

The Purchase of Moral Satisfaction*

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Abstract

The debate over whether or not moral sentiments should be included in normative economic analysis offers the following arguments against inclusion: inclusion is unnecessary as the results will be the same with or without it; inclusion can result in double counting and will result in acceptance of projects that fail to pass a potential compensation test. I show that these arguments and others are unpersuasive or incorrect.

The inclusion of moral sentiments has the potential to improve normative economic analysis. This is illustrated by comparing the standard normative criteria for benefit cost analysis (Kaldor-Hicks), that does not include moral sentiments with a modification that does, KHZ. The conclusion is that KHZ dominates KH even by the principles of KH itself.

The advantages of using a more inclusive standard for economic efficiency are illustrated through examples considering Christmas giving and environmental clean up. Ethical criticisms of the use of discounting harms to future generations are shown to rest on moral sentiments of the current generation, which can be incorporated directly into the analysis as values so as to avoid debate about the ethics of using discount rates.

1.0 Introduction

The practical criteria for economic efficiency, the Kaldor-Hicks (KH) criteria, have existed for over sixty years, without the profession fully facing the issue of whether or not moral sentiments should be included in normative economic analysis. In part this is due to historical reasons, in part to normal inertia associated with any academic discipline, in part because of the recent interest in moral sentiments in the form of existence values and in part because of objections raised to inclusion of moral sentiments.

This paper concerns two issues. The first is whether or not it is desirable to include moral sentiments in welfare analysis. The answer to this question will depend in

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part on the answer to the second question which is whether there is a suitable economic metric for considering moral sentiments. I consider recently raised objections to the inclusion of moral sentiments. Next, I consider the advantages of including moral sentiments. I conclude that the inclusion of moral sentiments improves the quality and acceptability of analyses,¹ and that a suitable metric exists similar to the logic and spirit of the traditional metric.

2.0 A Definition of Moral Sentiments

By moral sentiments I mean those involving concern for other beings. The focus of debate has been those moral sentiments that involve concern for humans. These moral sentiments also include immoral sentiments as when one wishes to harm others. One may care about others as a result of kinship, empathy, envy or hatred or because one supports justice applied to others. Charity is an expression of moral sentiment. One may care about others from others' perspective (one cares about their utility function) and this is called non-paternal or pure altruism. One may care about others from ones own perspective as when a parent requires a child to eat spinach when the child would rather not. This is paternalistic altruism. One may have an existence value for goods based on their use by others. According to Johansson (1992), it is far from unusual that non-use values such as bequest values and benevolence toward friends and relatives are claimed to account for 50 to 75 per cent of the total willingness to pay (WTP) for an environmental project. In economic terms I shall say that moral sentiments exist when there is a WTP for them or, when one has a right with respect to the care of others, a willingness to sell (WTA) such a right.

3.0 Arguments Against the Inclusion of Moral Sentiments in Benefit-Cost Analysis

Six arguments have been advanced against inclusion of moral sentiments in benefit cost analysis. It is said that their inclusion results in (1) the acceptance of projects that fail to pass a potential compensation test (PCT) [Winter 1969, Milgrom 1993], (2) the assignment of different weights to different individuals [Quiggin 1997], (3) the inclusion of purely redistributive policies [Quiggin 1997], (4) the inclusion of undesirable sectarian sentiments [Quiggin 1997], (5) double counting [McConnell 1997, Diamond

and Hausmann 1993, Diamond and Hausmann 1994], and (6) measurement problems. I consider these in turn.²

3.1 Moral Sentiments and the Failure of the Potential Compensation Test.

Perhaps the strongest argument against inclusion of moral sentiments, at least to economists, will be concern that such inclusion leads one to accept projects that do not pass the PCT [Milgrom, 1993]. The PCT requires that winners from a project are hypothetically able to compensate the losers while retaining some of their gains. Actual compensation is not required.³ The assertion is made that for the PCT to be passed, benefits must exceed costs, ignoring moral sentiments (e.g. Milgrom 1993). A general statement of such a proposition is as follows⁴.

Imagine that there is a project with benefits and costs distributed among two parties A and U. Let α be the "warm glow" experienced by the altruists from U's net benefits or losses. The direct net benefits (non-altruistic) from the project are NB_A and NB_U , respectively for person A and U. A gets indirect altruistic benefits from the net benefits to U. These are measured by A's willingness to pay, which is α per \$1 net benefit to U. U is a user of the project and has no altruistic benefits or losses from gains to A.

In order to satisfy the PCT, a transfer amount T must exist such that both parties have non-negative net benefits. Total ordinary net benefits will be positive and T can not exceed them. That is,

$$NB_A + NB_U = 0$$

$$NB_A - T \geq 0$$

Net benefits to A after transfer will be

¹ Reliable analysis requires the inclusion of both positive and negative sentiments.

² Diamond and Hausmann (1994, p.57) suggest another objection: ". . . preferences over acts (as opposed to states of the world) do not provide the consistency that is necessary for consistent economic policy. For example, if people are willing to pay to offset an act, then proposing and not doing an act appears to generate a welfare gain." This is incorrect from the KHZ perspective. To propose a project that harms welfare results in a loss measure of welfare that will be less than the gain from successfully opposing it.

³ Since one may care about transfers, e.g. compensation for a government taking, as a matter of principle or for self-regarding reasons such as fear that a bad precedent also may be applied to oneself, the restriction of altruism alone is too narrow.

$$NB_A + \alpha(NB_U - T) + T = 0$$

. A's net benefit with a transfer is monotonically increasing in T and T is bound above by NB_U . Therefore, the PCT will be satisfied, if it is satisfied at all, when $T = NB_U$. With this transfer, U has net benefits of 0 and A has net benefits given by

$$NB_A + \alpha(NB_U - NB_U) + NB_U$$

The expression above is only positive when the sum of direct net benefits is positive. That is, the sum of ordinary net benefits, ignoring altruism, must also be positive to satisfy PCT for a project considering moral sentiments.⁵ The lesson Milgrom and others draw from this is that one should exclude moral sentiments from benefit-cost analysis.

3.1.1 A Different Conclusion

I reach a different conclusion for the following reasons. First, I show that it is not generally true that ordinary net benefits ignoring moral sentiments need exceed zero for a PCT to be passed, although it may need to be true in special cases. Second, I show that the conditions under which the special cases arise are unlikely. Third, the criticism that projects that pass an aggregate welfare test may not pass the PCT when moral sentiments are included (Milgrom, 1993) applies also when moral sentiments are excluded. Fourth, a decision criterion that includes moral sentiments is shown to dominate the standard KH test by the very standard of PCT. Fifth, an aggregate measure that includes moral sentiments is more likely to improve welfare analysis than one that does not. Sixth, the rationale for accepting a PCT test itself rests on ethical grounds which support a more

⁴ I thank Aaron Finkle for this formulation

⁵ Milgrom (1993) provides an example. Consider a project that costs \$160 and from which person U has a gross gain of \$100 and bears none of the costs. Her net gain is \$100 and A has a gross gain of \$100, but pays the entire \$160 for a loss of \$60. The net surplus from the project will be \$40 (\$100 - \$60). Suppose A's gain from the project is given by $\$50 + 0.5$ times U's net surplus. If U hypothetically were to transfer \$60 to A as compensation, this would hypothetically fail to do the job as the \$60 hypothetical gain to A is partly offset by U's loss. A's hypothetical loss is now \$30, as A loses \$30 from U's loss of \$60. If U then transfers an additional \$30, A's loss would be \$15, and U would have a surplus of \$10 so that the project no longer has a net surplus and is insufficient to effect compensation. The actual rather than hypothetical transfer of money would result in both a failure to pass the PCT and to achieve positive net benefits.

inclusive criterion which drops the PCT test. I discuss the first two of these arguments here and the latter four later addressing the advantages of inclusion of moral sentiments.

3.1.2 Under What Conditions Will The Potential Compensation Test be Failed if Moral Sentiments are Included?

The assertion that net ordinary benefits must be greater than zero, $NB > 0$, in order to pass a PCT is passed implicitly assumes $\alpha < 1$. If $\alpha > 1$, the transfer will be negative. That is, we can compensate A by having him give money to U. Suppose for example that person A transfers \$100 to person U at a cost of \$110. This does not pass a benefit-cost test. Suppose now that person A gains two dollars in satisfaction for every dollar transferred to person U. The gains to person A are now $\$200 - \110 or \$90. The project now passes a benefit cost test counting moral sentiments and also the PCT since there are no losers.⁶

Without loss of generality consider a purely distributive project. The project will redistribute an amount Y from one group, altruists, to another group, users. If the project is assessed using KH, the users gain Y and the altruists lose Y, assuming no transfer costs. If instead we consider the project using KHZ, the users gain Y and the altruists lose $Y - \alpha Y$, where α represents the percentage value altruists place on users' welfare. The net WTP for the project will then be $+\alpha Y$. For sufficiently low values of α it is true that no PCT can be passed. But low values of α are unlikely. I distinguish between the altruism of an individual altruist, which is α_i , and this value summed over all altruists, which is just α . That is, α is the summation of the warm glow over all whose moral sentiments are engaged by the project. It reflects the public good nature of a redistribution in which many can gain from another's donation. If 160 altruists are charged \$1.00 each to transfer \$160 to the users, they will value each dollar transferred by some percentage less than 1, say 10 cents on the dollar. Then α will be 16 and αY will be \$256.

More generally, designate i 's willingness to pay for a benefit to k as W_{ki} , then, where j designates an economic good, the effect on i of a net benefit to k is

⁶ Negative altruism occurs when the warm glow parameter is negative (a chill). In this situation it is true that $B > C$ to satisfy the PCT.

$$du_i = \sum_j \sum_k \frac{\partial U_i}{\partial Y_i} W_{ki} P_j dX_{kj} \quad (4)$$

where P is price and X is a good. The weight given over all i's is the sum of W_i over all i's. This will be greater than 1 as long as $nW_i > 1$ where n is the number of altruists. That is, W_i will be less than one only if it is less than $1/n$. As long as the weight given by altruists to others' income is larger than a small amount and the waste from transfer is not too large, a project that includes moral sentiments will be able to pass the PCT.

Consider the conditions under which a project counting moral sentiments would fail a PCT test but be accepted by an aggregate welfare test. That is, consider the conditions required by Milgrom's example. If C is the cost of the project (or the amount transferred) and ϕ is the cost or waste per dollar transferred, the gains to the users will be $(C - \phi C)$ and the gains to the altruists will be $\alpha(C - \phi C)$. Thus the net gains will be positive as long as $\alpha > \phi/(1-\phi)$ and the gains to the altruists will be positive, meaning that PCT is passed, as long as $\alpha > 1/(1-\phi)$.⁷ That is, for a project to be accepted under an aggregate criterion and to fail PCT requires that:

⁷ This can be further explored in the case of reciprocal altruism. The willingness of k to pay for a benefit to i is W_{ik} , then the net effect on i 's utility from a benefit to k is

$$du_i = \sum_j \sum_k \frac{\partial U_i}{\partial Y_i} (W_{ki} + W_{ik} W_{ki}^2 + W_{ik}^2 W_{ki}^3 + \dots) P_j dX_{kj}$$

$$du_i = \sum_j \sum_k \frac{\partial U_i}{\partial Y_i} M_{ki} P_j dX_{kj}$$

where

$$M_{ki} = W_{ki} + W_{ik} W_{ki}^2 + W_{ik}^2 W_{ki}^3 + \dots = W_{ki} \cdot \frac{1}{1 - W_{ki} W_{ik}}$$

The effect on i 's utility will be bounded as long as $|W_{ik} W_{ki}| < 1$.

If the altruism is two sided, the net effect on k 's utility of a benefit to k can be shown to be

$$du_k = \sum_j \sum_k \frac{\partial U_k}{\partial Y_k} (1 + W_{ik} W_{ki} + W_{ik}^2 W_{ki}^2 + \dots) P_j dX_{kj}$$

$$1 > \alpha > \phi \quad (5).$$

so that waste is less than 100% and $\alpha < 1$. As long as there are a number of altruists, α will be greater than 1 for even small amounts of altruistic sentiments. Milgrom assumes that $\alpha = 0.5$ and $\phi = 0$ and $N = 1$. Suppose instead that α is > 1.5 . It is then impossible to construct the Milgrom example so that there are losers as long as the transfer is from altruists to users and the costs are less than αY . If, for example, the costs are \$160 and α

$$du_k = \sum_j \sum_k \frac{\partial U_k}{\partial Y_k} \left(\frac{1}{1 - W_{ik} W_{ki}} \right) P_j dX_{kj}$$

With this two-sided altruism, the net effect on total utility of a benefit to k is

$$dU = du_i + du_k = \sum_j \sum_k \left[\left(\frac{\partial U_i}{\partial Y_i} W_{ki} + \frac{\partial U_k}{\partial Y_k} \right) \frac{1}{1 - W_{ik} W_{ki}} \right] P_j dX_{kj}$$

Again, this will be bounded as long as $|W_{ik} W_{ki}| < 1$.

In following KH, we treat the marginal utility of income is the same for all, a sort of an egalitarian society, in which $\frac{\partial U_i}{\partial Y_i} = \frac{\partial U_k}{\partial Y_k} = \frac{\partial U}{\partial Y}$. This reduces to

$$dU = du_i + du_k = \sum_j \sum_k \frac{\partial U}{\partial Y} \left[\frac{1 + W_{ki}}{1 - W_{ik} W_{ki}} \right] P_j dX_{kj}$$

where, again, the initial benefit is to k . The term dU is bounded if W_{ki} and W_{ik} are both negative and their product is less than one because the only constraint is on their product. Thus, the effects of negative altruism or negative moral sentiments are easily handled. Only the numerator of the multiplier, W_{ki} , separates positive from negative altruism. If $-1 < W_{ki} < 0$, then the net benefit to k outweighs the resulting harm suffered by i . If $W_{ki} < -1$, then the net benefit to k is less than the resulting harm suffered by i .

Further, dU is still bounded if one person has positive altruism and the other has negative altruism as long as $|W_{ik} W_{ki}| < 1$ is still satisfied. The interesting end result is that dU is unbounded only if people either care about or hate each other too much. This will be true in any finite population, even if every member of that population has moral sentiments, positive or negative, regarding every other person in that population. Even the destabilizing effects of too much hatred or love on the part of some can be countered by sufficient apathy by others.

is 1.7 a project which transferred \$160 to users at a cost to altruists of \$165 would produce a net benefit of \$272 to the altruists and of \$160 to the users.⁸

3.1.3 Moral Satisfaction as a Good

There is no reason to assume the value of α is a constant. Moral satisfaction can be treated as other goods and its value assumed to decline with increasing purchases. Consider a downward sloping demand for transfers by altruists of the form $\alpha = M - bT$ where α is now a variable whose value is M before any transfers from the altruists are made, and T the amount of transfer. Let the marginal social cost of making transfers be ϕT , where ϕ is the waste from the transfer. The social optimum occurs where demand equals the social marginal cost. This occurs when $T = M/(\phi + b)$. The redistribution project will pass PCT as long as the average α is greater than 1. In this simple linear model, the equilibrium α will be given by $M - b[M/(\phi + b)]$. The average size of the warm glow parameter will be $1/2[M + \phi M/(\phi + b)]$ ⁹. The average warm glow will be greater than 1 for any M greater than some number less than 2 or two in the limiting case.¹⁰ The limiting case is where the social cost of transfer is zero; the optimum α will be zero in

⁸ As long as $\alpha > 0$ then costs should be shifted to altruists. This is because the cost to them of an additional dollar in costs is less than a dollar as long as $\alpha > 0$. As more of the costs are borne by altruists α will fall, and the additional costs borne by altruists will fall to zero when $\alpha = 0$ in the optimal allocation of costs. This means the value of α relevant for the determination of benefits to altruists is the average value as the portion of costs they bear changes.

In an elegant paper, Johansson (1992) considers altruism in cost-benefit analysis. He uses a well-behaved social welfare function to generate the equilibrium with and without non-paternalistic altruism. He asks whether this equilibrium will be different for a small project around the welfare equilibrium. He shows that the equilibrium is the same except for a term that scales up both benefits and costs. Thus, the inclusion of moral values will not bias the results and will not change the sign of net present values from the sign when they are not included. The explanation is that altruists will care about both benefits and costs borne by users. In general, Johansson shows that when a project is not small, or when (as will always be the case) it cannot be assumed that one begins near a social optimum, or when altruism is paternalistic or particular, then use values will underestimate total values so that it is important, for example, to ask about total willingness to pay and not just about use values in a benefit cost analysis.

⁹ The average warm glow is increasing in M and ϕ and decreasing in b .

equilibrium; i.e. costs should be transferred to the altruists as long as they have a positive warm glow parameter, and the average warm glow parameter would be $M/2$, which is greater than 1 for any $M > 2$. That is the warm glow per altruists could be as low as .002 of a dollar for each 1001 altruists and still ensure that the average warm glow was greater than one.

3.1.3 KH Does Not Pass the Potential Compensation Test

The standard benefit-cost test, the Kaldor test, sums the compensating variations (CVs). For almost twenty years it has been known that a positive sum of the compensating variations, CVs, is a necessary but not a sufficient condition for the passage of a PCT [Boadway and Bruce, 1984]. So projects that pass the Kaldor test ignoring moral sentiments also may not pass the PCT. Symmetrically, the Hicks test, the sum of equivalent variations (EVs), is a sufficient but not a necessary condition for passage of such a test. To use the Hicks test will result in rejection of projects that do pass the compensation test. KH is then an imperfect guide to passage of compensation tests.

Baker [1980, p.939] has pointed out a legally relevant failure of the KH to pass a PCT. He notes that when rights are in dispute, the usual case in matters at law, the sum of the expectations of the parties will normally exceed the value of the right so that no potential compensation is possible. For example, suppose a piece of property worth \$120 to Ronald and \$100 to Richard is in dispute between Richard and Ronald, but each believes with 80% percent probability that he owns the property. The total value of expectations is \$176 and the winner could not in principle compensate the loser. If the property is awarded to Ronald, he has a gain of \$24 and Richard a loss of \$80. There is not enough gain from which to potentially compensate Richard. As long as the sum of expected values is greater than the actual value, the project cannot pass the PCT. The inability to determine the efficient allocation is an indictment of KH.¹¹

¹⁰ The average warm glow will be greater than 1 as long as $M > 2(\phi+b) / (2\phi+b)$. Since ϕ and b are both positive, it is sufficient that $M > 2$.

¹¹ A move from a legal regime that does not use a KH or KHZ efficiency as a rule for legal decision to one that does would pass the PCT. For example a rule that inefficiently awarded the property to Richard would result in a loss of \$120 instead of just \$100 so

3.2 Weights

Quiggin [1997] notes that giving people credit for altruistic sentiments means giving them additional weight in a social welfare function. The benefit cost analysis would involve "the application of unequal weights to different individuals depending on the extent to which they are objects of altruistic concern. . . . Yet benefit cost analysis is based on the idea that benefits should count equally, no matter to whom they accrue [1997, p. 149]." Johansson (1992, p. 611) notes similarly that a social welfare function adding utilities gives greater weight to egoists than to altruists, and that "this is not a completely uncontroversial way of viewing social welfare.

I would say rather that the assumption in benefit cost analysis is that the marginal utility of income is the same for all. Those that do not like the result Johansson finds will have their own sentiments about the matter included in a KHZ analysis. The adoption of the assumption of equal marginal utilities of income as part of the Kaldor-Hicks criteria arose to avoid interpersonal comparisons. Unequal weights that arise from altruism do not violate this assumption. When the demand for oranges increases, oranges receive more weight in a benefit cost analysis that concerns oranges, but this is no different from the increased weight received by the object of moral concern when the demand for moral satisfaction increases. Since the weights arise from WTPs, that is endogenously, they are no different from other goods.

3.3 Purely Redistributive Policies

Quiggin correctly points out that the adoption of an aggregate WTP-WTA criterion results in the inclusion of purely redistributive projects. He notes the objection that benefit cost analysis is rarely applied to purely distributive projects. This is true but, as Quiggin notes, and as I noted [1991], such inclusion can improve benefit cost and policy analysis and is required by any criteria based on aggregate WTP-WTA. If our standard is usefulness and acceptability, historical practice is a weak reason not to adapt such an aggregate standard.

there would be a net social WTP of \$20 to move to a regime that used an efficiency criterion.

The KH criteria arose out of discussions among prominent British economists during the late 1930s.¹² Before that time it was generally assumed that each individual had an "equal capacity for enjoyment" and that gains and losses among different individuals could be directly compared [Mishan 1981, pp.120-121; Hammond 1985, p. 406]. Robbins [1932, 1938], disturbed this view by arguing that interpersonal comparisons of utility were unscientific. Economists accepted this and attempted to develop a welfare measure that would avoid interpersonal comparisons and which was more broadly applicable than Pareto efficiency. Kaldor [1939, pp. 549-550] acknowledged Robbins' [1938, p. 640] point about the inability to make interpersonal utility comparisons on any scientific basis, but suggested it could be made irrelevant. He suggested that where a policy led to an increase in aggregate real income,

. . .the economist's case for the policy is quite unaffected by the question of the comparability of individual satisfaction, since in all such cases it is possible to make everybody better off than before, or at any rate to make some people better off without making anybody worse off.

Kaldor goes on to note [1939, p. 550] that whether such compensation should take place "is a political question on which the economist, qua economist, could hardly pronounce an opinion."

Thus, it came to be thought that including considerations of the income distribution or of compensation would involve interpersonal comparisons, that such comparisons could be avoided by excluding considerations of compensation or of the income distribution, and that the measure of efficiency could be made more scientific.

Yet, in their commendable, though impossible, efforts to avoid interpersonal comparisons, economists failed to make their analysis more scientific and instead created additional problems. First, any measure of efficiency that is normative is based on moral assumptions and can be scientific only in the sense of being consistently applied. Second, the test simply assumes that all individuals' gains and losses are to be treated equally and receive a weight of one and that any change in these weights should be made by politicians or non-economists. Giving a weight of one involves interpersonal

¹² These are: Robbins, Hicks, Kaldor, and Harrod, all writing in the *Economic Journal*.

comparison yet it does have an ethical appeal of impartiality. To include compensation or income distribution considerations does not diminish this impartiality nor require any other weight than equal weight for individuals' values. Ask yourself if there are cases in which one would be willing to pay to affect some degree of compensation for the losses of others. Since the answer for some will be yes, then the enactment of compensation is itself an economic good. There will be a WTP or WTA for the purchase of this good. These WTP and WTA measures will receive a weight of one across different individuals just as is done for other goods. Thus, to include compensation or changes in income distribution as economic goods requires no interpersonal comparisons beyond the requirement to treat all equally, which is already a part of KH.

3.4 Sectarian Preferences or Immoral Sentiments

Moral sentiments can be negative as well as positive. Quiggin notes, "the unattractive policy implications of this conclusion may be illustrated by the case when some individuals have sectarian preferences, characterized by altruism toward members of their own racial or religious group and zero or negative altruistic WTP for others" [Quiggin, 1997, p.151]. It is at least ironic that the most extended and harshest criticisms of economic efficiency outside the profession are its failure to consider moral sentiments.¹³ Elsewhere [1998b] I have argued that benefit cost analysis should count all preferences and have considered the implications at length [Zerbe, 1998b, 2001].

Interestingly the issue of "bad" utility has prompted extensive criticism of KH, utilitarianism, or benefit cost analysis by those outside the profession in the philosophy and legal literature [Dworkin (1980, 1986), Posner [1981], Smart & Williams [1973]]. This sort of problem does not arise necessarily from moral sentiments but just from "bad utility", that is from values at variance with the norm. Problems of bad utility are raised in considering matters unconnected with moral sentiments such as how to value goods in the hands of criminals or the WTP by consumers of illegal drugs, as well as by many problems of moral sentiments. The protection against the weight of immoral sentiments is the weight of moral sentiments. Quiggin finds this "by no means a straightforward solution." [1997, p. 151]. This objection is unclear.

¹³ See references in Zerbe 1998.

First, legal rights will determine the starting point for the determination of whether a WTP or WTA measure will be used. For example, where law recognizes a right to not be enslaved, it grants to economic analysis a WTA rather than a WTP measure as the cost of slavery; these costs will be very large in economic measurement.

In addition, it is reasonable to take the law, where it is clear, as determining rights and therefore as furnishing information that serves as a shortcut for the weighting of values. Thus the law against theft implies that the value of goods in the hands of the thief is zero (Zerbe 1998, 2001). The thief's valuation of the stolen good is not zero but she has no right to it, so that in a full analysis, the WTP of those who would deny value to the thief will be greater than the value of the goods to the thief. Society has a WTP (or rather a WTA) to find theft illegal. When, however, we are considering whether or not theft should be illegal, the value the criminal places on her stolen goods should be explicitly counted because the law is in question and cannot be used as a shortcut guide.¹⁴

Benefit cost analysis is not an efficient instrument for determining the "right thing to do" nor even for determining the decision but is rather a tool for furnishing information for the decision process (Zerbe 1998, 2001). Ignoring or not counting bad values without legal authorization substitutes the values of the analyst and dilutes the reliability of the analysis. This is not a good idea.

3.5 Double Counting

3.5.1 Perfect Substitutes

McConnell [1997] suggests that whether or not existence value should be included depends on the motivation for the sentiments.¹⁵ Diamond and Hausman [1993, 1994] similarly claim that, for the type of altruism McConnell calls non-paternalistic, to include existence value is to double count. Non-paternalistic altruism values the utility function of others.

This appears to be a mistaken interpretation. What these authors have shown instead is that the size of existence value will depend in particular on the availability of

¹⁴ For more on this matter, including the cases in which the law is unclear, see Zerbe (1998b and 2001).

substitutes and this will vary with the type of moral sentiment.¹⁶ Existence values can always be included without giving an incorrect answer but in some cases it may be close to zero and thus irrelevant.

Following McConnell [1997] suppose there are two groups, users and non-paternalistic altruists, and that users are not altruists nor are altruists users. Users or altruists or both will pay for the project. The total of benefits and costs which must be greater than zero to satisfy an aggregate welfare measure is then just:

$$B_U - C_U + \alpha [B_U - C_U] - C_A > 0, \quad (6)$$

where

B_U is the WTP by the users of the good

α is the warm glow parameter so that $\alpha [B_U - C_U]$ is the WTP for moral satisfaction through purchase of the good by the altruists,

C_U are the costs borne by users, and

C_A are the costs borne by altruists.

McConnell [1997] shows that where one cares about the general welfare of others (non-paternalism) a benefit-cost analysis should not include moral sentiments (case 1). That is, the relevant condition is just:

$$B_U - C > 0, \quad (7)$$

where $C = C_U + C_A$ so that the existence value of altruists should not be included. To understand this result, consider that in equation (6) the WTP of the altruists will be $[B_U - C_U]$ if a perfect substitute such as cash is available and its redistribution can be carried out without cost. Thus the existence value will be $[B_U - C_U] - C_A$. If $B \geq C$, however, C_A

¹⁵ Existence values often reflect moral sentiments and such values can arise with respect to traditional environmental amenities as well, e. g., historic buildings that might be damaged in an earthquake.

¹⁶ Moral sentiments about others or other things may be expressed in four ways: One may care about: (1) the general positive well-being (utility) of others (love) or non-paternalistic altruism) (2) the well being of others but believe it is promoted only by their consumption of particular goods (paternalistic love); (3) the consumption of particular goods unrelated to the well being of others; (4) the existence of particular goods regardless of use by any person. These cases can be discussed simply on the basis of the extent to which substitutes exist for the good in question.

$\geq [B_U - C_U]$ so that the existence value is zero or negative. That is, the existence value will be positive only when $B_U > C$, which is McConnell's result. This result implicitly assumes that there is no existence value because a perfect substitute is available at the same price. This result is quite general. The consumer surplus is zero for any good with a perfect substitute available at the same price.

Even if there is a perfect substitute the existence value may not be zero where direct compensation is not costless. As before let ϕ be the waste from transferring money directly. The cost of alternative methods of providing the same moral satisfaction is then $\phi[B - C_U]$, which is just the cost of producing the same result as the project using the cheapest alternative method.¹⁷ The existence value then is $[B_U - C_U] - C_A + \phi[B - C_U]$ or

$$(1 + \phi)(B_U - C_U) - C_A \tag{8}$$

and when ϕ is zero, we have McConnell's result. When $\phi > 0$, existence value can be positive even if $B < C$.

Now ϕ may be greater than 1. There is no limit to the level of waste. There is, however, a limit to the existence value. The existence value cannot exceed $\alpha [B_U - C_U]$. For reasons given earlier, it will generally be the case that $\alpha > 1$. We can imagine, at least in the case where direct transfers of cash are perfect substitutes, that $\phi < 1$ and that $\alpha > 1$. Thus the results here are that (1) one can always include existence values if properly calculated and (2) there will often be no need to estimate the warm glow parameter, as it will often be greater than ϕ .

The issue of double counting is treated elegantly at the level of a social welfare function by Johansson (1992). He shows that altruistic values will already be included in questionnaires to determine the optimum provision of a public good. "... A willingness to pay question which allows households to state their total willingness to pay will provide us with a correct data set for the cost benefit analysis: households correctly account for costs and benefits accruing to themselves and others..." (p. 609). That households already account for such moral sentiments presents a difficulty in separating out altruistic benefits

¹⁷ The value of transfers is then limited to the opportunity cost of making them by the cheapest alternative means. This is the approach taken by Harberger (1978).

from non-altruistic benefits. The implication is that difficulties arise in contingent valuation studies in separating out existence values from use values. If one includes all sentimental values, we will be correctly assessing the costs and benefits of the project. The difficulty in ignoring altruism means that in a practical sense it is better to always include it than to always ignore it.

3.5.2 Imperfect Substitutes

The altruists may care about the particular payment form of the benefit to users. In this case, cash or another provision may be poor substitutes. We can think about poor substituting as simply increasing ϕ . Again, regardless of the size of ϕ , the warm glow parameter limits the size of the existence value.¹⁸ When one cares about the well being of others but believes it is promoted only by their consumption of particular goods (paternalistic love), the existence value will be larger because the substitutes for the purchase of moral satisfaction are more limited.¹⁹ When one cares generally about other people, then substitutes for moral satisfaction will be very good; mainly money, and existence value will be small. It will be limited to the costs of transferring money by the most efficient alternative means. When moral satisfaction may be more cheaply purchased through the provision of certain goods rather than others, then substitutes will be less perfect and existence value will be larger.

3.6 Measurement Problems

This paper asks whether *in principle* moral sentiments should be included in efficiency analysis. The debate over measurement, focused on existence values has, however, spilled over into questions of the inclusion of moral sentiments in principle.

This is unfortunate. Measurement considerations limit what we can measure not what we can discuss. Measurement problems do not justify excluding moral sentiments as a class. Much useful economic analysis does not require empirical measurement. As

¹⁸ Notice that as the users pay a smaller portion of the costs, the size of the existence value and therefore of the total surplus increases. The actual distribution of costs is important here in determining existence value and therefore total value.

¹⁹ Diamond and Hausman (1994, p. 55) suggest that it is inappropriate to include the welfare of both the user and the altruist, but no reason is given for this sentiment so I disregard this suggestion.

far as measurement goes, the distinction among individuals and among sentiments that needs to be drawn, both in law and in economics, is between values that are reasonably measurable and those that are not. By reasonably measurable I mean measured sufficiently for the purposes for which the measurement is made. Measurement issues always exist regardless of how broadly or narrowly welfare analysis is defined. Benefits and costs of all sorts are inherently subjective. We do not measure utility but rather WTP or WTA whether for material goods or moral sentiments. In the case of non-market goods, including moral sentiments, often we can measure the costs of substitutes as, for example, restoration costs in the case of environmental goods. Or we can measure the waste involved in compensation transfers as compared with alternative transfer means as bounds on moral sentiments. In measuring where we can, we are not dissimilar to that most empirical of policy institutions, the courts.²⁰ The decision to recognize that moral sentiments are not always measurable is consistent with the sorts of exclusions that are made in practice in both economics and in law.

What needs to be measured is not moral sentiments in many cases, but rather the costs of achieving the moral result by the most efficient means. Thus restoration costs or costs of alternative compensation can place an upper bound on the value of the moral sentiment. Thompson (2002), for example has shown that in natural resource damage cases, the courts are paying more attention to restoration costs than the contingent valuation results.

4.0 Advantages of Inclusion of Moral Sentiments

The advantage of including moral sentiments is that it tells us more about people's legitimate preferences and therefore improves the quality of policy based on such analyses. A simple metric is available to do this which is merely an extension of the traditional KH measure. In suggesting a particular aggregate criterion for normative evaluation I ask which normative measure is likely to be the most useful and acceptable.

²⁰ The courts have denied standing to sue in certain environmental cases in which moral sentiments were at issue and have disallowed claims for sentimental values. They have allowed such claims in other instances. Zerby [2002] suggests this distinction is due to costs of measurement.

This metric I call the KHZ criterion. A project will pass this criterion when (1) the sum of the WTP's for a change exceeds the sum of the absolute value of the WTA's. This assumes simply that (2) all values count, or more precisely all goods and sentiments for which there is either a WTP or a WTA are regarded as economic goods; (3) gains and losses are to be measured by the WTP and WTA, respectively, and from a psychological reference point that is determined largely by legal rights; and (4) transactions costs of operating within a set of rules are included in determining efficiency. The rationale for these assumptions may be found in Zerbe [2001]. Here I focus on the rationale for counting all values, that is for counting moral sentiments.

In what follows I provide examples dealing with (1) the general domination of KH by KHZ, (2) the assignment of legal entitlements, (3) the fact that projects with compensation are different from those without, and (4) the ethical problem of discounting the future.

4.1 An Aggregate Welfare Measure Dominates KH

The KHZ test dominates KH with respect to the PCT test in the sense that a move from KH to KHZ itself passes the PCT test. Clearly this is the case when society consists only of altruists and others and when altruism is non-paternalistic. Both groups will gain from a move to KHZ. There will be a net positive WTP to move from KH to KHZ as long as $\alpha > 1$ and waste is less than 100%. When this issue is considered for society at large N will be large and α will be greater than 1. *Thus a project to move from the status quo use of KH to the use of KHZ will itself pass the PCT.* The move from KH to KHZ may fail only when a third group—those offended by the gains of others—are included. In this case whether or not the move satisfies PCT becomes an empirical question.

4.1.2 KH Will Result in The Choice of Inferior Projects

Finally, it is easy to show that when moral sentiments are ignored, one may choose projects which pass the PCT, not counting moral sentiments, but whose NPVs are negative, counting moral sentiments. Further, one may choose a project with negative aggregate welfare effects over a project with a positive NPV that does not involve moral sentiments. Consider two projects. Call them A and B. Both cost \$140. A achieves ordinary benefits of \$149, B of \$150. One, A, involves no moral sentiments. The other, B, does. The altruists associated with B gain \$50 plus one-half of the gains to the users.

When moral sentiments are **ignored**, project B is superior with ordinary benefits of \$100 for the users and \$50 for the altruists and costs of \$140 for a net gain of \$10. The users will bear the entire costs. Project A has benefits of \$149 for a net gain of \$9. When moral sentiments are considered, however, B has a net loss of \$10. To choose B over A then is to choose a project that is inferior by the aggregate welfare standard. Moreover to include moral sentiments shows that there is a project superior to either A or B, project C, where the altruists bear the cost of project. For project C the benefits are \$200 and the net surplus is \$60.

Thus, to exclude moral sentiment leads to acceptance of an inferior project that offends moral sentiment. Moreover, to include moral sentiments makes it clear that the distribution of costs and benefits matters for welfare. To ignore moral sentiments is to ignore information that affects welfare.

4.1.3 The Example of Christmas Gift Giving

When moral sentiments (and transactions costs) are ignored inefficiency will be found where there is none. Joel Waldfogel (1993, p. 1328) argues that Christmas giving is inefficient: ". . .it is more likely that the gift will leave the recipient worse off than if she had made her own consumption choice with an equal amount of cash. In short gift giving is a potential source of deadweight loss." This inefficiency arises because ". . . gifts may be mismatched with the recipient's preferences." In reaching this conclusion, Waldfogel ignores sentimental value as well as the transactions costs of providing a better matching of preferences. A survey (Zerbe 2001) given to graduate students from two different departments at the University of Washington finds, however, that gifts can have sentimental value to the recipient; that they also can have sentimental value to the giver and that this value can raise the price the giver is willing to pay or the price at which the recipient is willing to sell. The survey finds that gifts of cash do not generally carry sentimental value so that giving cash destroys it and that gift certificates are less likely than non-cash gifts to carry sentimental value. On this basis, Zerbe (2001) finds that on the average Christmas gift giving creates more value than its price and the hypothesis that Christmas giving is (KHZ) efficient can not be rejected.

4.2 The Analysis Of Legal Entitlement

Consider the application of KHZ to the example of Ronald and Richard considered previously. Consider first the legal rights. Suppose that legal rights are clear and that Ronald legally owns the property so that Richard's claim is mistaken or fraudulent. An analysis built on legal rights will then conclude that the award of the property to Ronald is legally correct and is economically efficient. There will be neither gain nor loss except for transactions costs. The decision to reaffirm Ronald's legal right is worthwhile as long as the transactions costs are less than the \$120 value to Ronald. If no legal determination of rights occurs, the loss is \$120. Thus the decision to affirm Ronald's right is justified under the KHZ measure but is not under KH. When rights are unclear, the assignment of rights may satisfy efficiency but may not pass the PCT. However, to move to KHZ from any other decision criteria will itself pass the PCT just as the decision to move from KH to KHZ passes the PCT.

4.3 Compensation

4.3.1 Equity and the Criticisms of KH

No criticism of the KH criteria is more widespread than that they neglect distributional effects. The views of the former Solicitor General of the United States, Charles Fried [1978, p. 93f], are representative. He sees the economic analysis of rights as using a concept of efficiency that is removed from distributional questions. He holds that economic analysis does not consider whether the distribution is fair or just. He then concludes from this that the fact that a given outcome is efficient does not give it “any privileged claim to our approbation” [1978, p. 94]. The view that efficiency is unconcerned with distributional issues, or with fairness, is widespread in both law and economics [Zerbe, 1998b]. Thus adoption of an aggregate WTP-WTA criterion would obviate these conditions. Economists generally pay little attention to criticisms from outside the profession. Yet if acceptability of our criteria by those outside the profession is important these criticisms are another reason to include moral sentiments.

4.3.2 The Issue of Compensation

Under KHZ a project for which compensation is provided is not the same as one in which it is not. Compensation can reduce moral harm as long as the reduction in moral harm from compensation is greater than its costs. The optimum level of compensation will be provided by the marginal condition that it should continue as long as the marginal

reduction in moral harm is greater than its marginal costs. Compensation can arise from sentiments of justice rather than from the regard of particular people. Compensation may differ also in that the warm glow associated with altruism may decline smoothly to zero as transfers to others increase, but in the case of compensation associated with considerations of justice, the warm glow may cease abruptly after full compensation is made (Zerbe 2002).

4.3.3 When Compensation is Not Possible

Compensation may not be possible because (1) the amount of compensation cannot be reasonably determined, (2) the injury is not compensable, and (3) there is no method to provide compensation even if the amount is known. When compensation cannot be provided, the moral sentiments of others remain important. Thus in considering compensation of generations in the far future, it may be that no institutions can be devised with reasonable guarantees to provide compensation in the far future. In this case the moral harm from the project, which might be considerable, should be included as part of the benefit-cost analysis. Such inclusion would increase the benefit-cost case for mitigation. Colleagues suggest, for example, that the benefit-cost analyses of clean up of nuclear wastes at Hanford WA and Rocky Flats CO did not include such moral harm.²¹

In this case it is not the amount of compensation actually required for those injured that is directly relevant here. Rather, it is the amount of compensation the current generation thinks is correct. This information is likely obtainable at least in principle. (In the absence of good information about actual damage, however, people may have no opinion.) Even when compensation is not possible, it is generally possible through a contingent valuation survey to determine at least in principle the WTP or WTA of "others" who have moral sentiments about the project.

4.3.4 The Discount Rate Problem

In benefit-cost analysis, future benefits and costs are discounted using an interest rate termed the discount rate. There are a number of issues in considering the problem of

²¹ Conversation with Howard McCurdy of American University, Steve Tarlton of the Department of Public and Environmental Health, Colorado, Max Powers of the Department of Ecology of the State of Washington and Elaine Faustman of the University of Washington.

discounting, particularly when discounting beyond the lives of the decision makers [Ahearne, 2000]. Here I am concerned with only one, the widespread criticism of the use of discounting in benefit-cost analysis on the grounds that it is unethical to discount the predicted benefits and costs to be borne by future generations [e.g., Parfit 1992, 1994; Schultze et al 1981]. It is said that the utility of future generations should count equally with the utility of the present generation [Schultze et al. 1981; Pearce 1989]. For example, Parfit [1992, p. 86] argues that “the moral importance of future events does not decline at n % per year. . . .” This sort of criticism has been noted with favor by economists [e. g. Schultze et al 1981; Pearce et al 1989], lawyers [Plater et al. 1998, pp. 107-109], and philosophers [Parfit 1992, 1994]. Similarly Brown [1991] notes that “. . . discounting imperils the future by undervaluing it.”²²

Consider the following example of the sort of problem with which these critics are concerned:

A nuclear project is being considered that produces benefits of about \$65 billion at a cost of about \$30 billion but, in addition, produces a toxic time bomb that will cause enormous environmental costs sometime in the far future.²³ (We remove questions of uncertainty from this example). Suppose that current waste-disposal technology will contain this waste for 500 years after which it escapes its sarcophagus but will remain toxic for 10,000 years. The estimated cost of the future environmental damage in constant, year 2000 dollars will be about \$16 trillion, about the size of the current U. S. GDP. The present value of these damages discounted at a 3 % real social rate of time preference (SRTP), assuming the waste escapes at the first opportunity 500 years from now, is about \$6.1 million. This amount is not insignificant, but it is far far less than the damage that will occur in 500 years and far too small to affect the results of the benefit-cost

²² Shrader-Frechette has argued that both the decision and the process by which it is made require informed consent. This is not possible when decisions affect future generations. See Ahearne (2000).

²³ Cases in which this sort of issue has risen include *Baltimore Gas & Electric v. Natural Resources Defense Council, Inc.* 462 U.S. 87, (1983); *Pacific Gas and Electric Co et al. v. State Energy Resources Conservation and Development Commission*, 461 U.S. 190, (1991). See also 123 U. S. 45 (1999).

analysis. Discounting these damages then results in the project going forward as the benefits are determined to exceed the costs by almost \$35 billion.

It is said that this project would be unfair to future generations and on this basis it is argued that the use of discount rates is immoral.

A commonly proposed solution to the problem of unethical harm to future generations is to use low, or even negative, discount rates [e.g., Schultze et al. 1981] or not to use discount rates at all [Parfit 1994]. This sort of argument is, I believe, a moral plea about what our sentiments *should* be towards future generations, but not an effective statement about what or whether discount rates should be used. The proposed solution of using no or low discount rates is *ad hoc* and, if generally applied, will lead to other ethical problems – for example, the adoption of projects that give less benefit to both present and future generations.²⁴

This argument for unacceptability is not based on the preferences of future generations, which we cannot know exactly, but on our own preferences based on our empathy with future generations. Under KHZ we can give standing to moral sentiments about future generations as long as these can be reasonably measured. This allows a solution to the ethical dilemma of the discount rate problem that acknowledges ethical concerns as valid and seeks an ethical solution, while acknowledging the values that commend use of a discount rate. To use a discount rate below the rate at which people will trade off present for future consumption, i.e., a rate of time preference, will lead to economic inefficiency by justifying investment with insufficient returns. To use a rate that is too low attempts to cope with inequity by adjusting prices. The result is that an inequity appears to be an inefficiency.

²⁴ For example, consider two projects with initial costs of \$100. Project A has benefits of \$150 in the first period. Project B has benefits of \$150 in 100 years. With negative or sufficiently low discount rates project B is preferred. Project A however may result in greater wealth in 100 years so that it is superior both the current generation and the 100th year generation. One may object that these future benefits to the 100th year generation associated with project A that arise from reinvestment of proceeds need to be counted. This is not required, however, where the discount rate is equal to the growth rate and serves to show only the peculiar adjustments that would need to be used to get the best decisions with too low or negative discount rates.

The economic efficiency of the project will then depend on the sentiments of the present generation. For example, the present generation may feel that future generations should be free of problems caused by the current generation. Evidence from Kunreuther and Easterling [1992, p. 255] and from Svenson and Karlsson [1989] suggests that, at least as regards nuclear waste disposal, individuals tend to place a high weight on future consequences. On the other hand, the present generation may find that compensation for environmental harm is unwarranted, given their belief that future generations will be wealthier than the present one.

5.0. Do We Need the Potential Compensation Test?

The argument for dropping the PCT is first that it does no work for us. Its original justification was moral and scientific. The moral basis is that all are treated equally (assumption of equal marginal utility of income) so that society is thought to be free to turn any project that passes the PCT into one in which there are no losers. But if moral sentiments are ignored there can be uncompensable losers since total costs may exceed benefits. Even in the absence of moral sentiments actual compensation will be costly (thought uncounted) so that the social choice of no losers is not a possible choice. That is an approach that uses the PCT but ignores moral sentiments and transactions costs does not mean compensation is in fact possible.. More recently the moral basis for KH is said to be one in which all groups may gain over time as KH is applied broadly so that losers one period become larger winners in the next period (Zerbe, 1998). Yet this argument applies a fortiori to an aggregate measure such as KHZ.

The scientific basis for the PCT does not exist. It neither avoids interpersonal comparisons nor is required to maintain the useful assumption that the marginal utility of income is constant. In giving up KH for KHZ we are giving up a potential compensation measure for one that addresses equity effects directly. None of the other attributes of KH are lost. KHZ assumes an equal marginal utility of income. It gives information useful for deciding equity effects. It increases the chances that all groups will gain over time from its application by avoiding projects with very bad distributional effects and, in general, taking into account values ignored by KH. Something is gained, namely the choice of projects with a greater net benefit and the avoidance of inferior projects that inflict moral harm. So the second argument for dropping the PCT is that it causes harm.

6.0 Choices

Quiggin [1997, p. 152f] usefully suggests four possibilities to the difficulties he and others raise: (1) Discard moral sentiments and non-use values but maintain that benefit cost analysis furnishes a complete evaluation (2) adopt an aggregate WTP criteria replacing the usual distinction between equity and efficiency, (3) consider moral sentiments but only outside of benefit cost analysis (4) ignore concern for others in general but accept other forms of non-use value.

To choose among these four possibilities, I ask which choice makes benefit cost analysis the most useful and acceptable. On this basis, the first choice may be disregarded. To ignore moral sentiments while maintaining that nothing is missing is simply contrary to fact. Such a choice would subject benefit cost analysis and economists to further vilification from outside the profession, a breaking of ranks within it, and a decline in the acceptance of benefit cost analysis. The superiority of the second choice I have attempted to demonstrate here. The third and fourth solutions recognize what is necessarily true in practice, that benefit cost analysis is inherently partial, as Quiggin notes. The standard for its application should note, what will inevitably be true in practice, that the benefit-cost analysis is itself not the decision but rather provides information relevant to the decision [Zerbe and Dively 1994], [Lesser and Zerbe 1998]

Why should we ignore moral sentiments in benefit cost analysis? No persuasive reason for ignoring them has been advanced except that, as with all measurement issues, the costs of measurement limits their extent. I have shown that there are examples in which their inclusion will improve the quality of analysis. I know of not a single example in which their exclusion produces a superior analysis, that is, a suggested action that is more likely to make people better off than with the inclusion of moral sentiments. Until this can be shown I maintain that the standard should be to include moral sentiments.

The assumption by KH of an equal value for the marginal utility of money for all was made to allow British economists of the 1930s to make normative suggestions about the repeal of the Corn Laws. The decision to abandon the potential Pareto criterion is equally justified today for a similar reason. Perhaps we can fashion agreement to

recognize two forms of benefit-cost analyses. One form would be analyses based on KH and the PCT, which ignores moral values and particularly those that involve altruism, and the other, such as KHZ would be based on an aggregate WTP-WTA test that recognizes moral values. In practice, since moral values may be too costly to measure in many cases, these approaches often will yield similar results but not always. As this paper shows, results will improve using the aggregate WTP-WTA approach in important cases.

7.0 Conclusion

This paper has demonstrated that there is value added in including moral sentiments in economic analysis and that the objections that have been raised to it are not persuasive. The exception is that such inclusion is limited by the difficulty of measurement. This is true of any values.

In the long run, it seems likely that an aggregate measure that includes moral sentiments will be adopted in response at least to outside pressures either in addition to or as a substitute to KH. As a practical matter, it is not efficient for benefit-cost analysis to consider all relevant goods and affected individuals, so any analysis will fail to meet the requirements of theoretical perfection, whether for KH or KHZ. Yet, in performing practical analysis it is always desirable to have the better theoretical template in mind so that decisions about practice can be well considered and not ad hoc. My purpose has been to contribute to this template.

References

- Ahearne, John F. (2000). "Intergenerational Issues Regarding Nuclear Power, Nuclear Waste, and Nuclear Weapons." *Risk Analysis* 20 No 6.
- Baker, Edwin C. (1980). "Starting Points in the Economic Analysis of Law." *Hofstra Law Review* 8: 939.
- Boadway, Robin W. and Neil Bruce (1984). *Welfare Economics*. New York: Basil Blackwell
- Brown, Peter (1991). *Greenhouse Economics: Think Before You Count: A Report from the Institute for Philosophy & Public Policy*. Volume 11.
- Diamond P. A. and J. Hausman, (1993). "On contingent Valuation Measurement of Nonuse Values" in Hausman, Jerry A. (ed.) *Contingent valuation: A critical assessment. Contributions to Economic Analysis*, Amsterdam; London and Tokyo: North-Holland; distributed in the U.S. and Canada by Elsevier Science, New York, 220: 417-35.
- Diamond and Hausmann, (1994). "Contingent Valuation: Is Some Number Better Than No Number" *Journal of Economic Perspectives* 8(4).
- Dworkin, Ronald (1980). "Is Wealth a Value?" *Journal of Legal Studies* 9: 191.
- Dworkin, Ronald (1986). *Law's Empire*. Cambridge: Belknap Press.
- Fried, Charles (1978). *Right and Wrong*. Cambridge MA: Harvard University Press.
- Hammond, Peter (1985). "Welfare Economics in George Fiewel (ed.) *Issues in Contemporary Microeconomics and Welfare*. New York: Macmillan.
- Harberger, Arnold, (1978). "On the Use of Distributional Weights in Social Cost-Benefit Analysis." *Journal of Political Economy* 86, 635.
- Johansson, Per-Olov, 1992. "Altruism in Cost-Benefit Analysis", *Environmental and Resource Economics* 2 605-613.
- Kaldor, Nicholas (1939). "Welfare Propositions In Economics and Inter-Personal Comparisons Of Utility." *Economic Journal* 49: 549.
- Kunreuther, Howard and Douglas Easterling (1992). "Are Risk-Benefit Tradeoffs Possible In Siting Hazardous Facilities?" *American Economic Review* 80(2): 252-256.
- Lesser, Jonathan and Richard Zerbe. 1998. "A Practitioner's Guide to Benefit Cost Analysis" in *The Handbook of d Public Finance* (ed. by Frederick Thompson and Mark Green). New York: Marcel Dekker,
- McConnell, K. E. (1997). "Does Altruism Undermine Existence Value? *Journal of Environmental Economics and Management* 32: 22-37.
- Milgrom, Paul, (1993). "Is Sympathy an Economic Value? Philosophy, Economics, and the Contingent Valuation Method," in Hausman, Jerry A. (ed.) *Contingent valuation: A critical assessment. Contributions to Economic Analysis* Amsterdam; London and Tokyo: North-Holland; distributed in the U.S. and Canada by Elsevier Science, New York, 220: 417-35.
- Mishan, Ezra J. (1981). *Introduction to Normative Economics*. New York: Oxford University Press.
- Parfit, Derek. (1992). "An Attack On The Social Discount Rate" in *Values and Public Policy* edited by Claudia Mills. Fort Worth: Harcourt Brace Javanovich.
- Parfit, Derek. (1994). "The Social Discount Rate" in *Politics Of The Environment* edited by R. E. Goodwin. Aldershot: Edward Elgar.
- Pearce, David, A. Markandya and E. Barbier, (1989). *Blueprint for a Green Economy*. Earthscan Publications: London.

- Plater, Zgymunt, J. B. Robert, H. Abrams, W. Goldfarb and R. L. Graham (1998). *Environmental Law and Policy: Nature, Law, and Society*. St. Paul: West Publishing Co.
- Posner, Richard (1981). *The Economics of Justice*. Cambridge, MA: Harvard University Press.
- Quiggin, J. (1997). "Altruism and Benefit-Cost Analysis." *Australian Economics Papers* 36: 144-155.
- Robbins, Lionel, (1932). *An Essay on the Nature and Significance of Economic Science*. London: Macmillan
- Robbins, Lionel (1938) "Interpersonal Comparisons of Utility: a Comment." *Economic Journal* 48: 635af
- Schultze, William D. D. S. Brookshire and T. Sandler. (1981). "The Social Rate of Discount For Nuclear Waste Storage: Economics of Ethics." *Natural Resources Journal* 21: 811-832.
- Smart, John C. and Bernard Williams (1973). *Utilitarianism – For and Against*. Cambridge: Cambridge University Press.
- Svenson, Ola and G. Karlsson (1989). "Decision Making, Time Horizons, and Risk in the Very Long Run Perspective" *Risk Analysis* 9: 385-398.
- Thompson, Dale. 2002. "Valuing the Environment: Courts' Struggles with Natural resource Damages", *Environmental Law* 32, (1)
- Waldfoegel, Joel, "The Deadweight Loss of Christmas", *American Economic Review*, December 1993 83(5) pp. 1328-36.
- Winter, S.G. (1969). "A simple remark on the second optimality theorem of welfare economics." *Journal of Economic Theory* 1: 99-103.
- Zerbe, Richard O., Jr. (1991). "Comment: Does Benefit-cost Analysis Stand Alone? Rights and Standing." *Journal of Policy Analysis and Management* 10(1): 96-105.
- Zerbe, Richard O., Jr. (1998a). "An Integration of Equity and Efficiency." *Washington Law Review* 73 (April): 349-361.
- Zerbe, Richard O., Jr. (1998b). "Is Cost-Benefit Analysis Legal? Three Rules." *Journal of Policy Analysis and Management* 17(3): 419-456.
- Zerbe, Richard O. Jr. (2001). *Efficiency in Law and Economics*. Aldershot England: Edward Elgar.
- Zerbe, Richard O. Jr. (2002). "Can Law and Economics Stand the Purchase of Moral Satisfaction?" forthcoming in *Research in Law and Economics* Volume 20.
- Zerbe, Richard O. Jr. and Dwight Dively. 1994. *Benefit-Cost Analysis in Theory and Practice*, New York: Harper Collins
- Zerbe, Richard O. Jr. and Sunny Knott, (2002). "Economic Efficiency and Equity in the Merger of Superior Propane with ICG Propane: A Case Study". *Research in Law and Economics* 20.