The Emperor's Old Clothes: The Curious Comeback of Cost-benefit Analysis

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ABSTRACT: Cost-benefit analysis is enjoying a resurgence. Despite its well documented failures in the past to cope with the environmental damage caused by major transport projects, and despite lack of progress in resolving the causes of these failures, Britain's Department of the Environment now proposes to apply it not just to projects, but to the formulation of policy. Curious.

KEYWORDS: Cost-benefit analysis, valuation, willingness to pay, willingness to accept

"There is nothing quite like it anywhere else in the world."
So said former environment minister David Trippier in announcing the UK Department of the Environment's guide for those in central government who are charged with advising ministers on environmental policy.[1] There is perhaps a good reason.

As Figure 1 shows, the core of the appraisal process that it recommends is cost-benefit analysis. This represents a significant expansion of the role of economics in the formulation of environmental policy. While cost-benefit analysis has been used – with contentious effect – for many years in the appraisal of investment projects, this guide now elevates it to a central role in the making of *policy*.

After the cost-benefit analysis of the Roskill Commission into London's third airport over twenty years ago the method fell out of favour. The Roskill exercise, which was the largest cost-benefit analysis ever undertaken up to that time, failed to achieve political credibility, and its recommendation was disregarded by the Government. It was widely regarded as, simultaneously, too ambitious and too limited. Its ambition to attach cash values to everything that was significant to its decision, attracted ridicule; perhaps the two best remem-

Environmental Values **2** (1993): 247-60

bered of these attempts were its use of the fire insurance value of the Norman church at Stewkley (£50,000) to represent the true value of the loss, and its valuation of a human life at £9,300. But it was also compared to a horse and rabbit stew (one rabbit, one horse). The Commission limited its analysis to the rabbit – the local effects which could be translated into cash – which it examined in enormous detail. It treated the horse – the wider social and environmental effects of the growth in air traffic – in an extremely cursory fashion. As a result of the failure of the Roskill exercise, cost-benefit analysis played no serious part in the subsequent planning of London's airport system which culminated in the expansion of Stansted Airport.[2]

* *Summarise the policy issue*: seek expert advice to augment your own knowledge as necessary.
* *List the objectives*: give them priorities, and identify any conflicts and trade-offs between them.
* *Identify the constraints*: indicate how binding these are, and whether they might be expected to change over time or be negotiable.
* *Specify the options*: seek a wide range of options, including the do-nothing or do-minimum options; continue to look at new options as policy develops.
* *Identify the costs and benefits,* including the environmental impacts: do not disregard likely costs or benefits simply because they are not easily quantifiable
* *Weigh up the costs and benefits*, concentrating on those impacts which are material to the decision.
* *Test the sensitivity of the options* to possible changes in conditions, or to the use of different assumptions.
* *Suggest the preferred option,* if any, identifying the main factors affecting the choice. *Set up any monitoring necessary* so that the effects of the policy may be observed, and identify any further analysis needed at project level. *Evaluate the policy at a later stage*; and use the evaluation to inform future decision making.

FIGURE 1. Steps in policy appraisal
(reproduced from *Policy Appraisal and the Environment*)

Since Roskill there has been a marked reluctance on the part of government to apply cost-benefit analysis to environmental impacts in other policy areas. The Advisory Committee on Trunk Road Assessment[3] explicitly rejected the cash

valuation of environmental impacts, and the Department of Transport's cost-benefit analysis package for assessing road schemes[4] excludes them.

The Department of the Environment's new guide now seeks not only to rehabilitate cost-benefit analysis for the purpose of appraising the environmental impacts of investment *projects,* but to enlarge its role to embrace the wider *policy context* of such projects. It distinguishes between "*policy,* the ways in which government seeks to achieve the objectives which it sets itself in a particular area", and "*programmes* or *plans,* sets of related activities which give effect to policy". Programmes, it goes on to say "may in turn be composed of *projects,* discrete activities usually at specific locations".

That the application of cost-benefit analysis to the appraisal of policies represents a move into uncharted waters is made clear by the standard reference work on cost-benefit analysis by Mishan, a text recommended by the guide itself. Mishan repeatedly stresses the importance of limiting the method to costs and benefits which are immediately related to a particular project.

> Let me remind the reader again that the context of a cost-benefit analysis is that of partial equilibrium analysis, one in which we concentrate on the valuation of several items on the assumption that the effects of consequent changes in the prices of all but the most closely related goods or bads may be neglected ... (p. 188)

Given the unresolved problems discussed below encountered by cost-benefit analysts at the project scale, the ambition to enlarge the scope of its application to the appraisal of policies can only be described as heroic.

ECONOMIC VALUE

The guide urges policy makers to make strenuous efforts to reduce all the important elements of a policy decision to cash. It does concede that not everything relevant to policy making can be translated into money, but it treats such factors as residuals whose value can be deduced from the values of those things that can be monetized[5].

> The choices you recommend will imply a [cash] value for environmental resources in terms either of the other benefits foregone to preserve the environment, or of the other benefits gained at the expense of the environment ... (para. 4.8).

The guide anticipates resistance:

> The use of money as a standard is sometimes a barrier to wider acceptance. Most people believe that there are some things which are 'priceless' (in the sense that they cannot conceive of any sensible trade-offs involving these things). It may be considered immoral to place a value on goods such as clean air and water which are generally seen as a right for all. *But* a monetary standard is a convenient means of expressing the relative values which society places on different uses of resources.

> Valuation is, *therefore*, a means of measuring public preferences, for example, for cleaner air or water, and is not a valuation of those resources in themselves (para. 4.15, my emphasis).

The Department of the Environment appears to be saying that the use of a money standard may not be sensible or moral, but it is convenient; therefore a money standard can be employed so long as you are only using it to measure *preferences* or *relative* values and not *actual* values. Perhaps this makes sense to an economist, but other readers are likely to need help.

The guide tries to be helpful but only succeeds in deepening the mystery.

> Monetary evaluation is about measuring preferences. It is not about measuring intrinsic values of the environment (that is, values which some people may argue reside in the environment itself, independently of any human perceptions). Economic values and intrinsic values are different. Values in things are not measurable, though they could be taken into account in decision-making (para. C1).

What meaning a human policy adviser should attach to a value that is independent of human perceptions is not clear. Is it, for example, the value that a tree places upon itself? The guide does not tell us, nor does it elaborate on the way in which decision-makers might 'take into account' such values. The very existence of such values is left in doubt – 'some people may argue' that they exist. Beyond mentioning their possible existence, the guide has nothing further to say about them. Their neglect in the guide suggests that if they do exist they are of marginal importance in comparison with economic values which can be expressed in monetary units.

David Pearce, the Department's economic adviser at the time of the guide's publication, in a recent article entitled "Green Economics",[6] has another go at explaining economic value. He complains about his critics who have not taken "the trouble to investigate the meaning of economic value". He states

> There is, of course, the view that we 'cannot value the environment'. But the meaning of this objection is not always clear, and confusion has arisen because economists have themselves used slipshod language. What economic valuation does is to measure *human preferences* for or against changes in the state of environments. It does not 'value the environment'. Indeed, it is not clear exactly what 'valuing the environment' would mean.

This particular critic remains 'muddled'. The indignation accompanying the insistence that economic valuations measure preference for change and not the value of the thing being changed is puzzling. Whether one speaks of preferences or values, economic valuation still requires the use of money as a standard. Compounding this puzzlement, the guide insists that economic values have three components (para. C5):

Total Economic Value = User Values + Option Values + Existence Values

An existence value, it explains, is the value that a person attaches to an 'asset' that he or she knows about but may never actually see – but whose loss or damage he would nevertheless regret. The Grand Canyon, the Norfolk Broads, the Flow Country and endangered species are examples cited. In many cases, the guide stresses, they are likely to be very important.

This may be an example of the slipshod use of language by economists about which Pearce complains. Having insisted on the importance of the distinction between 'preference for change' and 'the valuation of resources in themselves', and having said that cost-benefit analysis is concerned with the former and not the latter, the guide proceeds to a discussion of the value of 'assets', and speaks of clean air and peace and quiet being 'traded in the property market'. The Oxford English Dictionary defines 'value' as "that amount of some commodity, medium of exchange, etc., which is considered to be an equivalent of something else". The economist's definition, for this reader, remains elusive.

Contingent Valuation

Existence values, the Department states, should be measured by a process called 'contingent valuation' – that is, asking people. In the case of potential environmental loss, the way they are asked is very important. They could, the guide says, either be asked what they would be willing to pay to prevent the loss, or what they would be prepared to accept as fair compensation for the loss.

> Figures can be derived either for the willingness to pay (WTP) for an improvement (or to avoid damage), or for the willingness to accept (WTA) compensation for environmental deterioration (or to forego environmental benefits). Studies show significant discrepancies that are still the subject of debate amongst experts. Most notably, values derived by WTP studies are often substantially less than values obtained by WTA measures. Where possible attempts should be made to obtain both WTP and WTA measures, and to look for reasons for any divergence.

This advice blurs a long established and important convention of cost-benefit analysis, namely that potential benefits of a proposed investment project (or policy) should be valued in terms of what the beneficiaries would be willing to pay for them, and potential losses should be valued in terms of what the losers would be prepared to accept as compensation. This is because cost-benefit analysis is rooted in the concept of a 'Pareto Improvement' – defined as a change that makes at least one person better off and no one worse off – or, alternatively, a 'Potential Pareto Improvement' – which would permit winners to compensate losers and still enjoy a net benefit.

As Mishan points out (p. 182) a willingness to pay value can be, literally, an infinitesimal fraction of a willingness to accept value because the sum that an individual can pay for something (or to avoid something) is constrained by the limits of his budget, whereas the sum that someone might accept as compensa-

tion can be infinite. No amount of money, to use Mishan's example, is likely to compensate someone stricken with a fatal disease.[7] Thus, the sum that a person is willing (able) to pay to prevent a loss will rarely be an accurate measure of that loss to the person experiencing it.[8]

The definition of 'costs' and 'benefits' is crucial to the choice of measure adopted. Figure 2, based on an illustration by Mishan (1971 edition, 125-31), shows the way in which the legal or moral context of a problem can transform a cost into a benefit. It represents the possible bargains that might be struck during a train journey by two travellers sharing a compartment – a non-smoker, and a smoker – depending on the rules of the railway company.

	Smoker	Non-Smoker
Permissive rule	**Willingness to Accept** compensation for forgoing the right to smoke	**Willingness to Pay** for the benefits of a smoke-free journey
Restrictive rule	**Willingness to Pay** for the right to smoke	**Willingness to Accept** compensation for foregoing the right to fresh air

FIGURE 2.

Under the *permissive rule*, which allows smoking, fresh air will be viewed by the non-smoker as a benefit – a departure from the status quo for which he expects to have to pay. The amount that he might pay will depend on the strength of his distaste for smoky air, and what he can afford. The amount that the smoker might accept to forego his rights might depend on the strength of his addiction, his income, or his compassion – the exercise of which would produce 'payment' in the form of moral satisfaction.

Under the *restrictive rule*, which forbids smoking without the agreement of fellow passengers, the smoker's willingness to pay will be influenced by his income and the strength of his addiction, and the non-smoker's willingness to accept, will be influenced by his aversion to smoky air and how badly he needs the money. While it is difficult to imagine a civilized smoker requiring an extortionate sum of money to forego his rights, it is possible to imagine a desperately ill asthmatic refusing a very large sum of money to maintain his air

supply in a breathable state. In any event, only in exceptional circumstances are a person's WTA and WTP likely to be the same.

With respect to real world environmental problems one can find analogous situations. It does sometimes make sense to ask how much people might be prepared to pay to prevent certain environmental losses. The threat to Venice by the rising waters of the Mediterranean, or the threat of flooding in a river valley which could be protected by an upstream dam are two examples. But these are both examples in which the 'benefit' that people are being invited to pay for takes the form of preventing a loss which would otherwise be inescapable.

Most current environmental controversies however are disputes between 'developers' (representing the beneficiaries of a proposed project) and 'environmentalists' (representing the losers), and the choice of which measure to use to value the prospective losses stemming from the project is, in effect, a choice of rule. If, in the above illustration, the smokers represent polluting industry, and the non-smokers, the defenders of the environment, then to ask the environmentalists how much they are willing to pay to prevent damage to the environment, is to assume a permissive law. It is tantamount to basing the cost-benefit analysis on a presumption in favour of 'development'. It is to assert that people have no *right* to clean air and water, to peace and quiet, to their architectural heritage, to cherished landscapes, or to habitats for endangered species. These are all transformed into privileges for which people are expected to pay out of limited budgets.

The guide trivializes the difference between the two measures of environmental value. It acknowledges that WTP values for environmental losses are often substantially less than values obtained by WTA measures, but simply recommends trying to obtain both and 'look for reasons for any divergence'. It offers no further advice on which to choose, and in the section describing the procedure to follow for contingent valuation (p. 58) WTA is casually dropped from the discussion.

Perhaps a more significant clue to the bias of the government's appraisal of environmental losses is to be found in another appraisal guide recommended by the Department of the Environment's guide (p.3). This is the Treasury's *Economic Appraisal in Central Government.*[9] Annex B of this guide contains the Treasury's recommended procedure for valuing 'non-marketed outputs'. It observes that

> In addition to the intended consequences of a project, there will also usually be side effects. Thus a proposal to build a new road will have an environmental impact along its route. Costs may arise as well as benefits. (p. 45)

Like the Department of the Environment guide, it concedes that not all these costs can be monetized, but goes on to argue that "non-marketed goods are generally best valued against the yardstick of an individual's *willingness to pay* for marginal changes in supply". The Treasury guide contains no discussion of

the problem of deciding between willingness to pay and willingness to accept measures. It contains no mention of willingness to accept measures at all; its recommended valuation method embodies, therefore, a strong presumption in favour of development. It treats the entire population as a group of non-smokers travelling in a smoking compartment.

There are obvious pragmatic reasons why the DoE and the Treasury should prefer WTP measures of environmental loss to WTA measures. As noted above, the DoE guide accepts that, "most people believe that there are some things which are priceless". A person's loss cannot be separated from his belief about his loss. Values are inescapably subjective and cannot be detached from their valuers. If a person believes a loss to be beyond price, it is beyond price. And since 'priceless', if it is to be included in a cost benefit analysis, must be entered as an infinity sign, and since it takes only one infinity to blow up a whole cost benefit analysis, WTA values can seldom be used. They effectively give every loser a veto. There is no affordable test of whether or not a person's loss is genuinely beyond price. If WTA values are used, they must be arbitrarily limited by the economist to conform with his conception of 'rationality'.

Pearce address this problem in his book *Cost Benefit Analysis.*[10]

> One factor in the questionnaire [of the Roskill Inquiry into London's Third Airport] was the significant proportion of those interviewed who implied that no price would compensate them for movement away from their area. These replies would appear to be inconsistent with the general view that 'each man has his price'. If the response is ascribed to some element of irrationality in the householder, the problem arises of how to treat the factor in the cost-benefit analysis. The procedure in the study was to truncate the distribution at some arbitrary level (p.77).

Whenever the economist uses Willingness to Pay measures for potential losses, or truncates Willingness to Accept measures at some arbitrary level, the Pareto Improvement principle from which CBA derives it moral legitimacy is sacrificed to expediency – or 'convenience' to use the guide's term. The guide states that its proposed method of appraisal "helps to gain public acceptance of the chosen policies". This is wishful thinking. Cost-benefit analysis simply cannot do justice to the concerns of people – and the Guide suggests that it is most people – who think that some things are priceless. A method that dismisses such people as irrational is likely to lose its political authority as well as its moral legitimacy.

If we accept the concept of 'existence value', and if it is agreed that Willingness to Accept is the only fair measure of losses attributable to projects or policies, then cost-benefit analysis is reduced to a mere statement of principle, and rendered operationally useless. The suggestion in the guide that it can assist the appraisal of global environmental effects, including the greenhouse effect (p.25), is seen as preposterous.

Global telecommunications networks, and the global scale environmental impacts of economic expansion, have given enormous numbers of people an

interest in the existence value of an enormous number of things. A growing proportion of these people are coming to the view that the planet is being plundered by untrammelled economic growth. The ever-lengthening list of endangered species and habitats flashing before us on our television screens is developing, worldwide, a consciousness of an uncontrolled process that threatens environmental damage on a catastrophic scale. Economic activity in Britain contributes not only to the destruction of remote tribes, and species, and rain forests, but to the pollution of the oceans, and a process of global climate change.

For reasons of self interest, guilt or compassion, or all three, many people in Britain now attribute 'existence value' to things of which a few years ago they were unaware – until it became 'news', few people had heard of the Flow Country. To pick selected items off the endangered list and invite people to say how much they are willing to pay for the preservation of those items is likely to provoke a rude answer. To ask them how much they would be prepared to accept as compensation for the loss of those items – which is what a legitimate cost benefit analysis would be required to do – is likely to provoke an even more vigorous response, which the economist would be obliged to translate as infinity; there are for example numerous people who would reject an offer of cash compensation for the wiping out of a species as morally offensive. The economist can salvage his method of policy making only by dismissing such people as irrational or dishonest, and substituting his own arbitrary valuations for the ones they have given him.

Consider again the equation for Total Economic Value set out above. It is apparent that if this formula were to be used to assist in the making of policies involving economic and environmental 'costs' and 'benefits' the estimation of the economic benefits would frequently be an infinitesimal fraction of the environmental costs. Governments frequently, and legitimately, over-ride the passionately held convictions of minorities in pursuit of policies that they deem to be for the wider public good. They do so, and have done for centuries, on the basis of political judgement. Such judgements ought not to be assisted by juggling with the combination of biased, arbitrary, and plain meaningless numbers to be found in most environmental cost benefit analyses.

NONSENSICAL OR IMMORAL?

The guide suggests somewhat tentatively that "it may be considered immoral to place a value on such goods as clean air and water which are generally seen as a right for all". Contemplation of a particular case, Kakadu National Park in Australia, leads to a more conclusive judgement.

Willingness to pay. A wealthy mining company wishes to exploit a site in Kakadu National Park which is sacred to the penniless aborigines who live there. The sum that the aborigines are willing/able to pay to defend Kakadu is pitifully

small compared to the fortune at the disposal of the developers. In an attempt to salvage something from their cost-benefit method, the economists of the Australian Resource Assessment Commission conducted a survey in which they asked a random sample of 2034 Australians how much they would be prepared to pay to stop the mining of Kakadu. The answers ranged from $52 to $l28 per year. The defenders of Kakadu argued that since this sort of money, if given by every Australian, would exceed the revenue from the mine, the mine had failed its cost-benefit test and should not be permitted. The mining company replied that the survey results were 'nonsensical' and 'unscientific'.[11]

One of the main justifications that economists give for monetizing debates, such as that over the fate of Kakadu, is that money is the language of treasuries and big-business, and that it is necessary to address such influential interests in terms that they understand. But treasuries and big-business are better equipped than most to notice when someone is talking nonsense in their language. The numbers yielded by surveys such as the Kakadu one are nonsense because they float free of any context that can give them meaning. If Kakadu were placed in a list of all the endangered species in the world, and habitats, and cultures, and works of art, and historic buildings ..., and if people were invited to say, item by item, how much they were prepared, and able, to pay each year for their preservation, and required to hand over the money, then the figures might mean something – but for each item, including Kakadu, they would be exceeding small.

If they were too small to yield the desired result, the cost-benefit analyst would have one last card to play. Anyone can claim to place an existence value on anything. Indeed, although they do not express it in money terms, a growing number of people all around the world are beginning to take an interest in the survival prospects of remote endangered species, such as some varieties of whales, that they have little prospect of ever seeing at first hand. So if the willingness-to-pay values of all the people in Australia were not enough to save Kakadu, the cost-benefit analyst need only cast his net wider – to embrace the whole world if necessary.

The DoE guide observes that "most sensible [WTP valuation] results come from cases where respondents are familiar with the environmental asset in question" (p.58). People's willingness to pay to preserve 'environmental assets' is, not surprisingly, influenced by what they know about them. People will place a nil value on something they know nothing about. Conversely, if the asset in question has been the subject of an emotive and widely broadcast television programme, the numbers of people who declare a high willingness-to-pay value is likely to be large. With respect to remote assets of which few people are likely to have direct experience, the values declared will be highly manipulatable by media campaigns.

With assets closer to hand there is a different problem, sometimes known as the NIMBY problem. The values that people place on things are strongly influenced by self interest. At the time of the Roskill Inquiry into the third

London airport, the area around Cublington, one of the prospective inland sites, sprouted signs saying "Stick it on Foulness". There was a tendency for people in the vicinity of Cublington to view the prospective coastal site at Foulness as an ugly mud flat ripe for development. The defenders of Foulness on the other hand tended to dismiss Cublington as just another middle class village compared to their area which was a naturalist's paradise and a haven for endangered Brent geese. Cost-benefit analysis purports to be a method for resolving environmental conflicts. But where opposing factions place high values on their own threatened interests and low values on the opposition's potential losses, taking a numerical average of these numbers will settle nothing. The method is more likely to inflame both sides by its irrelevance.[12]

A further problem is that the recent, widespread 'greening' of public opinion – the heightened public awareness of environmental damage worldwide – is an on-going *process.* It is the nature of environmental 'problems' – from pesticide poisoning and traffic danger to ozone holes and the greenhouse effect – that knowledge and opinion about them can change rapidly. Any attempt to inform policy about such issues by eliciting cash values for particular environmental assets will provide a snapshot instead of the required motion picture. The resolution of most environmental conflicts depends on one or both sides *changing* their values. Cost-benefit valuation freezes them at the moment of the survey.

All the problems with willingness-to-pay measures rehearsed above suggest that they will almost always yield nonsense results when used to measure environmental losses. But are they also immoral? The answer appears to be yes. To ask people how much they would be prepared to pay to prevent a part of their birthright being taken away, or to avoid being poisoned is a form of blackmail – like the probing of an extortionist trying to find out how much a supermarket owner might pay not to have the goods on his shelves poisoned.

Substituting a *willingness to accept* value instead of a willingness to pay measure does not make the method moral. To ask the aboriginal inhabitants of Kakadu what they would be willing to accept for something that their culture holds sacred would be to attempt to corrupt them; that which is truly sacred is not for sale. Many non-market goods, the most important non-market goods, are defiled by attempts to measure them with the measuring rod of money. Rape preceded by cash compensation willingly accepted is indistinguishable from prostitution.

Confronted with this argument the Department of the Environment replies

> As for the 'corruption' of the aborigines, I am afraid I have, however reluctantly, to adhere to my view that they have as much right as anybody else to exercise choice. If they believe they are better off accepting compensation, then they have to be allowed to make that choice even if they might subsequently regret it. It is rather akin to the necessity to allow a child to make mistakes.[13]

This is an argument that proclaims the supremacy of economics over all other

moral codes and religious values, that claims for the wealthy a licence to procure from the poor whatever they might desire. It is an argument rooted in a value system that is incapable of distinguishing the sacred from the profane. The guide does admit that "there will always be some environmental effects which cannot be be valued". But the guide provides no examples of such effects. The aborigines say "It is sacred." The economist replies "How much?"

THE EMPEROR'S OLD CLOTHES

How does one account for the revival of the fortunes of cost-benefit analysis? Have economists found answers to the problems that led to the failure of the Roskill cost-benefit analysis? Is there a new improved method of cost-benefit analysis that now overcomes the reservations of the Leitch Committee? Apart from the the fact that computers have become more powerful, and questionnaires more 'sophisticated' little has changed. Why then has the Department of the Environment not only resuscitated it as a method for project assessment but promoted it to a central role in the formulation of environmental policy? Why, when there were so many witnesses to the emperor's nakedness, is the Government now admiring the clothes that he wasn't wearing twenty years ago? One can but speculate.

One reason may be that, for those coming to it for the first time, like Justice Roskill, it can be extremely seductive. Its flawed foundations are obscured by a superstructure of impressive sophistication. Its practitioners can be forceful and intimidating. Their jargon is unfamiliar. Doubters, depending on their rank, are treated with patient condescension, or brusque dismissiveness. There is a 'literature' of which they are ignorant, and which is too difficult to explain.

The rewards for believing are great. Believers are offered a Solomon Machine – a machine that embodies in quantified form the principles of profit maximization, and distributive justice, a machine into which can be fed accurately measured valuations of all the relevant facts, and out of which will flow wealth and even-handed justice for all. For a judge whose working life involves balancing probabilities and weighing up incommensurables, it must be tempting. For civil servants and government ministers, faced with decisions about environmental problems of enormous scale and complexity, and who are unfamiliar with the method's dubious past, its charms must be equally difficult to resist.

A second explanation may be straightforward academic imperialism. A senior government economist has recently described the commissioning of the Pearce report as an opportunity to hijack the concept of sustainable development for the economics profession.

A third reason may be found in certain economists' convictions about the propensities of human nature. In "Green Economics"[14] Pearce states that "Economists assume that people are fundamentally greedy, though not exclu-

sively so." The hopes raised by the 'not exclusively so' are promptly dashed. Pearce continues, "If environmental improvement is to be achieved, it will require policies that use selfishness rather than opposing it." *Homo economicus*, the central actor in all economic dramas, is indeed greedy. All economic models rest, of necessity, on simplifying assumptions; there are unlikely ever to be computers large enough to model the behaviour of real people in all their complexity. *Homo economicus* is a simplifying assumption whose insatiable appetites have become, in "Green Economics", an inescapable feature of human nature. The mistaking of simplifying assumptions for reality is known as 'the fallacy of misplaced concreteness'. The damage done by economists beguiled by this fallacy is described with devastating effect by Daly and Cobb.[15]

A final, and related, explanation may be that the whole surreal exercise of attaching price tags to the priceless is based on a false premise that has escaped notice. In *Blueprint for a Green Economy* Pearce et al. assert that

> Preserving and improving the environment is never a free option; it costs money and uses up real resources.[16]

If this premise is accepted then clearly it would be wasteful to spend money on preserving or improving something if the costs of doing so were to be greater than the benefits; rational decision-making about the environment requires, they say, that all the relevant costs and benefits be priced.

But more often than not preserving or improving the environment is not only free, it saves money. The global scale environmental degradation that we are now witnessing is the result of careless and excessive consumption. Those who are convinced that preserving and improving the environment is *never* a free option are blinded to what is often the most obvious solution – reduced consumption. There are expensive ways by which a fat person can lose weight – health farms, exercise machines, liposuction – but walking or cycling to work and eating less are likely to be more effective and actually *save* money. Before deciding to lose weight one does not need to calculate the cash value of being slimmer and then work out whether or not one can afford it. Perhaps a cost-benefit analyst would.

NOTES

[1] *Policy Appraisal and the Environment: a guide for government departments.* Department of the Environment. London, HMSO, 1991.

[2] A review of the criticisms made at the time can be found in Adams, 1971; 1970 and 1974.

[3] *The Advisory Committee on Trunk Road Assessment* (known after its chairman as the Leitch Committee). London, HMSO, 1977.

[4] *COBA 9* Assessments, Policy and Methods Division, Department of Transport, 2 Marsham St. London SWl, 1981.

[5] The guide shows signs of having been written by a committee that could not agree. Figure

5.l requires policy advisers to 'use a broad cost-benefit approach', while Figure 5.2 indicates that cost-benefit analysis should only be used in circumstances in which there is *no serious risk to the environment.*

[6] Pearce 1992.

[7] Mishan 1988, p. 182.

[8] David Pearce and Kerry Turner say (1990) that "economic theorists tend to dispute that WTP and WTA can differ so much simply because the theory says that they ought not to differ (and hence there must be something wrong with the empirical studies)". They do not say what the theory is that maintains that they ought to be the same, and most economists seem to accept Mishan's reason for expecting them to differ. Pearce and Turner acknowledge that psychologists "express little surprise that WTP and WTA are not the same". They conclude that "it seems fair to say that this problem is not resolved in the environmental economics literature" – and then pass on.

[9] *Economic Appraisal in Central Government: a technical guide for government departments.* H.M. Treasury. London, HMSO, 1991.

[10] Pearce 1971.

[11] Adams 1991.

[12] The same problem arises with different income groups. Christopher Nash, David Pearce and John Stanley (1975) address this difficulty. They note that it is commonly assumed that "on average, different income groups have the same tastes, and that their different patterns of expenditure are explained solely by their income levels. This assumption is implicit in most practical cost-benefit analysis, but it is of course, highly suspect."

[13] Letter of 23 December 1991.

[14] Pearce 1992.

[15] Daly and Cobb 1990.

[16] Pearce, Markandya and Barbier 1989.

REFERENCES

Adams, J.G.U. 1970 "Westminster: the Fourth London Airport?" *Area,* No. 2.

Adams, J.G.U. 1971 "London's Third Airport", *Geographical Journal,* **137**.

Adams, J.G.U. 1974 "... and how much for your grandmother?" *Environment and Planning A,* **6**.

Adams, J.G.U. 1991. "On being economical with the environment", *Global Ecology and Biogeography Letters,* **1**: 161-3.

Daly, Herman E. and John B. Cobb Jr. 1990 *For the Common Good.* London, Green Print.

Mishan, E.J. 1988 *Cost-Benefit Analysis.* London, Unwin Hyman (1st edition 1971, George Allen and Unwin).

Nash, Christopher, David W. Pearce and John Stanley 1975 "An evaluation of cost-benefit analysis criteria", *Scottish Journal of Political Economy,* June.

Pearce, David W. 1971 *Cost Benefit Analysis.* London, Macmillan.

Pearce, David W., Anil Markandya and Edward Barbier 1989 *Blueprint for a green economy.* London, Earthscan.

Pearce, David W. and R. Kerry Turner 1990 *Economics of Natural Resources and the Environment.* London, Harvester Wheatsheaf.

Pearce, David W. 1992 "Green Economics", *Environmental Values,* **1**(1): 3-13.