Decisions vs. Willingness-to-Pay in Social Choice

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ABSTRACT

The paper compares use of willingness to pay values with multi-attribute utility as ways of modelling social choice problems in the environment. A number of reasons for moving away from willingness to pay are reviewed. The view proposed is that social choice is about the integration of competing claim types (utilities, rights, social contracts and beliefs about due process). However, willingness to pay is only indirectly related to the first of these and assumes an Arrovian approach, namely one in which social choice is regarded as the aggregation of people's preferences.

KEYWORDS

Willingness to pay, applied social choice, multi-attribute utility theory, environmental decision making, capability rights

I. INTRODUCTION

Environmental decision problems exhibit, often at once, three features that make decision-making non-trivial. In no particular order, these are: uncertainty, multiple criteria and strategic conflict. Normatively desirable and supported environmental policy decisions need to be robust with respect to all three features but here I want to concentrate on issues that bear on the second of these. My target is the value to policy analysts of contingent valuation and I shall devote most of the space available to what I believe are some relevant foundational issues.[2]

Within the environmental and health literatures, contingent valuation has been used and criticised extensively: used because willingness-to-pay (WTP) values give us a measure of value, and criticised because the values are often elicited from responses to *hypothetical* valuation problems. A question that arises is whether we really need to have willingness-to-pay values that are exactly correct? If policy analysis were a matter of just getting the numbers right,

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then the answer might be yes, but this is clearly not the case. Even the analytical part of public policy making is fashioned by the links to particular disciplines and the mechanisms for using the techniques those disciplines promote. WTP values are only a means to this end, even if the literature sometimes accords a different status, and their instrumental value depends, largely, on the extensive institutional use of cost-benefit analysis (CBA) by central governments throughout the world. However, there are alternatives to CBA, like multi-attribute utility theory (MAUT), and in some cases they might place less institutional 'baggage' in the way of good decision-making.

MAUT provides an equally useable framework for making decisions, as it can be employed in all situations where cost-benefit analysis is used. Things that matter to people are translated into utilities (not always easy) but there is no attempt to put everything of value into a framework that operates in financial terms. Where financial values exist, they can be translated into utilities, and this may be a more acceptable translation, than the other way round.[3] The way in which MAUT is conceptualised and framed is such that it dispenses with the need for accurate financial measures of value, and puts centre-stage the idea that deliberative actors usually want to take a good course of action. Money values are salient (as we have seen in work on the economic valuation of life) but decisions are fundamental.

How should we ground *environmental* decisions? My argument is that such decisions are social choices and that we need to have an account that goes beyond the classical framework in which social choice concerns only conflicts between *preference* rankings. Rather, I suggest that a complementary, phenomenon-oriented framework for social choice would reflect the idea that social planning often involves the integration of four competing and canonical claim types. These claims are, roughly: rights (and duties), consequences, contracts (and social contracts), and views about due process. I call this a phenomenon-oriented framework, in contrast to the view that social choice is just about the aggregation of preferences, which has a self-conscious element of convention about it.

This proposal is one which has been developed in the context of health-care rationing problems elsewhere (Anand 1999; Anand and Wailoo 2000). The work emerged out of an attempt to apply Sen's (1985) theory of capability rights to health-care rationing and it suggests that the integration between functionings and freedoms that lies at the heart of Sen's theory can be expanded to include other morally valid claims on social choice, like social contracts and responsibilities. It is not clear that the axiomatic method is going to be the most appropriate for handling such a conceptualisation of social choice problems. For instance, it is possible to show that some of these issues can be formalised within a non-linear (and essentially multi-variate) programming framework. A second feature of the position advocated here is that whilst good decisions must take account both of the preferences that people have, and in some cases, should have,

preferences have a rather different structure than that exposed up to now in the (decision-theoretic) formalisations of rational choice theory. If people don't have, and rational agents needn't have, certain kinds of preferences, then the notion of valuation as a measure of *preference* may itself be flawed. Different conceptions of rational preference at the individual level have profound implications for how we model and conduct environmental social choices. There is a sense in which the literature of WTP and its adequacy as a measure of preference progresses without stopping to consider whether the object of measurement actually exists.

II. DECISION-THEORETIC REASONS AGAINST WILLINGNESS-TO-PAY

WTP estimates are central to environmental policy debate because they play a central role in CBA. However, there is a growing distaste for WTP values derived from answers to hypothetical questions, and though these objections can take on a certain ideological character, there is also careful experimental evidence which shows how responses to hypothetical questions make very little sense, where sense is defined by the lights of classical decision theory (see, for instance, some particularly interesting experiments by Covey et al. (1998)).

But classical decision theory, defined in Wittgensteinian terms of what one can *do* with or get from the axioms of subjective expected utility theory (SEU), has been the subject of a complete revision over the past 25 years (Machina 1989; Anand 1993). In a rather brutal but hopefully faithful nutshell the results of that re-evaluation are as follows. First, representation and uniqueness theorems that dispense with completeness, transitivity and independence are widespread. This means it is possible to demonstrate formally that behaviour which violates these assumptions is the result of utility maximisation, where utility is defined in a way that is less restrictive than SEU allows. Decision theorists work with these generalisations (for instance see Fishburn 1988), and we are now beginning to see their application in practical settings also. Mathematically, there is little question that the action has moved on from SEU and all its variants.

This suggests a choice relating to the second issue, which is where to locate the concept of rationality. SEU ties everything up together, and in fairness to it rather neatly, but the post-SEU literature forces on us a choice. If one thinks that utility maximisation is rational, then one has to dispense with SEU and its axioms because there are more general models of utility maximisation than SEU. In general, and possibly without exception, economics in the long run prefers more general models. The alternative approach is to continue saying that the assumptions of completeness, transitivity and independence specify what it is rational for people to do, in which case not all forms of utility maximisation are rational.

There is a temptation on the part of users of SEU[4] to want to hang on, somehow, to both, but most philosophers have, like their mathematical colleagues, moved on also.

A third interpretation of decision theory is the role it plays in science as a behavioural theory. There are two strands of experimental literature – one dealing with axioms and the other with more naturalistic and/or cognitive choice behaviour phenomena. Neither strand supports the view that the structural features of preference that SEU picks out is correct, or that tSEU identifies all the structure that preference has. My view that WTP is of limited use depends on the belief that classical decision theory is the wrong framework to use, even if WTP values were consistent with it. Here I want to illustrate the claim by discussing failures of two assumptions, completeness and transitivity, that are required by most versions of expected utility.

Assigning hypothetical or actual WTP values to (environmental) options encourages a sense that the completeness axiom holds. Some people do seem to be able to roll out a ready-made preference for every occasion but they are the exception rather than the rule and in general I would venture they are not exceptions that cause one to think the axiom a good one. Aumann (1962) accepts that completeness holds little normative appeal.

Why are preferences so radically incomplete?[5] I suggest that part of the answer can be found in basic premises of evolutionary psychology and game theory – for many purposes optimising actors don't need complete preferences because there are other ways of arriving at successful behaviours. This perspective is consistent with Hume's but is capable of going beyond it: reason may be the slave of the passions but only when there are any (relevant) passions. What's missing in this much quoted phrase is that preferences or passions are, in humans, not just existential facts but can reflect the construction of attitudes that contain elements which are reason-based. Preferences often don't exist until we find we need to build them. That I don't much care for email as a method of communication is not a fact immune from further analysis, even if my admiration of Bach is. For groups, the argument would seem to be even stronger: societies in which everyone had complete rankings over options would quickly either seize up in a gridlock of endless negotiation or, if the preferences were sufficiently intense, live on the constant brink of civil war. Incompleteness, not its opposite, is fundamental to any general story about social choice.

A second issue concerns transitivity, the assumption that if Pab and Pbc then Pac where P is the preference relation and a, b, c are choice options. That transitivity of preference should be linked with rational choice is an entirely twentieth century idea, but this novelty did not prevent the claim coming to take canonical status during the period spanning the late 1950s up to the early 1980s. The way in which WTP is applied suggests that options have *a* value, and only

one value: evaluation of options by comparison of WTP values imposes transitivity on the preference structure. Is this any more correct than the imposition of completeness – even for rational agents? Whatever one would like to say, it turns out that none of the arguments used to defend the claim that rational agents must have transitive preferences are logically valid. Tullock's (1964) proposal ends up confounding binary and ternary relations – not a matter of concern to some economists perhaps, but a mistake in elementary first order logic nonetheless. A second idea, to be found in Davidson (1980), which holds that transitivity is embedded constitutionally in our notion of preference because preference is like measuring lengths, is open to challenge by proposing other analogies – pairwise competition for example – which are just as plausible but do not lead to transitive results. The money pump argument, thought to be the strongest, turns out to depend on the elicitation of pairwise preferences in various choices and subsequent application to a set of choices, for which they may not be appropriate. There are no logically successful defences of the claim that rational agents must have transitive preferences and there is no reason why a normative analysis must produce transitive rankings.

Why should rational agents be *intransitive*? I have no answer for this question because it is not one that should be answered, not at least if we believe that Humean permissiveness is correct. If we really believe in the importance of subjectivity when it comes to preferences, then we should also accept that there are preferences for which no reason can or need be given. The question could be modified by replacing 'should' with 'might' in which case the possibility of giving a response becomes much more interesting. Suppose, for example, we construct all the subsets containing two elements from the set {large apple, orange, small apple}. A person might easily choose the orange when the small apple is the alternative, the large apple when the orange is the alternative and yet, for politeness sake, select a small apple in preference to a large one. Defenders of SEU often respond to such examples by pointing out that context matters here and should, therefore, be incorporated into the description of the options – see for example Savage (1954) and his requirement that option descriptions be materially complete. But how do we know *when* the context should be part of the description? For some people and in some environments context will matter, in others it will not. We have no way of telling in advance – SEU gives us no method at least. Typically, where issues of meaning are involved it matters (Douglas and Isherwood 1980); to say that someone is fasting implies that s/he had the option of eating, as Sen has pointed out. It is perfectly possible to say that, for any apparent violation of transitivity, we need to describe the choice options more carefully. We can always do this and avoid falsification but we avoid falsifiability (which matters to Popperians) and more important we avoid regulation (of wayward, irrational behaviours (which matters to proponents of SEU).

III. WHAT SHOULD BE CENTRAL: SOCIAL CHOICE AS THE INTEGRATION OF CLAIM TYPES

When making social choices in general, and those concerning the environment or environment related goods and services in particular, I want to argue that the preference based conception of social choice is not sufficient to capture many of the conflicts that make social choosing difficult. I want to suggest that there are four criteria – claim types – which matter in social choice problems concerning health, and here I want to suggest that because they are quite general, they can be applied to environmental decision-making. I shall say something first about the claim types themselves. Elsewhere (Anand 1999) I indicate how their integration can be modelled using the framework provided by non-linear programming.

Harvard philosopher Kristine Korsgaard's summary of the twentieth century as the swansong of utilitarianism seemed right when she wrote it. As a personal doctrine, the view makes demands on an agent's integrity that would test a saint. And as a basis for public policy, it promotes total good regardless of the very distributive concerns that are a predominant motive for state intervention. On reflection, however, there might seem to be an element of throwing the consequentialist baby out with the muddy, utilitarian, bath-water in this. Why do people have rights? Maybe there are non-instrumental reasons and perhaps this is part of what being (human) is about, but often people want rights so that they can choose to do things or bring states of affairs about that are valuable.

Since 1970, there have been three novel and influential accounts of the social choice problem, and though they originate from quite different provenances, all make space for generous helpings of consequentialism. Rawls' (1971) Theory of Justice begins with a notion of fair *process* but actually concludes by advocating a consequentialist (mini-max) distribution of primary goods. Sen's theory of capability rights emphasises the importance of capabilities but stresses that these are freedoms to do things, or bring things about, that are valuable. And Etzioni's sociological advocacy of communitarianism emphasises duties and responsibilities as ways of bringing about the outcomes that are valued by a community. All the evidence strongly suggests that any replacement for utilitarianism will give consequences an important role, partly because consequences matter, partly because deontological claims refer extensively to consequences in their description and partly because of interactions between the consequential and deontological claims identified by positive theories of freedom.[6]

Does this not contradict the claim in the previous section that neo-classical preferences should be down-graded with respect to their role in the social choice procedure? It seems useful to disentangle the normative and politico-historical issues from those of formulation. Nozick discusses the formulation of rights but it is Scanlon's comment that I think is most telling: we could probably formulate rights as consequences but it is easier to think of them as something (slightly)

apart – as trumps, if one follows Dworkin. This doesn't commit us to anything but it might make talking about questions of structure easier. Although Bentham was notoriously opposed to rights in favour of utilities, there is a political sense in which both units of moral currency are used to buy similar interventions. The alternative in the background to Bentham's argument was rule by the King, so, politically, Bentham's was an argument for an egalitarian distribution of influence on the determination of entitlements. When one looks at the use of rights language in the American legal system, certainly since the 1960s, it often appears that individuals are being protected from the power of large organisations (in both public and private sectors). In contemporary North American legal and policy debate, rights have served ends that are materially similar to those Bentham advocated. None of this requires one to admit that it is easiest to talk about the relevant social choice structures in utility or rights terms, instead of both.

From a contractual approach, the curious feature about Rawls' Theory of Justice is the centrality played by a *counterfactual* social contracting process. In many social settings, entitlements are won or lost as a result of some actual social contract that is made between a population and their representatives: society seems to be driven by these actual contracts and it is not clear that this should not be so. I think we should take actual social contracts as valid claims to entitlements for a number of reasons, though we should also recognise limitations to the contracts that are made. In general, social contracts derive their moral validity from two sources: general notions of promise making and social views about equity. Real institutions tend to ground supportability for their actions in both, though philosophically this might seem peculiar as they derive from quite different, and in some cases antagonistic, traditions. Actual social contracting could be just a special case of contracting in which the population is party to the agreement. This is a Nozickian line of support, though clearly there are always some people who feel co-erced by any social agreement however fair the process by which it was reached, so there must be doubts about the scope for any Nozickian foundations.

Putting these foundational issues to one side, we must accept that social contracting, the making of conditional promises by political candidates to those who they hope will elect them, is an important feature of most capitalist economies. Even though professionals are often sceptical, and the young said to be disaffected with politicians, we allow political actors to make promises which we demand them to keep (even if we think this is not what they will do). Social contracting is an important and flawed part of the social choice process. And like any promises, the terms of the bargain need to be kept by both sides unless there are very good reasons for doing otherwise. Within the UK, some people who have reached retirement age believe the social contract between them and the state concerning the provision of universal health-care is being breached. The phrase that they recall, 'from cradle to grave', is part of the reason why they paid

their taxes for the past 40 years and yet residential care, which is an expensive form of health-care, is not financed by the State unless people have exhausted all but most of their life savings, or are in particular 'medical' need.

Clearly social contracts must be open to change and they are difficult to enforce. Not only can they be vague, but they are usually made with the body that might be the source of enforcement. However, neither of these are reasons to think that such contracts can be waived when inconvenient.

But social contracts can be overturned, particularly when the bargains happen to violate rights. In environmental problems, these rights could attach to individuals or groups and often attach to both at the same time. With rights go duties, though the link is possibly weaker than in areas of personal and social morality: we might see many duties to the environment as being in direct conflict with any entitlements that agents were accustomed to. Even though Etzioni has proposed a 10 year moratorium on the creation of new rights in North America, the evidence from regulatory legislation around the world suggests that corporate duties are alive and well. These agent relativities are important sources of duty and can serve to undercut completely the value of consequences as a moral claim.

Finally, I want to mention what I have come to describe as process norms. Economists recognise that suitable processes can help make fair social choices when an efficient outcome does not exist. The allocation of scarce health-care between patients using some randomising procedure is an example, though it has to be said, economic discussions of process fairness are not nearly as extensive as those relating to distributive fairness. Nonetheless, we clearly live in a time when scientists, policy-makers, and some social scientists are beginning to accept that what counts as an acceptable due process is beginning to change. The rising influence of economic experts in areas like the environment and health comes at a time when societies around the world are also revising the relative weights they ascribe to expert opinion *vis à vis* public deliberation. And perhaps the use of the phrase relative weight is too crude to describe adequately the changes that are taking place – for it is not as if we are just giving more say to voters and less to experts. Rather the relationship between experts and an expanding set of stakeholders is changing so that the way in which they interact with voters is changing. Natural scientists, particularly those that have a high media profile, are now accustomed to the fact that science fashions and is fashioned by political media and public involvement, in a way that economists and economic theory is not. One can even point to examples where the failure to take a more political or behavioural approach has led to policy advice and analysis that was completely derailed by experience (analyses of taxation and health-care reform provide good examples).

The literatures that appear to shed most light at present on questions of process are those concerning philosophy and law and the social psychology of procedural justice (developed by Lind and Tyler 1988). Processes often appear

to be designed to bring about good outcomes and yet they frequently take priority over outcomes in social interactions. Furthermore, violations of due process can produce emotional responses that often appear disproportionate to the material harm done and there may be good evolutionary psychology/game theoretic reasons why this is so. Animals that are hard-wired to punish process norm violations, regardless of costs, belong to groups in which enforcement is credible and in which there are, therefore, incentives for the development of rule based social choice. I suggest that whilst the content of these process norms can vary radically over time and across cultures, the ability to recognise and accept process norms as a way of making social choices is much more universal and must be recognised as such, if social choices are to be supported by affected stakeholders.

Social choice, especially in the environmental area, is becoming a matter for negotiation and many, if not most games are indeterminate (even if game theory has focused on the tiny fraction of games that have analytical solutions). My argument is that all four of these claim types will, and should, be taken into account when making environmental decisions though the relative weights attached to each are analytically (but not sociologically) indeterminate.

Does this necessitate a flight from analysis? The conventional wisdom is that it does – that academic analysis focus drives in a different direction towards the synthetic skills that policy-makers require. (John Ashworth, formerly a social psychologists before becoming head of the London School of Economics and the British Library, has made such a point in his reflections on the differences between life and academia.) Having had some experience of policy analysis in central government, I increasingly come to the view that Ashworth's perspective is not just right, but provides clues for a whole new area of work in which the problem of synthesis, not the statement of conflict, is centre stage. If one cares to think about formalisation, then there certainly are mathematical tools that will help us sharpen up, if not completely describe, our understanding of the issues. The formulation below was developed for an application of this synthetic approach to the allocation of health-care to different groups.

$$\begin{aligned} &\textit{Max } s \text{ (C, SC, AR, PN)} \\ &\quad \text{st } n_g \geq 0 \ \forall \text{g}, \\ &\quad \sum_g c \leq B \text{ and} \\ &\quad f(n_1,.....n_g) \leq l. \end{aligned}$$

It is a general formulation of social welfare function, s, maximisation where *s* depends on consequences, C, social contracts, SC, agent relativities, AR, and process norms, PN, and is subject to a budget constraint B, and a constraint

relating the payoffs, *n*, of up to *g* groups, reflecting distributive considerations. Even from this simple, but quite general programming formulation, it is apparent that modelling synthesis is possible and, for problems where stakeholders compete for influence over the decision with different kinds of claims, desirable if not essential: hypothetical WTP values barely reflects any of this.

IV. SUMMARY

WTP measures are most valuable in the situations when they are least valid in the following sense. The need for measures of value to fill gaps left by non-existent markets is greatest in just the situations in which we can least expect to rely on responses to hypothetical questions. Second, the WTP approach is embedded in a concept of preference that is sometimes useful but not always correct, even for cognitively unconstrained rational agents. Given the importance that preferences play in economics it is difficult to underestimate the value of a general theory of preference, or the intellectual costs arising from its absence. Assigning WTP values imposes transitivity but I have shown that this is no longer a costless choice even for those who want to base analysis on the assumption of rationality. If one wants to assume utility maximisation, then in general, it is not formally acceptable (necessary) to assume transitivity. So the application of the WTP framework, cannot be equated with the maximisation assumption – a serious drawback for those who want to work within the rational choice framework. Third, *social* choices deserve modelling as such: individual preferences will in general be relevant though decisions make on behalf of a citizenry are not the same as those made by the market. The relations between beneficiaries, providers and other stakeholders including the State are quite different in the two cases. To equate social and individual choice either misspecifies the decision problem or uses the wrong preferences to solve it.

Ultimately, it is the relationships between actors and the environment that are of consequence to both. Making reasonable decisions is an important part of this process but the more one examines the foundations of WTP values, the less plausible it is they should play the role in academic or policy debate that they do. Much environmental decision-making, like social choice in other areas, is a matter of integrating competing claim types.

NOTES

[1] The author is particularly grateful to Alan Holland, John O'Neil and participants at the Ambleside workshop for comments on this and related ideas.

[2] An excoriating attack on WTP in practice can be found in Hausman (1993). The tone almost overwhelms an appropriate caution about hypothetical valuations. However,

Hausman doesn't come up with a constructive alternative – rather, he repeats his view that academic economics should have nothing to do with responses to hypothetical questions in general and in environmental applications particularly.

[3] Some people have problems with any sort of translation that involves what educationalists now call the application of number. This is another issue, though it relates to topics that are touched on at various points in the paper.

[4] Many psychologists, though hardly consumers of SEU in the way that many practicising economists are, also hold that SEU is a theory of rational choice because it accords with a desire to say human beings are not completely rational and that their violations of SEU's assumptions constitute evidence for this.

[5] Any discussion about preferences has to deal with the complication of behaviouralism in economics. The economics literature espouses behaviourism in two senses. Epistemological behaviourism, as reflected in theories such as revealed preference, suggests that hypothetical answers to WTP values as well as econometric estimates suffer from problems that reflect a common cause. For many decisions, particular those that are made irregularly or on a one-off basis, people do not have anything like the preferences that SEU assumes: not everything can be ranked, and not everything can be traded off. If what ultimately matters is that society should take the right actions using acceptable deliberative means to reach them, then it is not obvious that placing more emphasis on the measurement of something regardless of its existential status is going to be very helpful.

[6] I am very grateful to an anonymous referee for pointing out an undesired consequence of an earlier formation of this point.

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