicitation, based on decision analysis and the methods of cognitive psychology, can help people to articulate coherent and well-informed preferences for unfamiliar goods (Gregory, Lichtenstein and Slovic 1993).

4. DOGMA 3: WELFARE

Dogma three is that 'people always make the choices they expect will benefit them or enhance their welfare'. After pointing out that people's choices are sometimes motivated by ethical values which have little or nothing to do with their own welfare,¹⁸ Sagoff poses a dilemma for welfare economics. Should these non-welfare values, which elsewhere he has termed 'citizen values' (Sagoff 1988), be incorporated in the utility function? If they are included, he argues, then the justification for trying to satisfy people's preferences is circular because it can no longer be claimed that it promotes welfare. If they are not included, he argues, then welfare economics does not take into account the most important considerations in relation to environmental policy: 'political, moral, ideological, and cultural values are central both to human experience and to environmental policy'.¹⁹

This vexed question about the meaning of 'utility' will require some background.²⁰ The first thing to point out is that 'utility' has at least two senses in the economics literature.²¹ In its older utilitarian sense, utility meant a person's conception of her own self-interest or wellbeing. I shall reserve the word 'welfare' for this older sense. In its modern technical sense, utility is the value

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of a mathematical function which can represent individual preferences insofar as they conform to a model of rational choice.²² I shall reserve the word ‘utility’ for this modern technical sense, and use the phrase ‘account of utility’ to mean the range of values to be incorporated in a particular utility function. Utility functions need not stand for the same thing in all contexts, but can be interpreted according to the purpose in hand. In particular, the values which determine a person’s welfare need not be the same as those which motivate her behaviour (Sen 1977).

As a second piece of background, I would like to distinguish between ‘pure’ and ‘applied’ normative economics. Pure normative economics – in particular, pure welfare theory – is a branch of political theory which aims to *clarify* political debate by developing abstract principles and arguments (Sen 1995, Sugden 1993). Applied normative economics – in particular, applied welfare economics – is a branch of economics which aims to *inform* political debate by doing concrete policy analysis. Although the pure and the applied cannot drift too far apart, there is likely to be some difference. In particular, the account of utility for use in applied work will be powerfully constrained by the fact that there must be a method for measuring it. It is important to recognise, therefore, that Sagoff’s dilemma concerns the practical account of utility for use in applied welfare economics rather than the theoretical account of individual value for use in pure welfare theory.

As a final piece of background I would like to distinguish between ‘subjectivist’ and ‘objectivist’ theories of value. Subjectivist theories claim that preferences are prior to and independent of specific values, and objectivist theories deny this claim.²³ Different economists will subscribe to different theories of value – and hence will give different answers to the philosophical question: ‘Why satisfy preferences?’ A subjectivist will tend to answer that preferences are the only ultimate source of value; an objectivist will tend to answer that preferences are often a good measure of value. Paraphrasing Plato – but not thereby commending his extreme and implausible form of objectivism – we might say that the subjectivist claims that environmental protection is valuable because preferred whereas the objectivist claims that environmental protection is preferred because valuable.

Sagoff subscribes to an unrelentingly Kantian theory of value, which claims not only that all values are objective but also that the satisfaction of mere preferences is not one of those objective values. Sagoff’s view about preferences is that they are, as Kant said, ‘mired in subjectivity’ (Sagoff 1994b). For Sagoff, the mere fact that you want something is not a good reason that you should get it. Many applied welfare economists, of course, subscribe to unrelentingly subjectivist theories of value which are diametrically opposed to this. There is increasing discussion in the ‘pure’ literature, however, of objectivist theories of individual ‘wellbeing’ or ‘good’ rather than subjectivist theories of individual ‘welfare’ (Griffin 1986, Broome 1991, Sen and Nussbaum 1993). On these

objectivist theories, an individual's 'good' means whatever it is that makes her life go well, or 'flourish', which may or may not coincide with her preferences. The recent work of Amartya Sen on 'freedoms' and 'capacities to function', which develops an Aristotelian theory of value, represents the frontier of research in this area (Sen 1992; Sen 1993b).

An objectivist interpretation of welfare economics would signify a fairly dramatic break from utilitarian political theory and would probably mean dropping the terminology of 'welfare' and 'utility'. Indeed, the increasingly popular use of the terms 'wellbeing' and 'good' in the environmental economics literature suggests that, at least for the purposes of pure theoretical discussion, objectivist theories of value are gaining ground (see, for example, Dasgupta and Maler 1994). It is fair to say, however, that 'good' is not something that can currently be measured through market transactions, expressed valuations, or any other method subject to the checks of publishable scrutiny. Unless and until methods of measuring 'good' are found, applied welfare economics can only stick to traditional accounts of utility as subjective preference. Those who subscribe to an objectivist theory of value at the 'pure' level can then think of welfare as a *part* of good, and cost-benefit analysis as a *partial* evaluation.²⁴

With this background in place, let me address Sagoff's dilemma. Should non-welfare values be incorporated into the account of utility for the purposes of welfare economic analysis?²⁵ Not unless welfare economics changes its name. Welfare economic analysis should be just what it says it is: an economic analysis of welfare. In general, it must be counterproductive to make arguments which purport to be about welfare when really they are about something else. If non-welfare values are central human values then they should be considered explicitly, on their own terms, and not buried away in amongst the welfare values. Good welfare economic analysis can then inform political debate, and help both policy-makers and citizens to make decisions on the basis of considered political judgments rather than instinctive political reactions.

What about Sagoff's claim that all of the most important considerations in relation to environmental policy are non-welfare values? However important one considers non-welfare values to be, it is hard to believe that, on any plausible theory of value, welfare values are not at least *among* the most important considerations. It is hard to accept that people's conceptions of their own wellbeing should be a minor consideration in the policy-making process. And it is equally hard to accept that the welfare effects of environmental policy are generally insignificant – either in terms of the standard of living (that is, average income as traditionally measured) or human health and quality of life more generally.²⁶

So Sagoff's criticism boils down to the claim that welfare economics fails to incorporate *some* of the most important considerations in relation to environmental policy. Most welfare economists would accept this claim, although they would dispute just how important these other considerations are. It could only be

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a fatal criticism for someone who believed that welfare economics was a mechanism for making legal and political decisions. But welfare economics is a method for evaluating the outcomes of policies and institutions on the basis of individual welfare. It is not supposed to evaluate outcomes on the basis of all values; still less to determine which political action is right.²⁷ The aim of welfare economics is to improve the policy-making process, not to short-circuit it. The hope is that good quality welfare economic analysis can improve political debate and political judgment by bringing hidden costs and difficult issues to the attention of policy-makers.

Let me relate this discussion more explicitly to the environmental economics literature. What are the practical implications for environmental valuation of my argument against the incorporation of non-welfare values into the utility function? In particular, should contingent valuations of 'nonuse values' be incorporated into cost-benefit analysis? My argument implies that they should be incorporated only to the extent that nonuse value measures individual welfare – in other words, to the extent that it captures 'existence value' as it was originally defined (Krutilla 1967). As far as possible, other parts of nonuse value (political, religious and humanitarian ideals, concerns for rights, fairness, and traditions, and so on) should be excluded.²⁸ There are two major practical problems with this theoretical claim, however. One is that contingent valuation of nonuse value is currently the only open and explicit method for valuing a large class of indirect environmental impacts on human welfare. The other is that existing survey-based methods cannot separate out welfare and non-welfare values. Furthermore, existing welfare theory does not allow welfare and non-welfare values to be directly compared, even if they could be separated out. These problems are clearly large and important research topics for environmental economists and for welfare economists more generally.

5. DOGMA 4: THE INVISIBLE HAND

Dogma four is 'the doctrine of the invisible hand', that is, 'perfectly competitive markets will allocate resources to their most beneficial uses'. Sagoff proposes an alternative 'doctrine of the invisible foot' which predicts that perfectly competitive markets will allocate resources to their least beneficial uses. His argument is that unethical rational utility maximisers will prefer to generate harmful threats than beneficial offers, because the return is greater. Hence markets should maximise misery.

I need not repeat my methodological strictures on taking the rationality assumption too seriously. Instead, the 'invisible foot' argument makes a fundamental analytical mistake. It ignores the fact that the theory of competitive general equilibrium analysis assumes that there are no transaction costs. By allowing the production of threats and other offensive activities which carry no

market price or fine, Sagoff is introducing legal or regulatory transaction costs into the analysis. It is, of course, true that illegal, anti-social and anti-competitive activities are common in real markets, and it is undoubtedly the case that transaction costs of various kinds would be far higher in the absence of ethical norms. But facts about real imperfectly competitive markets do not undermine a normative theory about ideal perfectly competitive markets. Modern neoclassical economists, like their classical predecessors, are quite happy to accept that, in reality, the invisible hand can only work against a backdrop of legal and social institutions (see, for example, Atkinson and Stiglitz 1980: 9).

It may be worth mentioning that here, as in other places, Sagoff gets rather carried away by his own rhetoric. He claims that optimal unpriced threats by unethical rational maximisers, such as economists, would lead to misery *maximisation*. But if harmful threats are subject to the usual assumption of diminishing returns, or if the rational maximisers are allowed to adopt strategic behaviour, surely at some point a few beneficial offers would become optimal. Mafia-rule is not all bad. Indeed, nor is Sagoff's rhetoric against corrupt economists.²⁹ His claim that the social costs imposed by corrupt economists are higher than those imposed by corrupt philosophers suggests an important institutional reform. In order to reduce their incentives for corruption, all economists should be guaranteed a handsome salary which is entirely independent of their published output and policy recommendations. This could be financed by voluntary contributions from those who care deeply about corruption but care little about income and welfare.

6. CONCLUSION

Assume the existence of a *reductio ad absurdum* of welfare economics. How should welfare economists respond if it were discovered? A complacent response would be to argue that logical inconsistency at a deep theoretical level is unimportant at a practical level. Applied mathematicians, for example, do not have to worry about Godel's Theorem. An arrogant response would be to deliberately ignore demonstrable inconsistencies and to carry on, regardless, like a witch-doctor peddling snake oil.³⁰ My own response would balance complacency and arrogance in equal measure. Rather like Newtonian physics at the turn of the century, welfare economics is a useful tool for dealing with ordinary problems but may require a paradigm shift before it can adequately address extraordinary problems such as human control over global environmental change.

To put the situation into perspective, consider what Sagoff's arguments might imply if taken to their logical conclusion. His discussion focus upon 'neoclassical economic theory with respect to environmental policy', but his arguments could equally well be applied to non-environmental externalities and,

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indeed, to other sources of market failure. Sagoff gives us no reason to think that welfare economic analysis in fields such as competition policy, trade policy, or social policy is any less suspect than welfare economic analysis in the field of environmental policy. Why should welfare values be especially insignificant for environmental policy as compared to these other types of policy?³¹ Further, his proposal that the theoretical terms of welfare economics should be ‘consigned to the flames’ seems a trifle dismissive considering the calibre of the authors in the utilitarian tradition who have developed and interpreted these terms - such as Smith, Bentham, Mill, Sidgwick, Marshall, Pigou, Hicks, Samuelson, Arrow, and Sen.

At present, the main ideas of welfare economics seem indispensable in thinking about public policy: opportunity cost, efficiency, free-riding, private versus social costs. Welfare economics is the language of policy analysis in the same way that English is the language of international communication. Properly used, this language can allow policy analysts to clarify and inform political debate at all levels. Badly used, of course, this language can allow policy analysts to rationalise bad policy with a set of numbers which at best serve special interests and at worst serve nobody’s interests. Whatever one’s opinion about how it is actually used, it can be agreed that Sagoff’s criticisms raise important issues about how welfare economics ought to be used.

NOTES

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¹ Indeed, the search for mutually acceptable principles to regulate a pluralist society is perhaps the key motivating problem in the history of modern political thought. An excellent discussion of the development – and difficulties – of utilitarian political thought in response to this problem is Plant 1991 Ch.4.

² Atkinson and Stiglitz 1980: 334, quoting Frank Hahn.

³ Unless otherwise cited, all quotations in this article are from Sagoff 1994a. 4

⁴ This empirical question is usually taken to be the key issue raised by the Coase theorem. Environmental economists argue that, in ‘large-numbers’ situations, bargaining over pollution externalities between private individuals will be unmanageable (see Baumol and Oates 1988: 10). The counter-argument is that private individuals, left to themselves, will find ingenious methods to get around transaction costs. Coase gave a famous example of how lighthouses, a textbook case of a public good, were privately provided in England and Wales before the mid-nineteenth century (see Coase 1974).

⁵ See, for example, Sen and Williams 1982: 1.

⁶ There are, in fact, several alternative definitions in the literature. Although the various authors disagree on important issues, they all agree that transaction costs differ in a fundamental way from production costs. See, for example, Alchian and Demsetz 1972,

Coase 1960, Demsetz 1967, Grossman and Hart 1986, and Williamson 1985.

⁷ More generally, production costs will depend upon initial endowments, as well as technology and tastes, due to economies of scale and the incentive effects of the initial distribution. See Layard and Walters 1978.

⁸ The 'blackboard economist' is described as follows: 'The policy under consideration is one which is implemented on the blackboard. All the information needed is assumed to be available and the teacher plays all the parts. He fixes prices, imposes taxes, and distributes subsidies (on the blackboard) to promote the general welfare. But there is no counterpart to the teacher in the real economic system' (Coase 1988: 19).

⁹ This is repeatedly emphasised in the environmental economics literature, both in advanced research and in elementary texts (see, for example, Turner, Pearce and Bateman 1995: 79-90). Consider the following passage from the introduction to a recent volume of work by top environmental economists: 'Thus we have first to identify and evaluate market failures, and second take adequate account of government failures. Again the approach is pragmatic: *a priori* general rules are inferior to case-by-case analysis.' (Helm 1991: ix).

¹⁰ In their textbook on welfare economics, Boadway and Bruce write: 'a complete study of welfare economic attempts to go beyond the concepts of efficiency based on the Pareto principle... The SWF is an important conceptual tool in welfare economics' (Boadway and Bruce 1984: 4).

¹¹ Strictly, this is a 'consequentialist' and 'welfarist' conception of equity, but not necessarily utilitarian, since it does not require 'sum-ranking'. See Sen 1979.

¹² 'Perfect competition' is strictly defined, of course, requiring several conditions for the existence of a competitive equilibrium, including full information and a full set of markets.

¹³ The second theorem adds a requirement of 'well-behaved' consumer preferences to the conditions of the first theorem.

¹⁴ A method often proposed for health and safety policy analysis is to value health and safety gains equally, irrespective of who receives them (see Wagstaff 1991).

¹⁵ Arrow puts this well: 'Like Lange, the present author regards economics as an attempt to discover uniformities in a certain part of reality and not as the drawing of logical consequences from a certain set of assumptions regardless of their relevance to actuality. Simplified theory-building is an absolute necessity for empirical analysis; but it is a means, not an end.' (Arrow 1963: 21).

¹⁶ This issue is explored in Schick 1982.

¹⁷ A good textbook discussion of these axioms, and their violation, is Kreps 1990: 17-37.

¹⁸ This is not news to welfare economists. Consider the following passage, taken from Arrow's original discussion of his famous 'General Possibility Theorem': 'In general, there will, then, be a difference between the ordering of social states according to the direct consumption of the individual and the ordering when the individual adds his general standards of equity ... We may refer to the former ordering as reflecting the *tastes* of the individual and the latter as reflecting his *values*' (Arrow 1963: 18).

¹⁹ The claim that economics, political economy, and indeed the whole liberal tradition ignore the most central human values is well-worn. See, for example, Ruskin 1890.

²⁰ Well-respected experts in the field cannot even agree on terminology, let alone meaning (see Broome 1991a, Sen 1991, Broome 1991b).

²¹ Thanks to Alan Williams for emphasising the importance of this point.

²² Formally, models of rational choice can represent any preferences whatsoever, rational

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or irrational, by allowing unrestricted redescription of the consequences of choice. Substantively, however, rational modelling imposes quite strong rational requirements on preferences, since redescription is restricted both by the practical availability of data and the analyst's judgment in specifying the utility function (Bacharach and Hurley 1991, Broome 1991 ch. 5, Machina 1991).

²³ Since this takes me into dangerous philosophical territory, some caveats are in order. First, the issue of subjectivism, which concerns reasoning about values, should not be confused with the issue of *paternalism* which concerns the proper limits of the state (and on which, see Burrows 1993). Second, the issue of subjectivism, which concerns the *basis* of reasoning about values, should not be confused with the issue of *relativism*, which concerns the *scope* of reasoning about values. Third, if objectivism is defined as the *denial* of subjectivism, some fairly mild views can qualify as 'objectivist': in particular, views which claim that preferences and values are interdependent. To deny the subjectivist view that preferences are prior to and independent of specific values is not necessarily to assert the extreme objectivist view that specific values are prior to and independent of preferences. Fourth, the definitions of subjectivism and objectivism which I adopt come from a well-respected philosophical work which argues in favour of objectivism: Hurley 1989: 9-15.

²⁴ Until better measures are found, of course, this implies that steps should be taken to provide policy-makers with supplementary information about whatever values are left out. Sen argues, for example, that measures of gross national product should be supplemented by mortality statistics when making rough and ready comparisons of quality of life between different places at different times (Sen 1993a).

²⁵ I should emphasise that the account of utility for the purposes of positive economics, which relate to behaviour rather than to welfare, is quite a different matter.

²⁶ It is slightly less hard to accept that an active environmental policy could only ever have a significantly *negative* impact on social welfare – but this would still require rather dogmatic doses of both technological optimism and faith in free markets.

²⁷ See Hicks 1969: 98, Hahn 1982, Broome 1994, Sen 1995. In making a plea for explicit consideration of values which lie outside the economic calculus, Hicks writes: 'Not that I wish to regard that 'noneconomic' side as overriding; all that I claim for it is a place, and a regular place.'

²⁸ An issue much discussed in the literature is 'altruism', that is, concern for the welfare of other people. To the extent that the fates of these other people are bound up with the fate of the individual, it seems reasonable to consider 'altruism' to be part of individual welfare. However, the literature contains formal welfare-theoretic arguments which purport to show that, to a large extent, including such altruism in cost-benefit analysis would involve a form of 'double counting' (Jones-Lee 1991, Milgrom 1993).

²⁹ Sagoff discusses the high transaction costs generated by welfare economic debates among opportunistic economists and lawyers after the *Valdez* disaster. One important reason for this costly wrangling was that the compensation claim was an *ex post* matter of justice. The main legal use of welfare economics should presumably be an *ex ante* matter of social efficiency in setting up a system of fines for the purpose of deterrence.

³⁰ 'The 'witch doctor' analogy is taken from McCloskey 1986.

³¹ The environmental economics literature standardly gives two reasons why environmental policy may be special. First, the problems of chaotic change and 'threshold effects' are more relevant to environmental issues than most ordinary economic issues (Costanza 1991). Second, the unsustainable and international character of environmental damage to

global life-support systems constitutes a 'new challenge' to human societies (Pearce, Markandya and Barbier 1989). Although these may be good reasons for special approaches, such as 'ecological economics', or special policy principles, such as a 'precautionary principle', they do not seem to be reasons for thinking that non-welfare values are especially relevant.

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