

9 Economics, ethics and future generations

The contrast between focusing on efficiency and paying attention to moral issues and social context is apparent from the last chapter. In particular, modern economists' concerns over defining discount rates can be seen to largely miss the point with regard to the content of the arguments of non-economists. The extent to which economic efficiency can meaningfully be pursued while neglecting other social goals seems particularly limited in the case of the enhanced Greenhouse Effect. Greater clarity is then required over the content of the economic debate and in particular the meaning of concepts of harm and compensation. However, before going further some introductory qualifications and comments are required concerning the impacts of human activity due to population growth and the interests of future versus current generations.

Population growth has often been regarded as a primary concern when debating long-term futures. In this chapter the size of future generations is regarded as having no substantive impact upon the main arguments. This could be equated to assuming that some stable population has been achieved at a level which leaves the potential for long-term damages unaffected. The possibility of an increasing population which exacerbates the enhanced Greenhouse Effect, and other problems, might then provide separate economic and moral arguments in favour of population control. However, the enhanced Greenhouse Effect is a function of chemical and energy-intensive lifestyles, rather than purely the scale of human activity. A larger world population could, through appropriate production and consumption choices, live without sizeable GHG emissions. Alternatively, a world population of only one billion could still choose to perturb atmospheric chemistry by using a range of fluorocarbons which have a longer lifetime than CO₂ and are thousands of times more effective at climate forcing. Indeed, the historical creation of the enhanced Greenhouse Effect has been due to the lifestyles of a minority of the human population living in industrially developed economies. Contrary to the statement of Solow (1992: 6) 'the largest single danger to sustainability' is not rapid population growth which we should regard as 'fundamentally a Third World phenomenon'. High per capita resource consumption means one average American or Australian contributes much more to the enhanced

Greenhouse Effect than those in the less industrially developed or materially orientated countries. For example, per capita carbon emissions of those two countries are 4.8 and 4.3 times the world average respectively, while Africa emits 0.26 of that average (Marland, Boden and Andres, 2001). Thus, abstraction from the population scale and growth debate is seen as an acceptable simplification for current purposes where a range of other issues are more relevant.¹

This chapter also largely abstracts from interregional disparities, which have their own ethical implications. This may be derided as being concerned over the potential future poor and harmed while ignoring those currently in such positions. However, we must recognise that the future soon becomes the present and failing to look ahead is a recognised policy problem. A sole concern with the present results in spending all our time fire fighting and none on fire prevention. There is also implicit in this criticism the idea that the interests of the currently and future disadvantage must be in conflict, whereas analysis from these two perspectives provides a set of reinforcing but different reasons for redirecting policy in the same way. The aim here is to focus upon a key aspect of the enhanced Greenhouse Effect which is hidden in most economic analyses and has gained less political attention. Unjust resource distribution and placing the burden of pollution on the poor within the current generation are genuine concerns under the enhanced Greenhouse Effect (as earlier chapters have highlighted). The difference is that the current poor or harmed can have a direct voice and can choose or endorse representatives to argue their case.² At the same time the ethical treatment of those distant in time has lessons of direct relevance to our treatment of those distant only in space, social standing or culture. The more general concern is for how humans choose to act, as members of a community, across all divides.

A final qualification concerns the actual existence of future generations and their exact demographic constitution. The basic assumption throughout the chapter is that a human population will exist into the future, although the enhanced Greenhouse Effect itself may bring this into question (Broome, 1992: 23–4). However, who exists and their life expectancy is conditional upon current decisions. There are then questions over the responsibility of current humans to people who have only the potential to exist in the future and whose existence depends upon our choices (i.e. the non-identity problem). This matter was considered in the last chapter with resolutions including the importance of inviolable rights and the recognition of duties to collective entities such as communities and generations. In the following sections closer attention is given to the meaning of such ethical obligations.

The implications of various ethical principles have been explored by some environmental economists and these are reviewed first. This raises the need for clarifying the meaning of intergenerational transfers. Two types of intergenerational transfer can then be identified (Spash and d'Arge, 1989; Spash, 1993; 1994a; 1994b). First are the basic distributional transfers which have been the central

intergenerational concern of economists and which have been given attention by the sustainable development literature. That is, distributional transfers are concerned with the standard of living and avoiding unfair treatment across space and time. Second are compensatory transfers which emphasise a category of often disregarded obligations. These are transfers directly related to a moral duty to make reparations for harm.³ Yet compensation is also morally questionable as a *carte blanche* for creating long-term environmental damages. If harm has intrinsic significance then rights may follow. Obligations to future generations defined in terms of rights reveal a very different set of appropriate actions under the enhanced Greenhouse Effect. Thus, some of the fundamental tenets of the current political economy of GHG control are brought into question.

Intergenerational ethical rules

Perhaps due to the rather doubtful and sometimes strained set of justifications called upon to support discounting, some economists have explored ethical rules more explicitly. That is, ethical rules have been employed in economic models of resource allocation to see under what circumstances unequal treatment across generations can be legitimated. The models used compare the impact of various ethical rules on the welfare of different generations, where generations are treated as distinct aggregate units (Schulze, Brookshire and Sandler, 1981; Schulze and Brookshire, 1982; Kneese *et al.*, 1983; Kneese, Ben-David and Schulze, 1983; Pearce, 1983; Kneese and Schulze, 1985; d'Arge, 1989). In most instances these rules have been defined under assumptions which simplify the relevant ethical principles to mathematical formulae for use in optimisation models. Four ethical rules can be found in this literature and are discussed here with a view to their implications for the treatment of the enhanced Greenhouse Effect.

The four rules are: the elitist, the egalitarian, the neo-classical utilitarian, and the libertarian or Paretian. The elitist rule requires that the welfare of the best-off be improved: actions that decrease elitist welfare are wrong. The egalitarian rule is the exact opposite, requiring the welfare of the worst-off be increased or maximising the minimum welfare, often termed the max–min principle. Both rules focus entirely upon the relative level of well-being, without concern about quantifying the sizes of welfare gains or losses. The Paretian rule reallocates resources until no generation can be made better-off without making another worse-off. The neo-classical utilitarian rule reallocates resources in order to maximise total utility across all generations. These last two rules focus upon the relative size of gains and losses while ignoring absolute levels of welfare (e.g. whether the gainer is rich and the giver poor).

The egalitarian rule requires that the welfare of different generations count equally with each other. The max–min rule has also been equated to Rawls' approach to justice, although he himself explicitly avoided applying his intragenerational rule across generations due to the complications this entailed. Under the egalitarian

approach, making the future better-off relative to the present (the presumed goal of economic growth) would make the present the least well-off generation and hence is prohibited. If we take an indefinitely large (an infinite) time horizon, and assume finite resources, a policy of mere subsistence in each generation follows. In order to spread a finite amount of resources across infinite generations, and maintain equity, all generations must be committed to living at a subsistence level. However, the move to such a subsistence level is also prohibited, because the future would then have lower welfare than otherwise and welfare lower than that of the present generation (i.e. making the future the worst-off). So while the intuition of equity may be straightforward, trying to determine the implications of egalitarianism leads to complications. Egalitarianism is then often interpreted as the maintenance of the welfare level inherited. Thus, any harm passed on would need to be countered by a corresponding increase of good. However, harm is only considered in terms of impacts on the relative welfare level of each generation. Hence, an egalitarian option (from an original position) is to create harm spread equally across time without any compensation. Indeed deliberately creating good and harm in equal amounts would meet the requirement to pass along the same welfare as that inherited.

Elitism only considers future generations if their welfare is a concern of the elite (selfish altruism) or the future comprises the elite. Resource transfers will only be made if this increases the welfare of the elite, which is the best-off generation. Injuries caused to future generations will be uncompensated as long as the welfare of the elite is unaffected. More than this, changes that improve the welfare of the elite at the expense of others will be undertaken so that harm to the relatively poor is justified. While such elitism appears fanciful and morally unacceptable, there is some resemblance with actual conduct in human society where resources are extracted from less industrially developed economies, with low material consumption, to further supply the materially rich who already have the highest consumption levels.

Neo-classical utilitarianism (maximising total preference-based utility) focuses upon the gains and losses that comprise personal welfare, without any concern about welfare levels. This requires that any generation sacrifice one unit of utility when another generation can, as a result, gain more than one unit. Intergenerational redistributions are made according to the respective marginal utilities of consumption, where utility is dependent upon own consumption alone.⁴ A utilitarian ethical system would require reallocating resources to the future to boost welfare as long as future generations have a marginal utility greater than the current generation.⁵ Harm which leads to the equating of marginal utilities is justified. Compensation for the effects of long-term pollution will occur when the marginal utility of the current generation's loss, from the compensation payment, is less than the future generations' marginal utility gain. Compensation is excluded if, for whatever reason, the marginal utility of the victims is lower than that of the polluters. This argument is invoked for the enhanced Greenhouse Effect by claiming future generations will be better-off and

therefore have lower marginal utility. An act involving the infliction of deliberate harm is then never wrong *per se*.

The Pareto criterion is the fundamental rule supporting welfare economics. Under a Paretian ethical rule the status quo is reinforced. No redistribution of welfare is allowed unless at least one person is made better-off and none worse-off. Further, the Pareto criterion is commonly applied in the same way to both intragenerational and intergenerational contexts. That is, for intergenerational analysis, an initial endowment is allocated to each generation and then redistributions are allowed if they are Pareto improvements.

The outcome of the rule will depend upon the definition of the starting point (initial endowments). If the initial endowment is entirely allocated to the present generation (as is in fact the case), whether the future gets anything is determined by the ability to make transfers. For example, a transfer from the present (e.g. 100 utils, where utils are some measure of utility) which made the future better-off (e.g. being worth 120 utils) and increased total utility across all generations (e.g. by 20 utils) could only occur if the future could then compensate the present exactly for the original transfer (e.g. 100 utils). In the absence of this 'reverse transfer' the present would be made worse-off (by 100 utils) which violates the Pareto rule.⁶

The creation of long-term environmental damages which would make the next generation worse-off will require full compensation if the initial position is taken to be an unpolluted world. However, if the status quo is taken to be a world with existing pollution (i.e. part of the initial endowment) then pollution abatement is the policy to be considered. Such a pollution control investment is regarded as making the future 'better-off' while reducing the welfare of the present, in exactly the way exemplified above. In this case reverse compensation is required or no abatement can take place. This is in part a failure of mainstream economics to have any conception of history, the past or process, so that the present is taken as the definitive point. Some time ago, Mishan (1971) made a similar point with respect to the way in which transactions costs can lock society into either a pollution-permitting or pollution-prohibiting world. As he explained, under these circumstances, modern economic rationality always finds the current state is optimal.

Indeed, whether and under what circumstances redistributions in light of harm should occur are avoided in modern welfare economics by invoking the principle of 'potential compensation'. Thus, Freeman (1986: 221) states that the basis of CBA is the hypothetical compensation criterion, which 'is justified on ethical grounds by observing that if the gains outweigh the losses, it would be possible for the gainers to compensate fully the losers with money payments and still themselves be better-off with the policy'. Beneficiaries could compensate losers but the action is an economic improvement regardless of whether compensation is actually paid. If compensation is actually paid the principle is nothing more than the Pareto criterion. This leads to the bizarre argument that claims that, while the Pareto criterion has been widely

rejected by economists as a guide to policy, and plays no role in 'mainstream' environmental economics, the potential for the same criterion is accepted (Freeman, 1986). The potential for Pareto improvements is invoked to justify policy based upon CBA while rejecting actual Pareto improvements! The only use of the potential compensation criterion is then, in effect, to deny the need for compensation to be discussed. Hypothetical compensation is, for example, consistent with making the poor yet poorer. The ethical implications of such a definition and use of efficiency seem hardly acceptable (Mishan and Page, 1982: 46), let alone ethically justified.

Indeed, the potential compensation criterion has been employed to separate efficiency from equity, and equity has then taken on a catch-all character for 'other' factors. This has meant that discussions of actual compensation have been avoided on the grounds that this is one of the 'equity' issues outside of the economists' realm. There are, of course, exceptions. Spash and d'Arge (1989) have reasoned that actual compensation for the impacts of the enhanced Greenhouse Effect is ethically required and explored different mechanisms by which this might be achieved. Howarth (1996: 269) has shown that actual compensation for reducing resource endowments is a necessary condition for meeting principles of intergenerational fairness. However, the tendency has been in the opposite direction with the need to discuss (let alone plan for) actual compensation being regarded as an unnecessary complication.

This raises a more general concern affecting all the ethical rules discussed above. A persistent modern view, especially among adherents of the positivist program in economics, has been that economists should avoid evaluation and prescription. Page (1988) points out that applied welfare economists have largely limited themselves to one normative idea, efficiency, which is often regarded as so universally appealing and analytically tractable that they scarcely think of it as normative at all. He has argued persuasively for the consideration of equity and other normative concepts besides efficiency, especially where intergenerational issues are involved. Compensation is one of those other normative concepts but the treatment in economics (as above) fails to recognise this as a different moral concern than just equity or living standards.

Distinguishing basic and compensatory transfers

Part of the problem with the economic approach to intergenerational welfare is the sole focus upon allocating resources to achieve a certain standard of living. The discussion of intertemporal allocations has evolved over time from the idea of splitting a fixed, finite cake to one of productivity and opportunity maintenance. This moves the emphasis from a dividing up of a particular resource stock toward asking what welfare can be generated from some economic and political system, given available resources and technology. Solow (1986: 142) puts it this way:

The current generation does not especially owe to its successors a share of this or that particular resource. If it owes anything, it owes generalised productive capacity or, even more generally, access to a certain standard of living or level of consumption.

As long as all resources are commensurable, substitutable and malleable then anything is expendable and nothing need be preserved for its own sake or because it is essential or irreplaceable.⁷

From that perspective, the problem posed by non-renewable resources is that future generations will have fewer options, other things remaining the same. This is because a given technology and capital stock output will be lower and environmental degradation higher. Barry (1983) believes failing to endow future generations with 'a slice of the pie' as readily obtainable as ours means that their reduced access to easily extractable and conveniently located resources needs to be 'compensated' via improved technology and increased capital investment. Compensation in this sense provides support for a basic standard of living, what economists view as the maintenance of utility, or what we might more generally call productive opportunities. The difference from the mainstream economic attempts at incorporating ethical rules is a move towards identifying certain rights to a standard of living.

However, the level of 'compensation' being referred to under opportunity maintenance is best recognised and termed as a basic distributional transfer (Spash, 1993). Basic transfers are concerned with distributional justice. There is no particular reason to limit compensation for damages to calculations about distributional transfers of this or that resource. Compensation can be defined as making amends for loss or injury and implicitly involves an asymmetry of loss and gain. Long-term environmental damages under the enhanced Greenhouse Effect entail an asymmetric distribution of loss and gain over time. Intergenerational compensation is the attempt to counter-balance negative consequences by creating positive welfare in the same proportion (e.g. as measured by a common metric such as utility). This requires the use of transfer mechanisms, but all transfers need not be compensatory. The reference point for compensation is the level of damages caused to the victim (e.g. an individual, community, generation). The reference point for basic transfers is the welfare level, difference in welfare, or opportunity set of the current generation compared to future generations.

Consider an egalitarian ethical system and assume this is taken to mean the welfare level received from the previous generation should be maintained for the next generation. The current generation would need to maintain the same welfare as that with which it starts. If deliberate substantive harm were inflicted upon future generations, a separate ethical case for transfers exists on grounds of compensation and there will be a need to consider what is adequate compensation for that harm. A focus upon aggregate welfare alone fails to make such a distinction. Thus some regard egalitarianism as spreading the damages of climate change equitably across generations

so as to maintain a common welfare level (see Crosson, 1989). The enhanced Greenhouse Effect could then be justified if sea level rise, crop losses and unmanaged ecosystem disruption affected everybody equally in welfare terms. More and more damages could deliberately be created as long as they were spread evenly. However, even if such a designed set of consequences were possible, the outcome appears morally objectionable because creating harm is different from good and compensation for injury is a separate moral issue from concerns over welfare distribution.

An example in the intratemporal context may help clarify the distinction being made here. Assume there is an individual who receives government payments because he or she is unemployed and has no means of support. The government provides for him or her a minimal standard of living. Without these government payments the individual's welfare will be at subsistence level. Assume that this individual lives next to a weapons factory run by the government. Unfortunately, there is on site a toxic waste dump that has been leaking materials into the local environment. The leak is discovered; there is proved a cause–effect relationship between the releases and the local high incidence of cancer cases. The welfare-recipient has also developed cancer since living in the area. Can the government now say to this individual that he or she is so much better-off already, due to the welfare payments that provide a minimal standard of living, that they require no compensation for the cancer? No, because the two kinds of payment cannot be morally linked. The welfare payments are made on the grounds of equity while the liability payments are founded upon grounds of injury. This is a simple and common distinction which has seemingly failed to make any impact on economic analysis.

A common economic argument is that the current generation need be unconcerned over the loss or injury caused to future generations because they will benefit from general advances in technology, investments in capital, and direct bequests of resources or consumption goods. For example, Adams (1989: 1,274) has raised this as a defence of his position against action to control for the enhanced Greenhouse Effect. As he states, while fossil fuel combustion implies forgone opportunities for future generations, they 'typically benefit (in the form of higher material standards of living) from current investments in technology, capital stocks, and other infrastructure'. There is no attempt here to designate investment with the express purpose of compensating future generations. Indeed, such a compensation scheme would require assessing the extent to which the future can be made better-off by economic growth being balanced against all long-term environmental problems on a case-by-case basis, e.g. enhanced Greenhouse Effect, ozone depletion, nuclear waste, toxic chemical dumps, loss of species, habitat destruction. Each incidence of harm requires separate consideration of compensation. However, such details are often ignored on the grounds that a generally wealthier future can take care of itself. Indeed, making the future too well-off has recently become more of a concern for some authors (e.g. Lind, 1995; Neumayer, 1999; Marini and Scaramozzino, 2000).

Relative wealth is used as an argument to mitigate against claims for damages. Thus, Lind (1995: 384) defines the enhanced Greenhouse Effect in the following terms:

The real disagreement between the environmentalists who advocate an all out programme to reduce greenhouse gas emissions, and economists and others who may be more sceptical, is a disagreement over whether future generations will be better off even with global warming than the present one.

A belief that economic growth will continue exponentially and that such growth is linked to human well-being then leads to the conclusion that the current generation is the worst-off. The outcome is the type of conclusion which so shocked John Houghton when he heard it from a UK government minister (see chapter 3), that basically the future can look after itself. In the words of Lind (1995: 382): ‘... in all likelihood future generations will be much richer than the present one and if they (future generations) want lower levels of greenhouse gases and lower temperature levels they should pay for them’. If irreversible events can only be avoided by action now, or earlier control is more cost-effective, then future generations will need to achieve reverse compensation.

to implement such a programme of control where future generations would pay the cost, we would need to implement a scheme whereby the future generations would compensate the present and near-term generations for their investments in emissions abatement programmes.

For Lind then the choice is one of the willingness to pay off the victims of pollution, which is contrary to the polluter pays principle and also leads towards the world of pollution as a means of extortion. This is, for example, equivalent to saying Mexico can dump toxic pollutants on the USA and expect either the USA to pay to prevent this or Mexico can just ignore the resulting harm because it is relatively poor.

There are then three questions being raised. Do basic transfers negate any obligations for compensation? If compensation is required can it practically be achieved in an intergenerational context? What is adequate compensation for deliberate harm? The first has already been answered in the negative. That is, basic transfers being provided on grounds of general rules of distributive justice are an inadequate basis for dismissing compensation. Economists cannot ignore future environmental damages due to the enhanced Greenhouse Effect purely because they expect economic growth to increase future welfare. A focus on aggregate welfare ignores distinctions between compensatory and basic transfers.

Second, actual compensatory transfers require consideration as to what might be feasible and the methods available for making such transfers over time. The adequacy of compensation means determining whether all harms can be rectified. Mechanisms

for achieving intergenerational transfers are normally taken to include research and development, man-made capital, consumption goods and trust funds. Debating whether the trust fund/cash transfers approach is preferable to abatement of GHGs seems to miss the point but has been seriously put forward as an option (see Lind, 1995). The future possesses all resources so paper entitlements add nothing in terms of real well-being. As redistributive instruments amongst future members of a given generation they require institutional structures which many believe have no prospect of surviving into the medium or distant future, or at least cannot be guaranteed to do so.

Other transfers mechanisms are concerned with increasing well-being rather than merely transferring paper property rights. In general all transfer mechanisms suffer similar problems in terms of being difficult to target on those requiring compensation, and suffering from strong uncertainty as to their outcomes due to the unpredictable nature of future preferences and the state of society. Recognising that transfers are meant for compensation as opposed to being part of basic transfers creates specific problems because the transfers must be targeted and get to their target. This has led to the suggestion that compensation via physical projects may be most appropriate because they can be located where compensation is required. Care is required to avoid confusing such physical compensation with actual abatement and prevention of harm. For example, power companies being required to maintain carbon sinks are preventing not compensating for harm, as suggested by Crowards (1997). Building infrastructure or other man-made capital might be seen as benefiting the future. Alternatively, investment in education may be regarded as improving human capital which may have long-term benefits. However, these are general speculations about actions rather than defining specific characteristics required of an intergenerational compensating project or any compensatory transfer.

Clearly intergenerational transfers are more easily discussed in economic models as means of raising aggregate welfare by economic growth rather than as practical tools to compensate for harm. This problem means that even when the literature turns to abatement as a practical alternative to compensatory transfers the issues become muddled. Thus, Schelling (1995: 400; 2000: 836) argues that 'Abatement expenditures should have to compete with alternative ways of raising consumption utility in the developing world'. He apparently assumes pollution and the creation of harm is the accepted norm and then asks whether this position should be altered (a problem noted earlier with regard to Paretian rules). The abatement policy is described as creating good rather than preventing harm. Abatement in this context is merely one way of raising future welfare, and the only consideration is the aggregate welfare of different groups (i.e. recognising regional disparities in terms of harm). This argument means that if education gives a better rate of return than GHG abatement, as a capital investment, then, on grounds of efficiency, future generations should be well educated and have climate change. There is no consideration here as to the difference between deliberate creation of harm and the maintenance of a

standard of living. The only consideration is once more basic transfers to achieve some level of aggregate welfare (resulting from the type of objective function specified). As Neumayer (1999: 34) states, 'it does not matter whether the current generation uses up non-renewable resources or dumps CO₂ in the atmosphere as long as enough machines, roads and ports are built in compensation'. The only moral duty for these authors is to pass on some aggregate level of welfare and so avoid much of the debate on the practical requirements of compensation, e.g. who is to be compensated, how much compensation is required, what form should this take and is such a transfer feasible in practice?

Such positions also assume compensation can be an adequate response and so reject the possibility of incommensurability. For example, Schelling (1995) assumes that abatement (e.g. CO₂ reduction), aiming to prevent damages and harm, be regarded as commensurate with humanitarian aid (e.g. education), creating benefits and good. This might, for example, result in trading off loss of life due to GHG emissions with higher educational attainment. Many may reject the concept of such a comparison. That different values may exist which can neither be measured in meaningful terms by a common unit, nor compared, is a pluralism beyond standard economic approaches (see O'Neill, 1993). Whether categories of harm can be regarded as commensurable and traded off is discussed in the next two sections.

Harm and trade-offs

Economists confronted by ideas of incommensurability, and associated refusals to make trade-offs, counter with the argument that every action implies a trade-off even if only implicitly.⁸ The problem with this approach is that everything is a trade-off for something else by the very definition of the term. This means that any human concern can then tautologically be described as involving an action which has an opportunity cost. In this way even ethical judgements become just another commodity to be bought and sold in the market place. Thus, Hasselmann (1999) believes the willingness to pay off current generations to abate GHG emissions gives the monetary value of ethics relating to the issue, and more generally that 'ethical values become monetized in the unavoidable competition with market goods and services' (p. 341). All ethics then are merely matters of how much people are prepared to pay or trade off consumption. From a philosophic viewpoint such arguments appear farcical; unfortunately, in economics they are too often taken seriously. This is in part because of the desire, since the enlightenment, for universal scientific rules which might explain all phenomena.

Such universal application of the concept of trade-offs seems to conflict with both the existence of incommensurable values and rights-based ethics. Hence, Neumayer (1999) derides concerns over the difference between compensation as creating good and environmental damages as deliberate harm, on the grounds that economic growth is founded upon trading off the harming of some people for the

benefit of others. The stated fear is that recognising values that lie outside the dogma of trade-offs (e.g. inalienable rights, intrinsic values) means an end to economic growth as many economists prefer to view it. Thus, Neumayer (1999: 340) believes that recognising a right preventing deliberate harm to future generations means 'a virtual standstill in economic actions of present generations' and that 'we are doomed for inactivity'.

The concept of trade-offs is so ingrained within modern economics that it is seen as an unquestionable necessity. In fact trade-offs may explain very little and often nothing of human action because to describe the 'trade' requires bounding an open choice set.⁹ The tendency amongst economists opposed to GHG control is to describe GHG abatement as a trade-off between the long-term uncertain benefits of action to help future generations and the benefits of action now to alleviate current poverty. The moral dilemma is made implicit by bounding the choice set so that the current poor must suffer if the future poor benefit. An alternative is to view the problem as the current rich needing to have a little less material consumption to benefit the future poor and avoid creating victims of harm. Thus, why one action is described as a trade-off for another often tells as much about the analyst as the actual decision problem. For example, should lost educational investment in less industrially developed economies be regarded as the cost of GHG abatement (as some authors suggest), or perhaps missile defence schemes and urban four-wheeled drive trucks? Such trade-offs are certainly not the widely publicised aspect of economic growth promoted by politicians, who prefer to talk of the cake getting bigger so nobody loses, e.g. the Brundtland Report (World Commission on Environment and Development, 1991).

The general concern underlying these various trade-offs is that preventing significant harm to future generations means current economic activity may be limited dramatically. This is then argued to mean a reduction in the rate of economic growth and the welfare of future generations from higher material consumption. The fallacy here is that economic growth can only be achieved by deliberately causing significant harm (e.g. loss of life, physical injury, loss of human rights, damage to cultures). Economic growth is being described as if it cannot be achieved via socially and environmentally beneficial production and consumption processes. Of course the concern should, in any case, be for human well-being rather than economic growth per se and the two often diverge widely in practice. If a class of economies can only survive by the deliberate and routine creation of significant harm of the innocent then the time is long overdue for its extinction.

Economic discussions in terms of welfare prove an inadequate basis for issues of the intrinsic value of harm as opposed to good or concerns over liberty. Human tragedy due to the infliction of deliberate harm is soon recognised to involve more than neat calculations of welfare losses and gains. Rights and duties then seem an integral part of human social structure which require explicit attention.

Rights versus consequences¹⁰

Discussions of potential injustice to the future because of uncompensated long-term damages, or the failure to provide adequately for their survival via basic transfers, do seem akin to arguments over the rights they may hold and our obligations to them. This is an active area of ethical debate with strong policy implications. However, the ethical debate of applied philosophers tends to be caricatured by economists while ethical concepts are reduced to mere shadows of their original. For example, the process of incorporation into economic models transforms all ethical concerns into variations on a utilitarian theme. Preference utilitarianism underlies much of modern economic thought and its central facets go unquestioned.¹¹ Yet when attempting to explore alternatives (such as different intergenerational ethical rules) economists begin to probe the validity and relevance of that tradition. Trying to incorporate different philosophical ideas shows the restrictions of the framework being used, but the analysts appear unprepared for the challenge mounted against their basic training and too often beat a hasty retreat.

Welfarism, teleology and deontology

In order to understand the nature of this challenge the characteristics of utilitarianism need to be considered. Utilitarianism relies upon two main principles: consequentialism and the location of intrinsic value in utility. Consequentialism determines the rightness or wrongness of an act by the results that flow from it. The utility principle holds some resulting state (e.g. pleasure, happiness, welfare) as intrinsically good. Modern normative economics locates intrinsic value in human welfare and this has been termed 'welfarism'.

The appearance of open ethical debate in modern economics can then be misleading. For example, the egalitarian max–min rule, discussed earlier, has been equated to Rawls' contractarian theory of justice although the reinterpretation in economics means there is no deviation from the two utilitarian principles.¹² The egalitarian and elitist rules only deviate from neo-classical utilitarianism in their concern over the welfare levels of specific groups (the elite or the poor), as opposed to the welfare of all social levels aggregated as if they were one. The use of welfare levels is but a variation on the neo-classical utilitarian concern for good consequences (Sen, 1982; Page, 1983). There is rarely any conception of alternative ethical theories outside these narrow confines.

Yet there is a major confrontation in philosophy between a teleological perspective and a deontological one. Teleological ethical theories, which include utilitarian ones, place the ultimate criterion of morality in some value (such as welfare) that results from acts. Such theories see only instrumental value in the acts themselves but intrinsic value in the consequences of those acts, i.e. an act is instrumental to the creation of a valued outcome. Thus, a teleological argument would be that the enhanced

Greenhouse Effect is justified if material wealth can be created as a result and, if necessary, the wealth might be used to compensate any people harmed. In contrast, deontological ethical theories attribute intrinsic value to features of an act itself. Thus an act (e.g. lying, adultery, murder) is wrong even when it produces better consequences than any of the alternatives. In the context of the enhanced Greenhouse Effect this might mean deliberately harming others (e.g. future generations, the poor, the innocent) in a significant way would be wrong regardless of the material wealth it created.¹³ Under deontology the consequences no longer determine what is right or wrong but rather the act itself is either right or wrong.

The economic debate assumes that the relative merits of social states depend uniquely upon the personal welfare characteristics of those persons who live in such states, without attention to considerations of rights. Under welfarism, if two states generate the same personal welfare they must be treated in exactly the same way. Intergenerational efficiency as defined under these ethical rules allows for the violation of human rights (Sen, 1982). The idea of a right to remain unharmed by others can easily conflict with these rules. For example, the present generation might be well-off and future generations starving and disease-ridden due to the enhanced Greenhouse Effect, yet under the Pareto criterion (without reverse transfers) this situation would be optimal because the future could only be made better-off by making the present worse-off. Conversely, rejection of welfarism means compensatory transfers cannot be decisively and justifiably denied even if a future generation were richer and enjoyed a higher welfare level than the present generation, and even if its marginal utility from the consumption gain is less than the marginal welfare loss of the present generation. Welfarism then appears as an inadequate reflection of moral concerns over the treatment of future generations.

Welfarism assumes that a harm can be corrected perfectly by a 'good' and that the direction of changes in units of welfare is irrelevant (i.e. gains versus losses). This standard approach in economics can be traced back at least as far as Bentham (1843: 438):

to the individual in question, an evil is reparable, and exactly repaired, when after having sustained the evil and received the compensation, it would be a matter of indifference whether to receive the like evil, coupled with the like compensation, or not.

However, compensatory transfers aimed at creating 'good' may be unacceptable as an attempt to correct for loss or injury. As Barry (1983: 21) has stated, doing harm is in general not cancelled out by doing good. For example, saving two lives provides no justification for killing a third person and calculating a net gain. There is an incommensurability in the attempt to conduct such calculations.

This distinction between doing harm and bringing about good is most apparent where the right to human life is involved, but can be extended to other areas where rights are accepted to exist. For example, assume individuals of a nation are accepted

to have a right to live in their own homeland. Sea level rise due to climate change floods the Maldives and violates this right. As a collective the Maldivians may have their cultural values undermined which would represent the type of intergenerational harm specified as relevant under the non-identity solution of Page (1999). Of course the Maldivians can be relocated and compensated but this approach at mitigation assumes a commonly rejected commensurability and as a deliberate act violates the aforementioned right.

If compensation from this generation to that fails to buy moral absolution for a range of harms created under the enhanced Greenhouse Effect (e.g. sea level rise, crop loss, melting Antarctic ice sheets) then the economic approach becomes inoperative. Economic efficiency is used to argue in favour of polluting as long as the damages created are less than the amount of compensation required. Indeed Neumayer (1999) believes that 'whether future generations will accept an increase in the rate of skin cancer or not depends upon what they get in exchange for it'. Compensation is then accepted as a means to deliberately harm others as well as a licence to pollute. Recognising the issue as one of the rights of future generations means avoiding acts which deliberately harm the innocent.

Defining intergenerational rights and duties¹⁴

The question may then turn to the characteristics of such rights and whether they are inviolable in different respects. Inviolability may be defined as consisting of being imprescriptible, inalienable and infeasible. These in turn refer to rights persisting through time, persisting regardless of any individual's desire to the contrary and never being overridden.

The justification for rights across time might be equated to those across space today. Consider the export of toxic wastes from country A to country B. Country A wants to be rid of toxic wastes and therefore pays country B to accept them. The right of B's citizens to have an environment free from toxic wastes is bought and sold. Should A act in this fashion? If A's citizens have rights to a toxic-waste-free environment, no matter how much A's citizens may wish to have the benefits of the chemicals produced and to rid themselves of their wastes, this cannot be bought by violating the same rights of B's citizens. The same argument extends to future citizens of B or future citizens of A. Thus, Lagerspetz (1999: 158) has argued that:

an 'equal treatment' of future generations means only that we have no right to make decisions which would, according to our present knowledge and values, impose on them such costs and risks as we would not be willing to assume ourselves.

Such an imperative can be described as a negative right, i.e. a right correlative with a negative duty to refrain from certain acts.

Respecting rights with a correlative duty to avoid deliberate harm of the innocent would mean that compensatory transfers could no longer be used to justify serious environmental degradation.¹⁵ However, there could still be a role for compensation. Irreversible damages, already underway, which cannot be prevented by stopping pollutant emissions, or other actions, would still require compensation. This is analogous to tort law, where compensation mitigates the wrong when rights, which ought not to be violated, have been violated.¹⁶

Many economists will object to such reasoning, which would, for example, ban the international trade in toxic wastes and bring into question the drive towards tradable pollution permits. This is in part because the contracting parties are regarded as entering into agreements of their own free will. An additional twist might then be added to the earlier story about the Moldavians by arguing that they believe themselves to be as well-off, or even better-off, in their new homeland so who is to deny them the change. As Bentham (1843: 438) also pointed out:

What is manifest is – that to no person, other than the individual himself, can it be known whether, in this instance, between an evil sustained, and a benefit received on account of it, any compensation have place or not.

In contrast to those who are present now, future generations are in a class of silent voices unable to give their consent in the way deemed necessary by Bentham. Thus protection is offered by, for example, defining a duty to avoid harm. Indeed Bentham's position might itself be regarded as advocating the inviolable right of individuals to self-determination in order to protect individuals from other powers such as those of government.

In practice there are many cases where intrinsic human values are protected from violation by even voluntary contractual agreement. For example, individuals are prevented from selling themselves or others into slavery regardless of whether or not all parties freely consent. There are various rights which society protects, such as freedom of speech, freedom from torture, and the right to sue another party. Freely contracting children are protected from working in coal mines despite the potential economic gains. There will from time to time be those who would, and do, accept the loss of their rights if they can trade these for enough money but this no more diminishes their intrinsic value than the existence of slavery or torture. Certainly there are a class of rights which appear inviolable by economic compensation. Thus there appear to be reasonable grounds for supporting an inalienable character to any right of future generations to be free from deliberate intergenerational environmental damages.

The question that then arises is the extent to which such rights are 'natural' as opposed to merely attributed by society. A 'natural right' can be defined as a right based upon intrinsic value (Nash, 1989). Natural rights can also be recognised as existing outside of specific legislation attributed to a society at a particular time and

place, i.e. by definition imprescriptable. Rights must be valid in this sense if there is to be any universal moral imperative. The United Nations (UN) charter of human rights is representative of such a position. Violations of human rights fail to diminish their importance. Yet the extent to which future generations are recognised to possess inviolable 'natural' rights has still to be clarified in law and, under the UN charter, the future only gains indirect protection via articles intended to protect the current generation.

Conflicting values and moral dilemmas

The failure of social institutions to recognise moral imperatives towards future generations may be justified by some on the grounds that the move to environmentally benign production and consumption processes is too costly. The dramatic change in current human activity required is then seen as good reason why the costs should override any rights. Similarly the prevention of future harm is sometimes described as violating other (more important?) rights, such as the right of current generations to maximise their welfare. Both these arguments question the extent to which such rights are infeasible or absolute in the sense of never justifiably being infringed.

Moderate deontology: consequences reconsidered

A strong right with a duty to avoid deliberate serious harm challenges conduct in modern industrial economies. As a result such a position is likely to be regarded with scepticism and as too dogmatic because it ignores the consequences of action. That is, the banning of substances is normally restricted because the benefits are argued to be large. This is also the standard argument used to introduce new technologies with unknown but potentially threatening long-term consequences, e.g. nuclear power, genetically modified organisms. The relevance of these consequential and empirical discussions is rejected where the imperative is to avoid serious harm.

Some have therefore explored the importance of a middle ground where neither consequences alone nor rights alone determine the goodness of an act. The appeal to a 'safe minimum standard' can be viewed as an example of constraining economic trade-offs by introducing rights. This standard advocates the protection of species, habitats and ecosystems as long as the costs avoid crossing a threshold and becoming unacceptably large. In the case of the enhanced Greenhouse Effect, Batie and Shugart (1989) argue that the safe minimum standard would support emissions reductions, despite estimates of high control costs. Such a position could be described as moderate deontology.

A moderate deontological position employs rights as the basic mode of operation except where the consequences become extreme (see Kagan, 1998). The moral

imperative might therefore be to avoid deliberate harm except where there are overwhelming beneficial outcomes which go beyond a consequential threshold. An extreme asymmetry of benefit relative to harm is then required for the justification of a harmful act. In contrast fairly frivolous forms of material and energy-intensive consumption today (e.g. urban four-wheel drive vehicles, electric toothbrushes, disposable phones and cameras) are being regarded as good cause for creating potentially dramatic future damages (e.g. dislocating and killing tens of thousands due to flooding and climatic change).

Thus, while moderate deontology allows for the introduction of consequential arguments the position is fundamentally similar to rights-based theories except in extremes. In the case of the enhanced Greenhouse Effect no substantive case has been made that controlling emissions would do more than reduce the rate of growth of material consumption for industrially developed economies.

Rights and absolutism

A standard criticism of rights is that there may be conflicts between different rights which then require resolution. This then brings into question the validity of discussing rights as prescriptions for action. Jones (1994: 193) paraphrases Burke as follows:

Government decisions call for a delicate balance of competing considerations. One interest will compete with another, the pursuit of one good might require the sacrifice of another, we may be able to avoid one evil only if we endure another, and so on. To suppose that the conduct of government can be dictated by a simple catalogue of absolute rights is morally naïve and politically dangerous.

There is indeed good reason for concern over where moral absolutism might lead. Excessively rigid moral systems can themselves be a cause of harm. For example, those who led their countries into the First World War made an absolute moral code of national honour, regardless of human consequences (Glover, 1999). The trench warfare which followed was the result of cold-blooded indifference rather than an unavoidable part of the conflict. The moral codes of many military men and the worst dictators of the past century have been absolute. Thus, the extent to which moral principles should be modified in response to feelings about humane and reasonable outcomes must be high on the moral agenda (Brittan, 2000).

Rights, even when absolute, can be limited in several respects. In general rights operate as only part of moral thinking. The way we implement our rights can be criticised and this must be done from an alternative basis of judgement. Duties can extend beyond and be unrelated to rights. Acts of benevolence, generosity, mercy and kindness by definition have no associated rights (i.e. if they were rights they would no longer be such acts). Interpersonal relationships can no more be reduced to rights and duties than to utilitarian calculations. Thus, friendship and family

relationships are poorly described when limited to such terms. There is more to moral life than rights alone.

Rights may also be absolute but conditional in that there are requirements for their fulfilment. They may be conditional upon material circumstances so that, for example, there is no right to a standard of living which cannot be achieved or to non-existent physical goods or services. Rights to socio-economic goods are conditional in this sense so that there are rights to goods today which humans did not possess in the past. Yet the moral standing of such rights remains despite their being conditional upon circumstances (see Jones, 1994).

Rights may also be limited in another respect. A given right may be justifiably overridden by another right or moral consideration. This has been termed 'prima facie' rights.¹⁷ Obviously if a right gives way all the time to other consideration then it loses all meaning as a right. This is why utilitarianism is so difficult to reconcile with rights because social utility could regularly override rights (e.g. the costs of controlling pollution always being deemed too high). Rights which are overridden in order to resolve a moral dilemma imply an injustice will result. Stating that something has a right, even an inviolable one, can still mean being unable to always accede to that right. The key point is that in overriding such a right there will be some moral residue (e.g. guilt at having done something wrong) and this can lead to a moral case for compensation.

Thus, while activities that create long-term environmental damage violate a right to be free from harm, the present generation may be argued to have some right to the socio-economic benefits acquired in the process. For example, chlorofluorocarbons provide benefits as deodorant propellants and as refrigerants. While linking the demand for aerosol deodorants to rights seems unlikely the provision of refrigeration is (at least potentially) less frivolous. Those in less industrially developed countries may claim that they have as much right to such benefits as do those in Europe or the USA and that this right to basic material commodities outranks any right of future generations to be free from harm.

In this regard the distinction between positive and negative rights is relevant. Positive rights are claims to specific goods and services and require a reciprocal response from those who bear the corresponding duty. Examples include rights to compensation, protection and welfare benefits. Negative rights require only restraint on the part of others and are rights to non-interference. Examples include the right not to be assaulted, libelled or have property taken away. A right to be free from harm due to environmental pollution is clearly in the second category and only requires that we refrain from certain activities. Correlative negative duties need never conflict if they are respected because they only require restraint. A duty to avoid harm can be respected by society using benign consumption and production processes along with a duty to avoid taking goods and services away from those in less industrially developed economies. Positive duties can create conflict as can violation of negative rights, with both leading to moral dilemmas. Thus, where harm is already being

conducted, or is threatened, interference is required to rectify the situation leading to possible conflicts with other rights.

An approach to moral decision-making which recognises rights must, if it is to be equipped to resolve conflicts, be able to assign priorities. Rules may be imposed to achieve this so that some argue negative duties are always superior to positive ones. In such situations the choice of which duty to perform means deciding which is the more 'stringent' and this requires judgement. The use of judgement here is different from and makes no call upon trading off various goods in a consequential manner. Thus, a non-consequentialist deontological ethic can allow for defeasible obligations that, in a particular context, can be overridden by others.

When two rights do come into conflict this may be far less problematic than sometimes suggested. The prevalence of conflicting rights will depend upon how extensively rights are asserted. The greater the number and scope the more often there will be conflicts. On the contrary, adequately defining the scope of rights may remove many apparent conflicts. Thus the discussion of harm here has been loose and largely unbounded but on occasion has been qualified by terms such as 'significant', harm of the 'innocent', 'deliberate' harm. These are all ways in which the scope of a right to avoid harm may be limited. As Jones (1994: 199–200) notes, the definition of a right might extend to several pages, although the tendency is to be short in definition to allow popular appeal. He goes on to point out that there may be two substantive causes of rights conflict. First, moral rights may conflict because there are limits to our ability to be totally comprehensive and cover every eventuality. Second, instability in world affairs means no rights structure can expect to be defined so as to avoid conflict. In particular, when people violate the rights of others, rights can conflict and moral dilemmas arise. Jones cites the examples of how to deal with murderous regimes and aeroplane hijackers. These instances often confront society, with tragic choices concerning individuals and their rights.

*Limits of value systems*¹⁸

More generally, problems affecting rights as a value-based system of obligations also affect other value systems such as utilitarianism. The general emphasis on the socio-economic benefits of growth often explains why a ban against harmful pollutants is consistently resisted and the right to trade pollution permits is put forward. Yet this requires interpersonal comparisons of welfare where no common metric exists. Problems also arise where there is a stated refusal to trade, as under lexicographic preferences, and such occurrences must be denied or diminished in importance if the economic calculus is to survive. A related problem is when an infinite willingness to accept occurs and so exposes a moral dilemma. In practice even large stated amounts are routinely excluded as 'outliers' because they upset the calculations. Zero bids for protest reasons are another such complication. In effect economists are already working in the realm of conflicting moral considera-

tions. Such conflicts are the essence of moral dilemmas and fail to simply disappear because they are assumed away (e.g. by assuming all values are commensurable and can be traded).

Moral life is complicated and at least instances of conflicting rights make this clear. If future generations are to be the losers then an explicit judgement to that effect is required and the consequent moral regret and case for compensation must be considered. Instead the current economic argument depends entirely upon the interests of the current generation being strong enough and correctly located.

The idea that future generations will be protected on the basis of human interests seems at least as problematic and in general false. Human motivation to act fails to include the interest of all humans and hence there are starving people and gross inequities in resource distribution. Reflection upon what is in the interests of other humans appears to be a weak motivation to act and only operative with regard to what is in the interests of some humans (e.g. family and friends) while excluding others. As Schelling (1995) has argued, making sacrifices now for people in the distant future is similar to doing so for those distant geographically or culturally; he goes on to note the self-obsession of Americans who prefer looking after other Americans to anyone else either present or future. Appeals to self-interested utility-maximising behaviour without recognition of other values merely reinforces such attitudes.

Indeed destruction of the environment may be in the interest of current humans (just another trade-off) and hence the appeal to utilitarian arguments to support concepts such as sustainability prove ill-founded.¹⁹ For example, Wade-Benzoni (1999) cites the destruction of fisheries by short-sighted behaviour restricted to profit-seeking, within one generation, rather than planning across generations. Perversely, this type of behaviour turns out to show how environmental protection and long-term business sustainability are compatible. Unfortunately, even though the burden of self-restraint is often small compared to the prevented loss for future generations, there is a lack of motivation to act on behalf of people who are imaginary, whose lives lack detail and with whom there are few or no ties of reciprocity. Motivation to consider future generations is stronger amongst those who feel a shared fate with other users of a resource (and therefore show self-restraint in their own use). In addition, the behaviours of previous generations are liable to be passed on to future generations, for example affecting intergenerational transfers (Wade-Benzoni, 1999: 1,403).

Rights analysis preserves the sense of tragedy in the world with regard to our treatment of the environment, other humans (current and future) and non-humans. The sense of value portrayed under the preference utilitarian approach is one where humans choose those bits of the world to value and throw away those bits they regard as of no value. This seems to seriously misrepresent the relationship of humans to each other and to Nature.

Economics too readily assumes that value conflicts are resolved when a decision is taken. The necessity of a choice due to practical constraints and political reality is

misleadingly represented as a carefully weighed-up trade-off. Indeed human psychology is misrepresented by the idea that because a decision is taken all conflict has been removed. The point is made with regard to the importance of conflicting duties by Jung (1989: 345–6):

By no means every conflict of duties and perhaps not even a single one, is ever really 'solved', though it may be argued over, weighed, and counterweighed till doomsday. Sooner or later the decision is simply there, the product, it would seem, of some kind of short-circuit. Practical life cannot be suspended in an everlasting contradiction. The opposites and the contradictions between them do not vanish, however, even when for a moment they yield before the impulse to action. They constantly threaten the unity of the personality, and entangle life again and again in their dichotomies.

Conclusions

Four ethical rules as incorporated into economic models were discussed in this chapter. Each could be given an interpretation under which no compensation for long-term damages is deemed necessary.²⁰ For example, the current generation can be:

- elitist with welfare dependent upon current consumption alone and themselves defined as the elite
- egalitarian and merely spread harm equally across generations including their own
- utilitarian with the belief that the marginal utility of future generations will be lower
- Paretian with reverse intergenerational compensatory transfers reckoned impossible and long-term pollution regarded as the status quo norm
- Paretian with only potential compensation required.

Indeed elements of most of these arguments have appeared in the literature on the economics of the enhanced Greenhouse Effect. That deliberate substantive harm of the innocent can be so easily ignored raises serious questions as to the failure of economics to distinguish between compensation and other transfers.

Compensation was argued to be a distinct and separate concern from basic transfers and an issue which cannot be circumvented by economists. A fundamental step forward would be to question when actual compensatory transfers are both feasible and adequate. If actual compensation proves difficult or impossible to target, or is an inadequate moral justification for deliberately creating harm, then GHG abatement is the best option. That such compensatory transfers may be impracticable across generations leads Lind to recognise that a political decision is required to deal with

the ethical issue of abatement, although he sees the issue as one of whether future generations should be 'subsidised' by an abatement programme.²¹ Whether compensation can ever be regarded as adequate recompense for the deliberate infliction of a harm was seen to drive straight into the philosophical conflict between teleology (e.g. utilitarianism) and deontology (e.g. rights).

Advantages of the latter appeared in terms of addressing intergenerational well-being. However, both philosophies might also prove too extreme. In the former case only the outcome matters regardless of process or the characteristics of instrumental acts. For example, releasing GHGs is justified by material wealth creation which is often frivolous. In the latter case the context within which acts may occur has no implication. For example, if the act of killing the innocent is intrinsically wrong then deliberately releasing GHGs knowing they will kill an innocent future person is to be prevented regardless of the potential positive results forgone or the costs of pollution control. An alternative to these two extremes is to allow for deontological rules subject to specified constraints either in consequential or non-consequential terms.

Thus, harming an innocent human or non-human can be forbidden up to a certain threshold defined in terms of the good which results from the act. For example, killing an innocent person to save five lives may be rejected but not so if a thousand or a million lives would be saved. As Kagan (1998: 78–84) explains, the moderate deontologist holds a position distinct from the consequentialist because the latter believes that goodness of results is the *only* factor with intrinsic significance and therefore they must *always* regard as permissible the act which leads to the best results. In contrast moderate deontologists are pluralists who believe in the intrinsic significance of acts of doing harm as well as good and will therefore forbid harming someone regardless of the best results overall, as long as they are within the threshold for a constraint on consequential motives to action. 'Moderate deontology is thus a genuine alternative to consequentialism' (Kagan, 1998: 80).

Philbert (1999) quotes Paul Ricœur as describing the realm of human action requiring a trade-off between the short-term focus upon foreseeable consequences and the long-term view of unlimited responsibilities. This sentiment may be taken as being similar to a moderate deontological position in recognising that responsibilities must sometimes be bounded by consequences. However, the extent to which responsibilities are unlimited is often exaggerated. There are then a variety of ways in which we might address the issue, e.g. institutional design, safe-minimum standards, defining rights or specifying duties. Indeed the duty to avoid harming others and the right to be free from harm are already in practice both present and restricted.

Serious consideration of the well-being of future generations has been argued here to require redefinition of the rights structure as realised in society and this may indeed be detrimental to the current generation's selfish interests. The dictatorship of the current generation over the future allows the imposition of damages regardless

of how small or frivolous the gain now and how significant or large the extent of future harm. Utility-maximising individuals and profit-maximising firms which lack any moral or social responsibility will push costs onto those distant from them in time and space. That is, the typical agents in a neo-classical economic model are driven by incentives to pass harm onto innocent others and benefit themselves.

The motive to perform moral action may be divided by three types of obligations (Lumer, 2000: 98). A formal moral duty exists when there are morally advanced legal standards. These are largely absent with regard to future generations. An informal moral duty requires following morally advanced non-legal standards. These may appear as social and ethical norms which are followed within society. An imperfect moral duty requires recognition of moral good on the part of the individual who must strive to implement and improve upon socially beneficial norms.

Definitions of harm due to environmental degradation may need to take the form of constitutional rights and the UN charter on human rights (see Eckersley, 1998). This would move the debate over action into the legal and institutional realm and away from 'free' market approaches. Page (1982) has made a point worth considering in this context. Even for the promotion of intertemporal efficiency; institutions are required which honour the wishes of the past and anticipate the needs of the future. The market, as shown by discounting, fails as such an institution which is why there are traditions of common law, the law of wastes, contract law, legislative acts and constitutions. Such institutional arrangements aim to bridge time and connect current to future behaviour.

The task of defining harm is difficult and has only been loosely addressed here. Preference utilitarian models tend to supply a very broad definition in terms of any welfare loss, and, as a result, risk trivialising the issue by equating a large number of minor income losses to a major humanitarian disaster. In as far as welfare losses are individual specific they also run foul of the non-identity problem. There is further complexity in deciding when an action with uncertain consequences is deemed to be in violation of such rights, although uncertainty is rejected as a reason for undertaking actions where harm is a potential outcome. In the case of the enhanced Greenhouse Effect there are strong reasons to believe numerous major contraventions of basic human rights will occur. The point of the current discussion has not been to offer a codified system of law or some constitutional amendment but rather to emphasise a fundamental basis for human action in morality and show the weakness, in this regard, of current economic approaches.

That there are alternative ways of conceptualising the moral dilemma confronting us under the enhanced Greenhouse Effect means there is a need for open debate and a plurality of values. Instead the problem has been characterised as a scientific technical issue with economic consequences. Thus, the Kyoto negotiations which are immersed in ethical considerations about resource distribution, rights and compensation have been treated as legal and economic discussions over technicalities. The most inadequate part of the IPCC information process has been the reporting

on economics because of the desire by many of those involved to divorce the subject from ethical judgements, which they then make implicitly.

Many of the concerns raised in this chapter with regard to future generations apply equally to morally significant others. That is, the separation of one human from another happens across space, social class, race, religion and cultural affectation. The role of civic virtue in producing moral decisions and just constitutions is lost in the reduction of all motives to preference utilitarianism. Deliberation is required as to what is right and just if humans are to maintain any status as ethical beings. Yet that deliberation is absent from the development of policy on the enhanced Greenhouse Effect.

Notes

- 1 The enhanced Greenhouse Effect is also only one cause of extensive and expanding long-term environmental damages, thus the arguments presented here can easily be applied to other activities (e.g. nuclear power generation). Many wastes, freely or inadequately disposed of, are highly toxic, and/or in amounts exceeding the assimilative capacities of ecosystems, so that they can accumulate and persist for decades, centuries, or longer (e.g. polycarbonated biphenols (PCBs), radioactive materials, chloro-fluorocarbons). Such pollutants share, with the enhanced Greenhouse Effect, damages which are significant, potentially irreversible, long term, and asymmetrically distributed over time. The net benefits of associated activities accrue now; the net costs accrue in the future.
- 2 Future generations require representation but are unable to confirm the legitimacy of those individuals or institutions which do so. Representation of future generations, and Nature, is therefore justified on different grounds than that of current humans. Both raise concerns over how democratic institutions can and should operate to represent the weakest in society (O'Neill, 2001). While concentrating upon the interests of future generations can prove more controversial, giving voice to such silent groups is no less important.
- 3 Such a moral duty can be utilitarian or deontological. That is, current neo-classical theory could be associated with a duty to compensate for harm given a simple rule such as the Pareto criterion discussed in the next section.
- 4 An egalitarian argument can follow from the utilitarian approach. This requires an appreciation of the law of diminishing marginal utility (additional income yields less than previous additions, though the total continues to rise), and assuming that all individuals are fundamentally alike in their preferences and capabilities for enjoying goods. In the strict form, the utilitarian argument for egalitarianism depends crucially upon the identity of the utility of income across generations. At the opposite extreme, an elitist argument can be made if the marginal utility of income of the elite is higher than that of others; the rich get richer and the poor poorer (see Culyer, 1973: 64–90). The ultimate extreme, under increasing marginal utility, is where one person should be given all the world's resources in order to maximise total utility for society (see Mishan, 1981: 122).
- 5 Of course, determining the marginal utility of future generations poses a practical barrier to making this requirement operational.
- 6 Such a reverse transfer of utility could be argued to arise from selfish altruism, i.e. the current generation enjoys making the future better-off.

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- 7 A problem apparent in Solow's writing on this subject is how to treat intrinsically valuable natural and cultural entities. He recognises their existence (Solow, 1992: 3; Solow, 1993: 168), but dismisses the relevance of this constraint by assuming such intrinsic value is rare and exceptional (Solow, 1993). Interestingly, one of his examples of an object with intrinsic value is the Lincoln monument!
- 8 Refusals to trade in neo-classical economics are usually regarded as instances of lexicographic preferences. That is, an absolute ranking of alternatives exists, as for words in a lexicon. While recognised as a theoretical possibility economists tend to reject the practical relevance of such preferences. However, there is empirical evidence for the significance and relevance of refusals to trade (whether lexical or otherwise) for environmental policy. For a review of relevant literature and empirical results see Spash (2000).
- 9 The trade-offs you made to read this text may be described as limited (e.g. another reading activity) or open (e.g. any alternative activity and its consequences for your life). The trade-offs you made in choosing your job could be described as another similar job or an alternative life path.
- 10 My thinking in this area has benefited from numerous discussions with John O'Neill over the past decade. In particular, personal communications during 1997, while conducting joint empirical research into environmental values, aided my understanding on several specific points discussed here. That research was funded by the European Commission, DGXII, Environment and Climate Programme. Of course, I am solely responsible for what is written here.
- 11 As Arrow (1973: 323) states: 'At no time in the history of economic thinking has there been a thoroughly agreed-on criterion, but at least among the more philosophic circles of economists a utilitarian criterion has been more or less accepted'.
- 12 The treatment of Rawls' contractarian theory of justice provides a good example of how economists take liberties with philosophical theories. Arrow (1973) reduces Rawls to the max–min criterion and in so doing admits 'I ignore the richness of Rawls' discussion, some other constraints he imposes on the allocation of resources (particularly setting an infinitely higher value on liberty than on goods)' (p. 323). The latter would imply a lexicographic preference which is hard for neo-classical economists to accept or meaningfully operationalise within standard theory. In the same article Arrow notes Rawls informed him personally that 'he did not intend to supply any form of the maximum principle to intergenerational justice' (p. 325). Solow (1974) uses the same interpretation although he again recognises this was not advocated by Rawls. Binmore (1989) discusses Rawls as if he were a utilitarian by putting aside any arguments he put forward as to the rejection of orthodox decision theory, and as he admits his approach 'entails a very substantial re-evaluation of Rawls' approach' (p. 84).
- 13 Harm can refer to many types of injury, from minor loss of a material object to death. Harm is used here in a generic sense to make a general argument, although implicitly certain significant categories are held in mind. In practice only certain categories of harm would be deemed absolutely wrong. This may lead into ontological difficulties and certainly does so if extended to non-humans.
- 14 There is no pretence here to provide a comprehensive coverage of issues surrounding rights and their classification, and indeed the treatment here is only superficial. The aim is limited to showing the relevance of rights-based thinking for addressing the enhanced Greenhouse Effect. The text is mainly concerned with claim-rights which have correlative duties without precluding the existence of other rights and rights without duties, or duties without rights. The interested reader is referred to Jones (1994).

- 15 This is similar to the US Clean Air Act where in 2001 the Supreme Court ruled (in response to challenges by industry) against the weighing-up of costs and benefits in setting air quality standards.
- 16 The intergenerational context putting this into practice would prove difficult because the polluters are long since departed. This has already proven problematic for cleaning up chemical and industrial waste from the past where firms have sold their polluted lands and/or been liquidated.
- 17 The distinction of prima facie duties is due to Ross (1930). He calls upon an 'objective fact' about acts, i.e., the characteristic which an act has, in virtue, of being 'an act which would be a duty proper if it were not at the same time of another kind which is morally significant'. He outlines seven categories of prima facie duty: fidelity, reparation, gratitude, justice, beneficence, self-improvement and non-maleficence.
- 18 I am grateful to Alan Holland for increasing my understanding of several aspects of rights philosophy. In particular some of the points presented here are based upon his input to a workshop held in Zurich, Switzerland under the EC-funded concerted action on Environmental Valuation in Europe (EVE) in 1999. As Alan stated at that time, he has no strong views about the rights position, but his exposition was most enlightening. Of course what is written here is my sole responsibility.
- 19 This can be clearly identified in the discussion of optimal extinction rates which are accepted as economically rational. Thus, the argument over biodiversity is about what to destroy and when, rather than conservation or preservation. A prime example of this approach is Swanson's *The International Regulation of Extinction* (London: Macmillan, 1994). In contrast the necessity of overriding economic preferences to achieve sustainability has been shown by Common and Perrings (1992).
- 20 Interestingly none of the rules will typically lead to a recommendation that welfare be continually increased over time, as economic growth recommends or as possible under weak sustainability (i.e., non-declining welfare). Such a rule makes the first generation the worst-off and each succeeding generation better-off than its immediate predecessors. Addiction to material consumption under neo-classical utilitarianism comes closest to providing an explanation, with greater consumption increasing marginal utility so that the more that is consumed by later generations the more value there is at the margin. However, the logic of an addictive allocation is to give all consumption to one generation to maximise utility.
- 21 For Lind (1995) the overall argument remains that current generations have no obligations if the future is better-off. This is again a failure to draw any distinction between compensation for harm and basic transfers aiming to achieve a certain standard of living. In particular, damages inflicted on a relatively wealthy person are to be regarded as less important because of that relative wealth.

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