

Is Economics the Wrong Language for Addressing Climate Policy?*

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I. Introduction.

Even though the policy debate on climate has been couched largely in economic terms, economic arguments have not been sufficient to bring forth a consensus. The Kyoto Protocol continues to divide the United States and the EU, and there is no general agreement on vital questions such as the urgency of action to reduce emissions, how to finance the necessary investments, a formula for North-South burden-sharing, or the governance structure for a global regulatory regime.¹ If anything, economic logic has tended to emphasize obstacles to effective global action – free riding, disparities in “willingness to pay” to avoid harms, and the discounting of consequences for future generations. Although a great deal of research effort has been expended on large-scale modeling (the closest thing in economics to “big science” particle physics or astronomy), the results to date have not bridged the gaps between those favoring immediate action, those who want to wait for better information and new technologies, and those who are skeptical of the need for any action at all. It has been known for a long time that the climate externality is global in scope, that the problem spans time scales on the order of centuries, and that continued exponential growth in the emission of carbon to the atmosphere is unsustainable, but it has not been easy to get beyond these almost self-evident facts to any kind of widely agreed-upon regulatory approach.

In the United States, climate is an important feature of the current domestic political landscape, but the difficulties this issue poses run deeper than simple partisan differences. As miserable as the record of the Bush Administration has been on climate, the actions (as opposed to the rhetoric) of the Clinton Administration were hardly any better. There is plenty of blame to go around: in 1997, before Kyoto, the U.S. Senate passed the bipartisan Byrd-Hagel Resolution without a dissenting vote.² Former

¹ The recent (July 2005) G8 summit’s statement on climate change acknowledged that “increased need and use of energy from fossil fuels, and other human activities, contribute in large part to increases in greenhouse gases associated with the warming of our Earth’s surface. While uncertainties remain in our understanding of climate science, we know enough to act now to put ourselves on a path to slow and, as the science justifies, stop and then reverse the growth of greenhouse gases.” However, the Plan of Action adopted at the summit, while containing words of encouragement for energy efficiency, renewables, carbon sequestration, and technology transfer, does not contain any mandatory emissions limitations or new funding (G8 Gleneagles 2005a, 2005b). Fundamental disagreement persists between the U.S. and the EU over strategies to limit carbon emissions.

² The Byrd-Hagel “sense of the Senate” resolved that:

...the United States should not be a signatory to any protocol to, or other agreement regarding, the United Nations Framework Convention on Climate Change of 1992, at negotiations in Kyoto in December 1997, or thereafter, which would--

(A) mandate new commitments to limit or reduce greenhouse gas emissions for the Annex I Parties, unless the protocol or other agreement also mandates new specific scheduled commitments to limit or reduce greenhouse gas emissions for Developing Country Parties within the same compliance period, or

President Clinton never submitted Kyoto to the Senate (which would have required that his Administration fight for it). It was the Clinton Administration that complicated the pre- and post-Kyoto negotiations with haggling over the various “flexibility mechanisms.” Presidential candidate Gore kept the climate issue out of the 2000 election campaign, a strategic mistake that probably accounted for his defeat because it emboldened third-party Nader voters.³ The Clinton Administration suppressed for nearly a year the second “5-lab study”⁴ demonstrating the range of no-regrets policy options that could have brought the United States more than halfway to its Kyoto target, because the findings of that study undermined the negotiating position that the United States had adopted before and during the November 2000 COP meeting in The Hague.⁵ The

(B) would result in serious harm to the economy of the United States....(National Center for Public Policy Research 2005).

The sentiments animating the Byrd-Hagel resolution live on in the U.S. Congress to the present day. In the course of debate on the recently passed energy bill, the Senate passed by voice vote (after a motion to table by Senator Inhofe failed 43-54) a Sense of the Senate Resolution stating:

It is the sense of the Senate that Congress should enact a comprehensive and effective national program of mandatory, market-based limits and incentives on emissions of greenhouse gases that slow, stop, and reverse the growth of such emissions at a rate and in a manner that: (1) will not significantly harm the United States economy; and (2) will encourage comparable action by other nations that are major trading partners and key contributors to global emissions (Danish et al. 2005).

The preoccupation with harm to the U.S. economy and action by other countries echoes Byrd-Hagel, although the call for mandatory limits on emissions is progress.

³ The official margin of victory of George Bush over Al Gore in Florida in the 2000 election was 537 votes; Green Party candidate Ralph Nader’s Florida vote total was 97,488. In New Hampshire, the Nader vote was more than three times Bush’s margin over Gore (Federal Election Commission 2001). Either of those states going to Gore would have changed the outcome of the national presidential election.

⁴ Five of the Energy Department’s national laboratories (Oak Ridge National Laboratory, Lawrence Berkeley National Laboratory, National Renewable Energy Laboratory, Argonne National Laboratory, and Pacific Northwest National Laboratory) contributed to two major studies, the first published in 1997, the second published in 2000 (Interlaboratory Working Group 1997; 2000). I was an outside reviewer of both studies, and was co-author of an Appendix E to the second study estimating macroeconomic effects. A revised version of this Appendix was published by *Energy Policy* (Sanstad et al. 2001). Clinton Administration economists raised numerous objections to the methodology and conclusions of the second 5-lab study. Drafts of Appendix E were criticized on the grounds that regression analyses of the results of the various models participating in the Energy Modeling Forum were inappropriate because the data points were the whole population of model runs and not just a sample. At one point, an Administration economist argued that a regression required on theoretical grounds to pass through the origin (a carbon tax of zero would result in no change in GDP from business as usual) could not produce valid statistical results because it contained no constant term! The delays caused by these artificial objections prevented the publication of the second 5-lab study until it was too late to affect either the COP negotiations in The Hague or the U.S. Presidential election.

⁵ The position of the United States in these negotiations was that domestic action alone was too costly and that the full suite of flexibility mechanisms – international emissions trading, credit for enhanced carbon sinks, credit for financing emissions-reducing projects in developing countries – was absolutely necessary for U.S. participation in the Kyoto regime.

recalcitrance of the United States on climate is too deeply embedded to be attributable to the momentary ascendancy of one or the other of the major political parties.

The failings of domestic and international political systems have a great deal to do with the difficulty of making progress on climate, but my concern here is with the role of economics at the level of the *intellectual* debate. The relationship between the realm of ideas and political outcomes is a separate matter (one certainly worth studying), but one not explored in this paper. Nor does the paper address governance issues, in particular the problems posed by institutional failings in the political arena. Political theory is still struggling to assimilate the consequences of public ignorance,⁶ and the actual influence of argument and evidence in the political system is not fully understood. Even if reason and logic do matter at the elite level of politics, there is still a large gap between the actions of the State and the attitudes and beliefs of the electorate. In addition, the shortcomings of formally democratic systems do not match the depths of the problems with the decision-making processes of non-democratic governments, some of which are key players in the global climate negotiations.

II. The failure of economics on climate.

Conventional economic policy analysis is grounded in what might be described as “Least Common Denominator Utilitarianism,” or LCDU for short. This approach is embodied in the Kaldor-Hicks compensation principle: a policy change is justified if the winners (as measured in strictly economic terms) can compensate the losers and still have something left over.⁷ Note that this principle is not the same as Pareto optimality; many welfare-improving moves are possible without achieving Pareto optimality, and full Pareto optimality is not implied by adopting policies that satisfy the K-H compensation principle.

There is much to be said for LCDU. Economic policies rooted in it have helped improve living standards, reduce poverty, and lengthen life expectancy across the globe. Economics as a discipline developed out of a focus on the basic material necessities of life, a preoccupation that was entirely justified given the conditions prevailing in the 18th and 19th centuries when economics coalesced as a field of study. Utilitarian concern for the alleviation of poverty and a general increase in prosperity was progressive in the days of Bentham and Mill.

LCDU is also a sufficient guide for a great many modern policy questions. Large segments of the world have not yet reached the point of self-sustaining economic growth, and the resulting poverty is *still* the great unsolved economic problem. In the more

⁶ The current literature on this topic begins with the pathbreaking article by Converse (1964), although Schumpeter (1942) wrote eloquently on the problem. For a review, see Samuel DeCanio (2000) or Friedman (2005).

⁷ A compact history of the Kaldor-Hicks criterion along with a discussion of some of its limitations is given by Persky (2001).

developed countries, cost-benefit analysis based on LCDU can be useful in overcoming special-interest resistance to reforms. Comparison of costs often identifies the regulatory alternatives that are most effective per dollar spent in reducing risks or harms. LCDU is surely superior as a policy guide⁸ to the rent-seeking and special-interest pleading that too often masquerade as economic analysis. (Think about the specious justifications of protectionist trade policies, agricultural subsidies, state-sponsored monopolies, and various forms of corporate welfare.)

However, modern economics has set its sights much higher. It has sought to be recognized as both the *science* of human behavior and the *ultimate arbiter* of a whole range of public policy issues (including climate). Economics aspires to “scientific” status with all that the term implies: the discovery of immutable laws of behavior; the rigorous testing of and selection among competing hypotheses; the ever-more-precise statistical estimation of fundamental parameters. As a guide to policy, economics aims to establish the cost-benefit ratio as the basic metric for decision-making.⁹ Economics is supposed to enable policy-makers to understand the inevitable trade-offs that are entailed in any significant social choice.

In reality, these ambitions constitute an overreach. Neither the purported scientific foundation nor the policy-directing presumption of economics is well established, certainly not to the degree economists usually take for granted. Climate policy is an archetypical example of why the claims of economics go too far, but the same excesses can be found in applications of economics to many other areas – health care, marriage and family dynamics, criminal justice, and technology policy, just to name a few.

There are several reasons LCDU does not work for climate policy. At the most basic level, the required K-H transfers are physically impossible. People living in the future cannot send goods back into the past to compensate present-day individuals who may have to give something up to avert dangerous climate change. Those living in the present can to some degree determine the future’s endowment of produced and natural capital, but causation in the reverse direction cannot happen.

Economic modelers try to avoid this difficulty through a variety of expedients, and in doing so are forced to adopt one of the much stronger forms of utilitarianism. Most common is to assume infinitely-lived agents, or a benign social planner with an infinite time horizon. Both procedures require that weights be assigned to the utilities of people living at different times, so that these utilities can be added together to form an objective function capable of being maximized. LCDU is appealing because it appears to require nothing more than an agreement that “more is better”; each individual under a

⁸ Even when the compensating payments to the losers are not made – a situation that generally prevails in practice, as pointed out by Sen (1979).

⁹ In a current example, Hahn and Sunstein (2005) claim that “balancing costs against benefits can offer the foundation of a *principled* approach for making difficult decisions” [emphasis added].

policy that passes the Kaldor-Hicks test is no worse off than before (at least in material terms). Adding the utilities of different people according to externally-set weights (whether symmetric, discounted, or determined by any other rule) is fundamentally more contestable.

There are other problems that can make even LCDU non-operational. From a policy-maker's perspective, there is no way to know exactly how much compensation would make whole those who suffer economic losses from a particular project. "Just compensation" is notoriously difficult to determine in eminent domain cases. There is nothing to prevent those who lose assets through "takings" from claiming that they need to be compensated to the point of absorbing all the gains of the winners. No external observer can know the exact utility functions of the members of society, and yet that is the information required to know the appropriate level of compensation for policy-induced losses. LCDU is a standard for policy analysis that, however well suited it may be for theoretical exercises, is often difficult if not impossible to put into practice even under circumstances that did not require intergenerational transfers.

Stronger forms of utilitarianism than LCDU also must be invoked if a utilitarian justification is sought for policies that involve the provision of public goods. If the gains from a tax-supported expenditure are non-excludable and indivisible, there is no way to compensate those for whom these benefits are lower than the utility they lose by being taxed. Lindahl taxes (in which each person pays a tax equal to his marginal benefit from the public good) cannot be implemented in the real world. Alternatively, it could hardly be wise to require unanimity for public goods projects financed by actual taxes. How should a policy with a redistributive element (such as public education) be judged if a large majority (but not everyone) supports it? Requiring unanimity is one way of avoiding Arrow-type voting paradoxes and can assure K-H-compatible public policies, but a rule of unanimity is entirely impractical and unwieldy in modern societies. Even a principle as seemingly innocuous as Stiglitz's no "negative redistributions" (2003) entails an implicit comparison of the social value of the utilities of individuals of different income levels.

Of course there are many other fundamental problems with utilitarianism that have been known for quite some time. A partial list of these includes: the question of whether preferences are exogenous, and if not, where they come from; the complication of individuals who have preferences over policies, not simply over goods; the need to rule out "anti-social" preferences such as those of the sadist; and the problems associated with outcomes so far outside the realm of past human experience that one can only guess what utilities might be associated with them.¹⁰

A variant of LCDU is the liberal (or rather, libertarian) procedural approach that assumes that once the "rules" for economic and social transactions are set up (how? by whom?), voluntary exchanges will result in improvements in well-being, because if they

¹⁰ See Sen and Williams (eds., 1982) for a comprehensive collection of contemporary utilitarian thought and criticism.

did not, the transactions would not occur. In this view, the K-H criterion holds by virtue of the absence of coercion, because both sides of every voluntary interaction must be better off.

This approach suffers from many of the same deficiencies as other forms of utilitarianism – exogenous preferences, the need for full information, and so forth. In addition, its proponents seem not to realize that well-defined property rights are intrinsically coercive: the State has to be enjoined with their enforcement if the rights are to be meaningful.¹¹ A corollary of this is that the definitions of “property” are not immutable. There have been times when slavery was an enforceable property “right,” and in recent years the creation and allocation of pollution “rights” (such as the right to emit a given quantity of SO₂ or CO₂) have come into being as a way of addressing environmental problems.

More fundamentally, the libertarian approach begs the question of whether the open-ended purely procedural specification of the social process will in fact lead to an outcome that can be identified as “good.” Furthermore, all transactions have the potential for unintended outcomes, and the interactions of individuals in a modern economy give rise to complex consequences that are beyond any person’s capacity to foresee or calculate. Whenever there are externalities (which are ubiquitous), the K-H guarantee allegedly flowing from the voluntary nature of the transactions no longer holds. Even when there are no technological externalities (the type that are present whenever the actions of market participants directly affect the utilities of non-participants), all market transactions have the potential to create “pecuniary externalities.” An invention that produces profits for the innovator and benefits for consumers is likely to reduce the value of the capital assets that had been employed in producing the product(s) displaced by the new method. This is nothing other than Schumpeter’s creative destruction, and it means that purely voluntary transactions that are welfare-improving for the direct participants can have adverse spillover effects on otherwise uninvolved bystanders.

It almost goes without saying that with regard to climate policy, the libertarian approach also suffers from the intertemporal “impossibility” constraint. The future persons who will be affected by today’s policies do not yet exist, and hence cannot transact with present-day agents in ways that are mutually beneficial. This is just another way of saying that the future cannot transfer resources to the present; the exchanges that would be required for a laissez-faire system to solve the climate problem cannot occur.¹²

¹¹ For a definitive critique of libertarianism that discusses the essential coerciveness of any system of property rights, see Friedman (1997).

¹² This does not mean that it is uninteresting to imagine what would happen if future generations *could* trade with the present. Thought experiments based on this possibility reveal all kinds of potential outcomes that are at odds with conventional economic wisdom. These outcomes include multiple equilibria even under perfectly standard assumptions about markets and preferences, with interest rates that can be positive or negative, depending on the equilibrium (DeCanio and Niemann 2006).

III. What might replace LCDU economics?

The discussion so far suggests that standard economic models and methods are *incapable* of resolving the climate policy problem.¹³ This is true as long as the terms of the analysis do not go outside the boundaries of utilitarianism. To make progress it is necessary to move beyond the casual scientism of LCDU economics and engage in a *discussion of moral principles*.¹⁴

A. *The scientific pose.*

This is not going to come easily to professional economists. Some form of utilitarianism is so deeply embedded in the models and even the language economists employ that it requires a major act of will to stand aside from the utilitarian perspective. Furthermore, the scientific pose serves a number of functions in modern academia (and in the parallel policy bureaucracies). Natural science has developed a culture of discourse that enables it to overcome the diversity of interests and outlooks. Even in the face of the inexplicable effectiveness of mathematics in describing the natural world (Wigner 1960), natural science has been able to rely on the reality tests of replicable experiments and reliable guidance for building devices that work to reach near-consensus.¹⁵ Modern technology in all its manifestations is a tribute to the cumulative efficacy of scientific knowledge about the structure and regularity of the physical world.

Science progresses by carrying out critical tests of hypotheses that are vulnerable to falsification (Popper 1968). In science, the mathematical linkage between assumptions and deduced consequences takes the form of restrictions on experimental results that must hold if the underlying physical theories are valid. Testing these restrictions is what gives the experimentalists the power to falsify the underlying theories. It would be nice if a similar discipline were applicable to economic theories, but unfortunately it is not. The fundamental economic hypotheses of rationality and optimization are stubbornly immune to empirical test, as evidenced by the ability of economists to ignore the overwhelming evidence of the inefficiency of firms, the prevalence of bubbles in even the best-developed markets, and the departures from rationality shown by individuals in both market and experimental situations.

In addition, there are short-term and selfish advantages to economists that come from couching their non-scientific arguments in mathematical terms. Restricting the sphere of debate to whether or not mathematical demonstrations have been done

¹³ Problems of applying conventional policy analysis methods to climate change have been noted before; see Morgan et al. (1999) in particular.

¹⁴ Other scholars who have recognized this necessity include Howarth and Norgaard (1992), Broome (1992), Brown (2002) and Splash (2005). This is not by any means an exhaustive list.

¹⁵ This is not to suggest that natural scientists are any less ego-involved in their theories than anyone else. Disagreements persist, and generational turnover is sometimes necessary for the full diffusion of new ideas (Kuhn 1996).

correctly, and to discussion of the relative merits of one or another set of initial assumptions, is less demanding than what would be required if economics were subject to the rigors of the scientific method. Mathematical disputation is also convenient in the institutional setting of contemporary academia, where self-referential methods of establishing and maintaining the prestige hierarchy are a central preoccupation.

A related professional benefit is the way the scientific pose serves as a barrier to entry to the practice of academic economics. Some degree of professionalization of economics is desirable, of course. Economics is one of those “disciplines” in which every pundit feels entitled to his or her strongly-held opinion. But the mathematical training required for entry into the economists’ guild has far outstripped any insight such formalism might bring. Graduate students are screened and indoctrinated by years of mathematical boot camp, and it is not surprising that those who survive have a tendency to buy into the notion that the tools they have so arduously acquired are worth the intellectual investment.¹⁶

Utilitarianism, whether of the strong or LCDU variety, provides the linkage between the formalism and the down-to-earth concerns of economic policy. Aggregating utilities is an essential element of reducing social choices to matters of *calculation*, and calculation is the foundation of a “scientific” approach to social policy. Without calculation, there can be no mathematics, and mathematics is essential to the scientific pose. Thus matters of political economy are transformed, via cost-benefit analysis, into matters of calculation. Debates are or appear to be disputes over technical scientific points, while potentially critical disagreements over underlying *principles* are obscured.

B. Moral traditions.

A reality-based starting point for discussion of the *principles* of climate policy is recognition that there is no general consensus on matters of morality in the modern world. The fact and consequences of such disagreements has been probed quite deeply by Alasdair MacIntyre in *After Virtue* and its companion volumes (1981 [1984], 1988, 1990). But rather than succumbing to moral relativism, MacIntyre holds the position that constructive engagement across moral traditions is possible, in a truth-seeking process by which one tradition may prevail over its rivals by being more successful in handling the dilemmas raised within the rival traditions themselves.¹⁷

¹⁶ Some of the inductees are restless, however, as evidenced by the Post-Autistic Economics movement (stronger in Europe than in the United States). A number of heterodox “schools” of thought or methodology – institutional economics, evolutionary economics, post-Keynesian economics, and the like – flourish in various locations. Also, quite a few leading economists wrestle with and even embrace unconventional economic ideas (see Colander et al. 2004, for example).

¹⁷ An informative collection of essays exploring from a variety of philosophical viewpoints the issues raised in MacIntyre’s books is Horton and Mendus, eds. (1994). Needless to say, not only philosophers have observed and probed the moral fragmentation of modern times in a systematic way. For example, the “critical legal studies” (CLS) school of legal theory is skeptical of any notion of objectivity or determinacy of the law. According to CLS analysis, “[W]e are divided, among ourselves and also within ourselves, between irreconcilable visions of humanity and society, and between radically different aspirations for our common future” (Kennedy 1976, p. 1685, cited by Altman 1986).

This kind of engagement might actually be more akin to the spirit of scientific inquiry than the scientific pose of LCDU. After all, scientific progress occurs as new hypotheses supplant older ones by encompassing the insights of the prior hypotheses while accounting for the anomalies and paradoxes the prior theories cannot explain. In the climate policy field, an open debate over first principles would enable the proponents of different positions to be more explicit about the fundamental views that underlie their stances. This could be more productive than endless clashes of “dueling models” while pretending that everyone is speaking the same LCDU language.

Perhaps the striking feature about the climate debate, however, is not that people from different traditions of moral philosophy disagree, but rather that the *only* real source of disagreement on the need for action to protect the climate arises from the LCDU tradition.¹⁸ Indeed, *it is only when the climate problem is couched in the language of LCDU or cost-benefit analysis that seemingly irreconcilable disputes arise.* MacIntyre’s call for productive engagement/confrontation between different moral traditions would appear to apply mainly to the encounter between utilitarian economists and everyone else.

If this is the case, the dogmatic adoption of LCDU or strong utilitarianism by economics may be fundamentally self-defeating if economics is to contribute positively to solution of the climate problem. LCDU emphasizes the achievement of individual material well-being, and the Invisible Hand Theorem (a.k.a. the First Welfare Theorem) shows that under certain narrowly-specified conditions, the pursuit of pure self-interest can lead to a Pareto optimal social outcome. Economics has taken this result to be its welfare benchmark. In contrast, the moral systems that are prominent in the life of civilizations outside the confines of economics emphasize *virtue*, adherence to *codes of conduct*, the *interdependence of human beings* as social creatures, and ultimate sources of *moral value*. As a result, almost every ethical system admits the potential necessity of personal sacrifice, whether in upholding a standard of behavior that conflicts with narrow self-interest or in expressing civic values such as the upholding of honor or the performance of duty. Manifestation of these principles is at odds with the utilitarian emphasis on the satisfaction of the selfish desires of today’s citizens.

Charles Taylor has drawn the comparison between utilitarianism and alternative moral systems quite sharply. He characterizes utilitarianism in this way:

In the utilitarian perspective, one validated an ethical position by hard evidence. You count the consequences for human happiness of one or another course, and you go with the one with the highest favourable total. What counts as human

¹⁸ Deliberately excluded from the discussion here are those who still deny that there is any scientific basis to fear climate change. The positions taken by these climate “skeptics” are derived more from their role as advocates of special interests than from an articulated moral position. The position of the “skeptics” is more worthy of being subject to an exposé than to a critique; for a good example of the former, see Gelbspan (1998).

happiness was thought to be something conceptually unproblematic, a scientifically establishable domain of facts like others. One could abandon all the metaphysical or theological factors – commands of God, natural rights, virtues – which made ethical questions scientifically undecidable. Bluntly, we could calculate (1982, p. 129).

Taylor goes on to contrast the “formalist illusion” and “utilitarian reduction” with brief examples of other moral orientations that are “central to our moral thinking and ineradicable from it.” These include maintaining personal integrity as a central goal, the ideal of Christian *agapê*, achievement of individual liberation (i.e., freedom from domination by other individuals or forces), and even commitment to an austere rationality that rejects all “comforting illusions” and “metaphysical temptations.” He then asserts that “[w]e should be distorting these views if we tried to construe the difference between higher and lower as a mere difference of degree in the attainment of some common good, as utilitarian theory would have us do. Integrity, charity, liberation, and the like stand out as worthy of pursuit in a special way, incommensurable with other goals we might have, such as the pursuit of wealth, or comfort, or the approval of those who surround us. Indeed, for those who hold to such views of the good, we ought to be ready to sacrifice some of these lesser goods for the higher” (ibid., pp. 132-135).

To Taylor’s illustrative list of moral traditions that are outside the bounds of utilitarianism could be added the pursuit of personal excellence,¹⁹ or the realization in one’s life and community of the four classical cardinal virtues: wisdom, justice, courage, and moderation. It is relatively easy to see how ethical principles derived from *any* of these perspectives could easily encompass climate protection, without the forced and artificial assumptions that are required for the utilitarian calculus to do so. Integrity, charity, human liberation, and the pursuit of excellence each can be seen to require positive connectedness between the present and future generations, manifested as conduct today that will bring honor to us in the eyes of our descendants. And of course, each one of the four cardinal virtues supports a future-oriented stance that grants no privileged status to the satisfaction of our own immediate wants.

It might be thought that the secularist tradition growing out of the Enlightenment would show a greater inclination to a utilitarian/economistic orientation than one of the older moral traditions. This is not the case, however. The only secular humanist who has no concern about the fate of his/her offspring, the human species, and the planet is one who is hedonistic in a very narrow way. For the consistent secularist, the *survival* of humanity is a value worth fighting for. If this world is all there is, its preservation is obviously worthwhile. Any secularist possessed of a sense of altruism, empathy, love for his or her own children, a belief in the value or nobility of human accomplishments, or a

¹⁹ Although we often associate the pursuit of personal excellence with classical Greece and its Homeric ideals (think of Achilles or Alcibiades), the concept of the overriding value of the pursuit of excellence persists in the modern-day fascination with sports, a multi-billion dollar industry that occupies the minds of large numbers of people as much or more than conventionally-defined ethical concerns.

commitment to lasting beauty expressed in art, would care about averting a future climate disaster.²⁰

Of course, couching practical policy proposals in terms of the survival of humanity carries some political risk. Scientists are quite cautious about making extreme claims, and some of the highest-risk future climate change scenarios (disintegration of the Antarctic ice sheets, shutdown of the thermohaline ocean circulation, or release of methane from permafrost and offshore clathrates) unfold far enough into the future to make scientists reluctant to adopt a Cassandra-like stance.²¹ There are good reasons for this; no one can reliably predict the course of technological change, economic growth, and GHG emissions hundreds of years into the future. But the risks are real nevertheless, and they in fact constitute perhaps the most powerful rationale for taking action now to mitigate climate change (Hall and Behl 2006). The imperative for action deriving from these risks is being acknowledged now at high government levels (at least in the UK) – see the recent Stern Report (HM Treasury 2006), for example.

From a religious perspective, the traditions of both Judaism and Christianity can hardly be indifferent to climate policy (and other forms of global environmental protection). According to the creation account in Genesis, God gave man “dominion” or “rule”²² over the Earth and all its plant life and creatures. God also declared that the creation was “very good.” The dominion of man must imply stewardship rather than exploitation, given that humans were created in the divine image and God cannot have created a good world only to have it destroyed by its stewards. The beauty and divine origin of the natural world are stressed in numerous Biblical passages. Nor is the human

²⁰ In writings too rich and extensive to give justice to here, Hans Jonas (1984 [1979], 1996) offers an ontological grounding for our ethical responsibility to the future. “Man is the only being known to us who can assume responsibility. This capacity for taking responsibility already signifies that man is subject to its imperative: the ability itself brings moral obligation with it. But the capacity for taking responsibility, an *ethical* capacity, lies in man’s *ontological* capacity to choose knowingly and willingly between alternative actions” (1984, p. 101). Jonas writes eloquently of the risks to the future arising out of our technological power to alter it irrevocably. Thus, in the essay previously quoted:

Modern megatechnology contains both of the threats we have named – that of physical annihilation and that of existential impoverishment: the former by means of its unquestionably negative potential for catastrophe (such as atomic war), the latter by means of its positive potential for manipulation. Examples of this manipulation, which can lead to our ethical powerlessness, are the automation of all work, psychological and biological behavior control, various forms of totalitarianism, and – probably most dangerous of all – the genetic reshaping of our nature. Finally, as far as *environmental* destruction is concerned – i.e., not a sudden nuclear apocalypse but a gradual one by means of a completely peaceful technology in the service of humanity – the physical threat itself becomes an existential one if the end result is global misery that allows only for an imperative of naked survival devoid of all feeling of ethical responsibility (p. 108).

Dangers of this magnitude imply a corresponding responsibility to avert them.

²¹ These catastrophic possibilities are discussed quite soberly by the IPCC (2001), however.

²² It is not necessary to belabor the point that translations vary. For contrasting versions, see *The Torah: A Modern Commentary, Genesis* (1974) and *The New American Bible* (1970).

role in preservation and maintenance overlooked – Noah was, after all, the first protector of biodiversity. The Golden Rule is a perfectly fine standard for long-term economic/environmental policy, and indeed can be the basis for policies of sustainable growth and intergenerational justice.²³

All of the world's major religions contain strong currents of "environmentalism." The Vatican has issued clear statements in favor of global environmental protection, and both Evangelical and non-Evangelical Protestants have embraced Green sentiments (see, for example, the "Common Declaration on Environmental Ethics" by Pope John Paul II and The Ecumenical Patriarch [Orthodox] His Holiness Bartholomew I (2002); Harden (2005); the website and links of the Evangelical Environmental Network; the advertising campaign to cut CO₂ emissions launched in early 2006 by a group of U.S. evangelical Christians;²⁴ or the ongoing climate change activism of the National Council of Churches). The Forum on Religion and Ecology (2004) has collected declarations from individuals and organizations coming from the full range of religious traditions showing those traditions' orientation towards ecological concern and/or care for the well-being of future generations. The World Bank has published (with commentary) a collection of "Faith Statements on Ecology" by individuals from the Baha'i Faith, Buddhism, Christianity, Daoism, Hinduism, Islam, Jainism, Judaism, Shintoism, Sikhism, and Zoroastrianism (Palmer and Finlay 2003).

It is worth noting that there is even an LCDU justification for climate action. The first steps of a policy response to the climate threat may involve nothing but "no regrets" actions by those living in the present.²⁵ Some would go so far as to claim that atmospheric stabilization could be achieved at no net "economic" loss. This is an extreme position, but it has some support among serious researchers. As Paul Krugman has quipped, "Amory [Lovins] is crazy, but not that crazy."²⁶ It may be the case that the present economic system is so poorly organized that transformative innovations, changes in property rights, and regulatory reforms could elicit technological and organizational advances of remarkable productivity (Hoffman 2005). The "no regrets" possibilities are expanded if the boundaries of climate problem are extended to encompass its national security aspects. These include not only the future dangers and instabilities that might accompany projected climate change (as outlined in the Pentagon's remarkable "imagining the unthinkable" speculation (Schwartz and Randall 2003)) but also the

²³ See DeCanio (2003). Invocation of the Golden Rule to describe the optimal *sustainable* path dates from the beginning of the modern literature on economic growth models.

²⁴ This start of this campaign was widely reported (see BBC News 2006, for example), in part because evangelical Christians are such an important part of the Republican base in the United States. Of course, the U.S. evangelicals are divided on the climate change issue. See also Murphy (2006).

²⁵ See, for example, Krause et al. (2002, 2003).

²⁶ This is from a briefing given by Krugman at the U.S. State Department in 1997 prior to the Kyoto negotiations. Lovins' (and his collaborators') belief in purely "win-win" solutions to energy and environmental problems spans three decades (e.g., Lovins 1976; von Weizacker et al. 1998; Hawken et al. 1999).

foolishness of shipping hundreds of billions of petrodollars to states that shelter or breed terrorists.

IV. Conclusion.

These arguments suggest that economics' attachment to LCDU (and other forms of utilitarianism) is actually an *impediment* to progress on climate policy. Strict adherence to the language and premises of utilitarianism makes it more difficult for people from different traditions to come to agreement. The philosophical baggage of utilitarianism overloads the lifeboat, and obscures the commonalities of the other moral systems that could produce consensus. While appeals to duty, honor, and sacrifice are potentially open to manipulation by those seeking only to advance their own interests, it is nevertheless true that functional social systems must be held together by these and other civic virtues (such as honesty and trust). Similarly, it is futile to imagine that healthy societies can be maintained without acknowledging our duty to the future. From the courage required of the military forces to the recognition that our children's wellbeing may be more precious than our own, well-ordered States must recognize and support the value of future-oriented sacrifices made by their members. No system of policy calculation based purely on narrow self-interest can fulfill the requirements of sustainability and long-term survival.

There is no doubt that economics can contribute to the solution of the climate problem. Economists know a great deal about effective incentives, unintended consequences, and how to avoid costly mistakes in the design and implementation of policies. Economics has the scope to incorporate the connection between environmental protection and economic development, and economists have considerable experience with both the formal modeling and the non-mathematical description of complex systems. However, given the role that economics has played in the climate debate to date, it is particularly important that economists acknowledge in public discourse the boundaries of their knowledge.

If the economics profession insists on maintaining the scientific pose grounded in utilitarianism, economists are likely to end up talking mainly to themselves and eventually will lose the credibility they might otherwise have with citizens and politicians who operate according to different principles. On the other hand, it is not impossible to imagine that economists might broaden their outlook and recognize the limitations of their "science," even though doing so would require a leap into the unquiet waters of metaphysics and moral philosophy. Embarking on such a course would mean abandoning the safety of the academic disciplinary divisions, but it might actually succeed in advancing the climate debate. The magnitude of the danger demands that we economists leave our comfort zone and come to grips with the ethical issues that matter most.

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