RESTRUCTURING THE INSTITUTIONS FOR NORTH-SOUTH COOPERATION THROUGH INCORPORATING SUSTAINABILITY AND EXISTENCE VALUES INTO THE NORTH'S OPTIMIZATION CALCULATIONS

Peter B. Meyer
Professor of Urban Policy and Economics
Director, Center for Environmental Policy and Management
Director, Environmental Finance Center

Working Paper, 1995

Center for Environmental Policy and Management
Kentucky Institute for the Environment and Sustainable Development
University of Louisville
426 W. Bloom Street
Louisville, KY 40208
Tel 502-852-1588 Fax 502-852-4558
http://cepm.louisville.edu

It is a truism to observe that the global economy is characterized by massive economic inequality and environmental inequity. Income and wealth vary tremendously, as do the environmental conditions under which people live and work, both within and between nations. The pursuit of "economic development" by regions, ethnic groups and nations has historically been accompanied by a willingness to sacrifice the local environment on the alter of increased monetary reward. The risks of such practices may not have been recognized in the early days of the industrial revolution - at least until "killer smog" and other events led to cleanup efforts. In the latter twentieth century, advances in science have led to far more dangerous technologies while advances in medicine and ecological sciences have fine-tuned our awareness of those risks. Our common inability to engage in ecologically sustainable economic practices cannot, then, be blamed on advances in the physical and biological sciences. The putative conflict between environmental protection and economic development that appears to belie the pursuit of sustainability thus appears to be in large part the product of a distorted accounting system.

There is no need here to recount the myriad criticisms of the system of national accounts (SNA) and its weaknesses and distortive tendencies; the critiques are well established in the literature (Anderson 1991; Pearce 1993; United Nations 1992). We note that even the United Nations has begun to move to repair the distortions inherent in GNP accounting (United Nations 1993). Adding to or modifying the SNA will not, however, necessarily produce an appropriate correction. To the extent that the environment-economy inconsistency is a matter of *noncommensurability* rather than *incompatibility*, it is at least theoretically possible that both objectives may be pursued jointly, albeit they cannot be measured on a common scale. Alternatively, there may be more commensurability possible than either the advocates of "growth" in pursuit of the affluence to raise environmental protection values (e.g. Brundtland Commission 1973, Pearce and Warford 1993, National Commission on the Environment 1993) or those that claim "sustainable development" is an oxymoron (e.g. Daly 1991; Daly and Cobb 1989; Schnaiberg and Gould 1994) are prepared to acknowledge.

Whatever the means by which one pursues an "ideal" accounting system that addresses "natural" as well as "human-made" capital, the realities of a global economy present serious problems. Economically rational optimization on the global scale is possible only if pricing processes are consistent across space. That is, the same goods - whether instrumental goods such as food or clothing, or industrial equipment or aesthetic and emotional goods such as natural beauty or time for contemplation and relaxation - need to be valued in the same way, albeit not necessarily at the same price, at the same level at all points on the globe if a common optimization is to be possible. The conflicts between the nations of the North and the South over economic development and environmental preservation in less developed states may be traced as much to the tendency for the North to use its own values (and to ignore those of the South) in calculating optima and thus deriving global economic strategies as to any overt political domination objectives. Our argument here is that, even if a common ideal and appropriate measure of human well-being could be derived that would substitute for the SNA, consistency in pricing of the components of the measure could not be expected to be consistent across space, that is, across cultural and contextual diversity.

The challenge, thus, is to pursue measures that *will* be sensitive to the diversity of human conditions and aspirations, and that share some commonalty across levels of aggregation. First, we must examine the putative tradeoff between environmental protection and economic development and the validity of the claim of their incompatibility. In particular, we need to focus on the measurement of economic well-being and the extent to which the accounting systems used to assess the wealth and income of people fail to incorporate environmental factors which *do* have potential monetary equivalents. Second, we must recognize that, no matter how much effort is committed to incorporating monetizable non-market factors into "sustainable development" accounting measures, the activities and processes that comprise the non-monetized human activity and interaction with nature belie consistent valuation and "pricing" between different cultures and, even more significantly, at different scales within one socio-economic system.[1] Third, we must address more systematically, the very tendency towards a global-level optimization effort, since such an approach may be inherently destructive of the very objectives of the pursuit of sustainability, that is, of a consistent and in some sense optimal balance between material goods production and preservation of nature. Fourth, the North's presumption that a common overriding objective is desirable and attainable needs to be subjected to more careful scrutiny. Fifth and finally, given the power of the Group of Seven or the twenty-five members of the Organization for Economic Cooperation and Development, the potential for reorientation of decision making need to be addressed, and the forms of institutional change most conducive to promoting such reorientations need to be identified. We pursue these objectives sequentially in

[1] A major flaw in the UN's efforts to produce a new System of Environmental and Economic Accounts (SEEA) lies in its reliance on the technique of contingent valuation for pricing environmental "goods" that do not have market values. In nations with differing degrees of monetization or market penetration, the identical contingent valuation surveys will produce divergent results. If the goods in question could be transported from one locus in space to another, these prices differences might be useful; when the good in question is fixed (a tree, a river, a mountain, a view, a taste of the air, or light quality) inconsistent pricing undermines the possibility of optimization.

this paper, using what little evidence exists of institutional and attitudinal changes in the North to provide indications of directions for change in our conclusions. First, however, we need to consider the problems of human powers - and perceptions.

Humanity's *perception* of how its actions may affect its physical environment and thus its well-being and the *reality* of the impacts of its actions need to be better reconciled. The problem is not new. A warning of the problem was posted by Robert Solo some twenty years ago (1974:863):

> "... a crucial change has come. The life system itself is no longer beyond the reach of man's technology nor beyond his power to disarrange, degrade and destroy. This is a danger no age has ever faced before..."

The record to date suggests we have not done well in addressing this danger. Either economists have had problems defining the objective to be pursued and thus could not solve the constrained optimization problem or their approach has been inappropriate, segmenting and sequentially addressing optimization of some welfare measure and the distribution of gains. As our discussion of scale and measurement problems below indicates, a broader measure of human well-being than that incorporated in the SNA cannot be addressed by focussing first on aggregates and then on their distribution to components. Resources not valued in global exchange markets cannot be allocated in such a manner, and the environment is such a resource.

ON CULTURE, SCALE AND THE VALUATION OF ENVIRONMENTAL AND ECONOMIC GOODS

The focus on this section is really on measurement "failures," the inability to arrive at consistent measures of well-being or valuation of key goods and services. We address the inevitability of inconsistent measurement in terms of both culturally-based differences in their valuation in the diverse countries and nations across the globe and differences attributable to the scale of analysis - the aggregation problem, examining four "outputs" of production decisions and the problems they pose for consistent measurement.

Some Roots of Inconsistent Measurement

Whatever the political imperatives, "established" methods tend to be perceived as "correct" to the extent to which they are employed -- any replacement has to demonstrate clear superiority to gain acceptance. The resistance to *any* change is perhaps encapsulated best in the failure of any body measuring national product to adjust for the costs of environmental depletion and reclamation. Waste management and contamination mitigation have become billion-dollar industries worldwide, yet they arguably "produce" nothing, other than profits and wages. They only repair prior damage or dispose of unwanted residues. The resources expended on such disposal and reclamation are, themselves, *losses*, not gains to an economy, except insofar as they product transient profits, wages and other factor payments. It is true that they may be said to "produce" a cleaner environmental and/or ecological preservation and improve human health. To the extent that such production repairs *past* damage, it may be considered to be a positive contribution (acknowledging, in passing, that the past calculations of contributions to improved well-being were over-stated by ignoring the damage done). However, any environmental mitigation expenses, including pollution abatement devices added to manufacturing plants as well as waste incineration or other disposal operations, that correct for *current* environmental damage or threats, involve at best a zero contribution to overall national product, since no net improvement is attained, only avoidance of damage.

The SNA ignores the four aspects of human production discussed below, and, in the process, has blinded decision-makers to their importance. Each of the four sustainability outputs0 provides some *instrumental* value to humans, all are consistent with the homo-centrism that is inherent in efforts to maximize exclusively *human* well-being and shgould be included in such calculations, despute the fact that they also have ecosystem maintenance implications. Consider:

(1) Diversity - in species, land use, lifestyle, and economic activity (in light of Ashby's 1968 'law of requisite variety' and the stability and resiliency it generates, which has a real economic value, but raises the question of the level of diversity required at any given scale below the planetary);
(2) Non-Monetized Economic Activity (which replaces monetized exchanges, but might be possible to value in terms of the activities it replaces);
(3) Exported Non-sustainability (which suggests that unsustainable activities assigned to the politico-economic periphery - waste disposal, extraction, etc. - be considered as possible deductions from the income and wealth generated in the center, to the extent that these activities promote apparent overall system sustainability);
(4) Existence Values (which, as the values placed on preservation of amenities or natural features for which no instrumental utility may exist for people, will be valued differently at different levels of aggregation - numbers of people).

Each element results from the economic activities measured by the SNA but presents different measurement problems. Given that each varies across the scale of the economic aggregate considered in a different fashion, they, as a group, present a serious problem for accounting systems. Yet no one of these considerations can be ignored if sustainable development is to be pursued. Recognizing the resistance to change in institutional self-assessment mechanisms, we do not propose here to challenge the homo-centrism that has governed decision-making virtually since the invention of the formal political state, but simply to demonstrate that even this perspective can benefit from better measurement of impacts that need to be considered.[2] However, we do need to address the individual factors in some detail, especially given unequal prices for these environmental "goods" in different countries. The distortions inherent in ignoring them in international trade accounts may help to explain the apparent, but false, development-environment tradeoff. More importantly, perhaps, the limited attention given these issues in international debates over trade and aid policies may explain the continuing inability to address the different sustainability concerns of richer and poorer nations, that is, of the North and the South of the title of this paper.

[2] We must acknowledge here that the homo-centrism is not the exclusive province of neoclassical economists. While proposing a "neoinstitutional" approach, Swaney (1987:1740) still claimed a focus on "... nonhuman resources, with emphasis on other life forms and physical elements useful to humans. ... [including] the life support systems of the biosphere." He thus remains in the same instrumentalist trap as the neoclassicists, considering only physical or biological utility of the environment, never addressing it as a source of aesthetic or moral satisfaction.

Measuring and Valuing Diversity

The instrumental value of species diversity to humans has been argued in terms of possible pharmaceutical/chemical and other utilization of compounds found in nature that might then be replicated in the laboratory and synthesized. The environmentalist focus on diversity in nature and its potential instrumental value, however, tends to overlook another form of diversity, that in forms of human social organization and production/distribution systems. While many have trumpeted the demonstrated success of "capitalism" as a system for the satisfaction of material human wants (and, by implication or assumption, for satisfaction of spiritual wants as well), economists can no more define a single form of market economy than biologists can define a single generic form of "beetle." Variations in norms and institutional contexts create highly diverse forms of capitalism, even among the nations of the North (c.f. Meyer, Williams and Yount 1995). The experience of emergent capitalism in the South raises further question about reliance on a single form of economic organization: The documented "success" in income and wealth generation (that is, in traditional economic development terms) of an array of different indigenous peoples' collective utilization of their ecological common pool resources attests to their efficiency, even along the narrow criteria employed in national accounts (Swanson and Barbier 1992; Friedmann and Rangan 1993; Mittelman 1988; Singh 1994).

An instrumental basis for valuing diversity, albeit no solution to the measurement problem, is provided by the Law of Requisite Variety, which read (Ashby 1968:135) that, "only variety can destroy variety." In other words, in order to be stable over time in a changing world, any system must contain within itself sufficient variety to be capable of tracking and reflecting the diversity to which it must adapt. Similarly, Berrien (1968:149) argued that a society, as the controlling system, must thus possess "a greater degree of complexity than the system which is controlled" - which in this case is the environment. A number of observations follow from these insights:

(1) Whatever economic system is *currently* perceived to be most efficient in terms of providing for human well-being almost certainly will not remain the most efficient over time; elimination of all other institutional structures for production and distribution may induce inefficiency in the future as adaptive capacity is lost.[3]
(2) Loss of species with no apparent current utility inherently reduce the adaptive capacity of an ecosystem, and thus could threaten humankind in the future as other unanticipated ecological changes occur.
(3) "Requisite Variety," which may be translated as the optimal level of diversity, will vary with scale, so the value to be placed on the sacrifice of efficiency to diversity maintenance will also change. Thus the prices placed on species or lifestyle maintenance in any new accounts employed for assessing change will tend to vary with their geographic scope and/or the size of the human population for which they are computed.

It follows from these observations that consistent bases for pricing may not be possible across nation-states. Furthermore, the summation of valuations of diversity at smaller geographic scales, such as neighborhoods, communities will not conform to the valuations at the level of the nation-

[3] Obviously, then, while those who are the major gainers from an existing economic system may not value its alternatives, those concerned with long-term well-being for humankind, even in the nations of the North, have an interest in preservation of non-capitalist forms of economic activity (primarily in the South). We return to this question in our final section, below.

state. Similarly, the valuations by nation-states, if summed, will result in figures that are at variance with those of global assessments. These inconsistencies are associated with variations in time horizons, in risk perceptions, and in risk tolerance, as well as in very different valuations placed on incremental gains in current incomes and production levels.[4]

More importantly, it should be evident that the need for internalized adaptive capacity, and thus minimum requisite variety <u>grows</u> with scale. Smaller units may value their choices under the assumption that the damage cost by lost diversity and unanticipated change may be repaired with external assistance (as in aid for drought-stricken areas of the world, whose problem may be the result of human interventions such as mono-cropping). However, at the global level, there is no external assistance available, and the adaptive capacity <u>must</u> be internalized (Meyer 1976).[5]

<u>Any</u> loss in either species or economic activity diversity needs to be treated as a potential loss from a long-term perspective. The same actually applies to social, as well as economic or ecological diversity. Promotion of a purely individualist ethos, for example, may stimulate economic output in normal times - but could critically undermine community capacity to respond to emergencies or render such responses more costly, as much of the evidence on response to both natural and technological disasters has suggested (Krimsky and Golding 1992; Lindell and Perry 1992). The valuation problem lies in the fact that the potential utility of any given element of diversity is almost impossible to measure *a priori*, yet that is the needed calculation.

<u>Non-Monetized Economic Activity</u>

Many non-monetized activities *which are currently measured for policy analysis* (and would be measured in the cost-benefit analyses increasingly called for in assessing regulations, both in the US and the European Union, c.f.: European Union 1993; Morphet 1994; National Commission on the Environment 1993) fail to be included in the aggregate accounts. Some may add to total recognized welfare production, but other elements need to be subtracted. The inconsistencies in current measurement approaches are legion.

For example, cost-benefit analyses of highways, airports, and recreational facilities include explicit calculations of the travel time cost savings associated with them. Yet policies that shape the aggregate levels of travel and associated time commitments (such as land use policies and subsidies that promote suburban sprawl) are not assessed in terms of the "waste" time created. Driving precludes sleeping, reading or writing, which mass transit need not, but studies of travel alternatives fail to address this difference in potential to engage in other activities while being moved across space, disproportionately favoring private cars over mass transit as a result.

---

[4] Perhaps the greatest source of variety across national-states is excluded from this narrative: differences in the political and social tolerance for degrees of inequality of income and wealth, whether across individuals, across social groups, or across geographic regions *within* a country.

[5] Ironically, the empirical evidence suggests that, world-wide, there may well be more concern for diversity at the local than at higher levels. The industrialized nations of the North may be pressuring those in the South with rain forests (important sources of oxygen and homes to spectacularly diverse species), to restrain their clear-cutting tendencies but meet with resistance at the level of the national state. However, at the local level in many rain forests, communities are struggling to preserve lifestyles well adapted to those ecological conditions. Even in the US, the principles of "good" local economic development stress diversification, as the negative historical legacies of dependence on single industries (let alone single employers) have become more evident.

Overall, the failure to acknowledge the contributions to human well-being of non-monetized activity increases the tendency towards reduction of diversity in human productive organization. The SNA is based on "flows," that is, exchanges. However, even when production is exchanged, unless the transaction is monetized, it tends to be undervalued. This last tendency is most extreme when the exchange is part of social and culturally defined practices not formalized into market processes, whether they are the reciprocal exchanges within families or the informal cooperation of established neighborhoods or communities.

Informal productive interactions may be overlooked and thus those forms of economic organization may be sacrificed to apparently superior systems in pursuit of GNP-measured "economic development." This pattern is evident not merely in the destruction of indigenous forms of socioeconomic interaction in the Third World. The United States and Canada have both experienced the loss of diversity associated with myriad forms of rural social interaction and decreasing recognition of the value of small communities and urban neighborhoods as productive units and generators of wealth and well-being (Meyer and Burayidi 1992; Ross and Usher 1986). Nevertheless, informal processes remain important: The United States, for example, continues to rely extensively on volunteer fire departments, but their output, including the insurance-equivalent value of the *availability* of their services, never enters the national accounts (unless as reduced premiums of fire insurance, which might actually be a net negative).

Non-monetized activity is more likely to be recognized and assigned some instrumental value in local than in non-local decision-making, simply because of the costs of information. Even at the local level, however, serious data problems arise in measuring such productive activity: accurate market prices for equivalent labor services or for comparable goods are not sufficient data to permit unequivocal valuation. A variety of multiple outputs may be produced simultaneously in any one work process. This phenomenon is well recognized in activities such as child supervision and housework, but is really very widespread: the volunteer firefighters alluded to above simultaneously provide both entertainment and a sense of self-worth to themselves and protective services to others by their activities.

Finally, even if joint production elements can be isolated and possible double counting addressed, the validity of the market prices as measures for the output produced is questionable. As Lane, among many others, has clearly demonstrated, even assuming the existence of perfect markets, "the claim that markets tend to maximize satisfaction of those wants that are clearly price indexed (commodities) is based on faulty premises and fails to consider theoretical and empirical evidence jeopardizing" the argument for markets (1978:821). If (theoretically possible but realistically impossible) perfectly competitive markets cannot measure even the welfare gains from consumption of commodities, how can we have any hope that they will help measure the welfare effects of changes in the stock or consumption of non-traded goods and services?

<u>Exported Non-Sustainability</u>

From a global perspective, the aggregate impacts of all human activities define whether or not we are moving toward sustainability. As Ayres (1993:205) posited what is arguably a reasonable global objective for human endeavor: "... the goal of both economic development and environmental protection policy over the next few decades must be to stop those activities that are most likely to interfere with natural climatological and nutrient recycling processes."

For any subunit of the globe, however, under the economists' *ceteris paribus* assumptions, there are welfare and possibly localized sustainability gains associated with shifting depleting and unsustainable activities to other jurisdictions. Swaney (1987:1761) suggested that these gains arise from the nature of changes in the production process:

> "Cost-shifting ... occurs when *technical* advance is not *technological* advance. ... new techniques ...[may just improve] the accounting identity at the expense of the sociosphere or biosphere....
>
> "... Only when society's total costs are reduced by the technical change is that a technological advance."

With no real change in the accounting identity, the strong (the North) have significant incentives to export the non-sustainable consequences of their lifestyle choices to the weak (the South). Such shifting has a long history (c.f.: Kapp 1950). This form of maximizing behavior has become more politically contentious as the issue of environmental justice has been brought into greater relief by those suffering exceptional or concentrated adverse health and ecological consequences of the current modes of production and consumption (Bryant and Mohai 1992; Bullard 1990, 1993; Hofrichter 1993).

Overall, environmental cost-shifting and relocations across international lines to avoid regulation has been rife, and largely ignored by the rich nations exporting their non-sustainability (Meyer 1994). A similar pattern of spatial displacement and cost-shifting has characterized domestic environmental policy in advanced industrialized countries as well. Obviously, the positive welfare effects of such geographic displacement and cost-shifting can be realized only so long as the costs can be externalized. Any *global* welfare accounts would have to treat such actions as merely internal transfer payments that net out at zero. Except, of course, in the event that the shifts create localized impediments to economic development and thus to overall welfare, which may well be the case in imposition of environmental burdens on the already poor (Meyer 1994; Meyer, Williams and Yount 1995).

Existence Values

Economists have been discussing the issue of "non-use" or "existence" values for over a quarter of a century since Krutilla (1967) initially raised the issue. Yet the debate is far from settled. Recent contributions to the discussion (Bishop and Welsh 1992; Kopp 1992; Rosenthal and Nelson 1992) have dwelt not only on the measurement problem, but continue to dispute the fact that people may actually attribute non-instrumental value to some phenomena or interactions. Granting that such values may exist, we still face serious measurement problems.

The balance between use and non-use values for a given environmental good varies tremendously with the scale at which those values are measured. At the highly localized level, there may be few non-use values, as the resource is directly employed by the population. As the geographic scale is widened, however, non-use values rise in importance relative to use values, as the existence of the former is attributed to ever growing populations. Bishop and Welsh (1992:415), for example, argue that a species preservation cost of $10,000 for a single fish (not the species) may be economically efficient, reminding their readers that, "Existence is a public good, which means that one fish can simultaneously satisfy demands of many people." A change in the number of people experiencing the non-use value can swamp any nuance in individuals' valuation; the issue of scale of analysis may thus outweigh any questions of bias in the contingent valuation techniques used to measure individuals' non-use value attributions.

The argument against inclusion of non-use values in accounting for effects on human welfare reflects rejection of not only the concept of an existence value, but also of any value assigned to diversity or to any form of sentiment. Raising what they consider to be a rhetorical question to bolster their case against using non-use values in calculations, Rosenthal and Nelson (1992:118) ask,

> "... why not expand the concept to the continued existence of the great American farmer? ... the look and feel of a local neighborhood, the climate... ?"

Their positivist neoclassical economics claims may, however, be indefensible:

(1) They assume an objective economics exists (and that a single "efficient" outcome can exist for all scales of analysis). The existence of cost-shifting and export of non-sustainability belies this claim.

(2) Their question presumes that the "great American farmer" and "the look and feel of a local neighborhood" are not valued economic goods. The very conservative "revealed preference" logic of neoclassical economics, that behaviors reveal the value assigned to alternatives, belies those presumptions for the US: Federal subsidies to preserve family farms remain intact after over sixty years and threats to local communities have resulted in the explosive growth of "not in my back yard" (NIMBY) neighborhood movements.

It is arguable, however, whether these behaviors reflect short-term non-use values or longer-run instrumental valuation of diversity.

In Summary

Our prior discussion of the utility of diversity suggests that we may have come full circle: much of what may be treated as non-use values, goods and services perceived at one point in time as not having direct instrumental utility, may turn out to be extremely valuable if conditions change. Some minimum level of ecosystem stability is essential to continued human existence. Efforts to maintain diversity that are now considered to be based primarily on existence values may, at some point in time, prove to have very immediate use values for the global human population. The distinction between use and non-use values may, thus, be merely a side-effect of the culturally-, temporally- or geographically-bound perspective of neoclassical economics, cost-benefit analysis and national accounting techniques.

The economic value of environmental goods and services, then, may be said to extend beyond their immediate use values. Even assuming the use values are reflected in exchange values, the prices people are willing to pay for such goods and services understate the overall gross utility gains possible from preservation of such environmental resources. Kopp (1992:124) reminds us that "One can enjoy a particular nonconsumptive service ... without engaging in any observable behavior." The aggregate volume of such consumption - which is not captured in any national accounts - can be expected to grow as the population base considered expands. Thus, not only are existence values critical to welfare measurements, but they change with the scale over which they are computed.

ON GLOBAL OPTIMIZATION, DEMOCRACY, AND SUSTAINABILITY

Despite - or perhaps because of - the tendency towards globalization of the economy, environmentalists have relied on localist values and a concern for community as sources of conservationist pressures. The assumption that such values prevail may be warranted for locales in the nations of the North adhering to strong ruralist values (Meyer and Burayidi 1991) and for indigenous cultures and communities across the globe (Fisher 1993; Friedmann and Rangan 1993; Mittelman 1988; Treitler 1994). However, in the context of the wealth and income pursuits of modern advanced capitalism, a local parochialism may be inconsistent with the sustainability ethos when taken from a global perspective. Thus the promotion of local community values may not, in itself, be consistent with environmental preservation.

Worldwide and throughout human history, the pursuit of subsistence has involved a tendency towards utilization of the ecosystem as a resource and disposal sink. Pursuit of affluence, once it became a possible goal, has compounded the problem. Two examples dating to human pre-history suffice to make the point: (1) Migratory groups have always had built-in waste avoidance processes - they moved on; and (2) Humankind's location adjacent to moving water has reflected a need for a waste disposal facility as much as a need for fresh water.

The increasing privatization of human activity over time has led to the current pursuit of putative lifestyle gains from ecologically damaging behaviors (private cars, large lot single family homes, etc.) without regard for public consequences (in poor air quality, wasteful use of infrastructure, etc.). The industrial revolution greatly increased the rate of human-generated increases in entropic forces, consuming resources and creating wastes that did not recycle smoothly or rapidly. In the United States alone, there are over 500,000 parcels of contaminated land that cannot be re-used without significant clean-up efforts (Edelstein 1988). Moreover, improved public services that spatially segregate the generation of wastes from their disposal have helped to isolate individuals, especially those in the North, have thus been isolated from the consequences of their impacts on the planet.

The causal factors generating continued adherence to behavioral patterns that appear to be self-immolating over the longer term have strong roots in *localism*, an attitude that combines a form of geographic *territoriality* with some element of cultural or group*identity*.[6] Historically, the local frame of reference was all that existed: Identity was defined in terms of a clan or inhabitants of a

[6] We use the generic term "localism" here, rather than urbanism, since, once a conurbation grows beyond some size, it outgrows the socio-economic label "local," whatever its legal status in a hierarchy of governments, and our concern is with neighborhood and community, that is, the emotionally and physically local level.

group of dwellings. Territoriality and identity in primitive societies were not distinguishable: the one determined the other. Tribalism, which combines the two, may, in fact, be an inherent human trait, with biological roots in survival requirements.

Centralization, in both the pre-nation-state era and in the period of political colonialism by the nation-states of Europe, has been experienced as the suppression of local identity as a basis for claiming power. While localist identification may be humanly inherent in itself, the central administration of territory has necessitated its suppression by "government." Modern assertions of localism, and the political and economic conflicts that have emerged from them, suggest that territoriality and narrow definitions of identity continue to limit changes in political ideologies, forms of economic organization, and cultural values and belief systems. Tribalism, ethnic nationalism, putatively "religious" conflicts, and even "beggar-thy-neighbor" urban development policies reflect specific unique values and community identity, and are difficult to reconcile with promotion of human welfare writ large on the global scale.

Demands for participation in local decisions, control over local territory and distinct representation in supra-local decision-making processes are all expressions of parochial community concerns that may sustain ecologically indefensible policies and behaviors. Institutions and values emerging from strictly localist identifications and orientations cannot help but support an inadequately global view of the impact of humanity on the biosphere. "Think Globally, Act Locally," may have served as a useful slogan for alerting people to the global impacts of their actions. Experience, however, suggests that strictly localized responses to problems that transcend the local scale will not produce sustainable solutions.

Global responses are needed, and those actions and new policies cannot be aggregated from the individual preferences of all the localities comprising the totality. Some coordination and prioritization is required - but the process of satisfying these imperatives cannot help but undermine efforts to acquire or retain local control, or to assure maximum political representation and economic democracy for all localized interests. To the extent that supra-local decisions are taken on the basis of such faulty measures of progress as those of the current SNA, however, distorted priorities and unintended consequences that actually reduce well-being may be inevitable:

1. Exclusion of all non-monetized transactions from the GNP has meant that traditional and informal socio-economic processes that contribute to well-being are ignored (Friedmann and Rangan 1993; Singh 1994). Decision-makers have thus (a) ignored distributional effects on displaced communities, and (b) sacrificed stable communities and neighborhoods to new infrastructure construction on the assumption that the simple replacement of housing stock would correct for the social and economic losses of displacement.
2. Valuation in terms of monetary and economic value effects has led to a disregard for the consequences of utilization of common pool resources (Singh 1994). Deterioration is ignored in the accounting system until such time as the cumulative effects generate monetary costs in a decision framework that treats all extra-local impacts as cost-free (Meyer and Chilton 1994).
3. An emphasis on growth encourages a short-term horizon and a tendency to over-discount the future (Brown 1991). Pursuit of short-term "comparative advantages" has had devastating effects even in urban centers of the North such as Pittsburgh (steel), Glasgow (steel, shipbuilding), Detroit (automobiles), Germany's Ruhrgebeit (steel and coal).

While the Brundtland Commission put "sustainable development" on the global economic agenda in 1987 and even the World Bank now advocates such an approach (cf: Lutz and Munasinghe 1991), narrow short term economic objectives still appear to dominate local agendas in industrial nations. It may be argued that such objectives reflect the parochialism of the local state and community institutions, especially given the absence of redistributive mechanisms at the local level. Moreover, to the extent that a localist ethos and commitment to particular lifestyle prevails, the mere provision of income to compensate for the loss of a lifestyle or livelihood may not be acceptable. This has been evident in regional struggles in the North, and is even more graphically demonstrable in the efforts of groups in the South to preserve local cultures and lifestyles, along with unique and highly valued physical environments (Makhijani 1992; Swanson and Barbier 1992).

Yet narrowly-defined and oriented economic and political institutions and organizations, especially when governed democratically, may simply be *incapable* of considering global issues:

1. Local elected officials must place the well-being of their small constituencies ahead of impacts on all others if they are to win re-election; such concerns dictate short time horizons with elections every two to four years (Logan and Molotch 1987; Schnaiberg and Gould 1994).
2. As geographical mobility rises, individuals' immediate personal returns grow in importance relative to longer or community -relevant rewards (since the more distant returns may never contribute to the well-being of the decision-makers, as they or their descendants relocate).
3. In large cities, community organizations, neighborhood associations, and ethnic, racial and religious organizations all tend toward forms of parochialism and they narrow the frames of reference of decision-makers to scales even smaller than those of the local state.

These patterns pose a problem for the future of local democratic institutions. Is it even possible for a system that is responsive to local differences and needs and interests to simultaneously respond to the global threats to human existence that may be emerging? The answers to this question may well be very different in countries with different histories of democratic processes or varying value systems with regard to the balance between individual and collective rights and responsibilities. A uniform response for the North and the South is thus not likely to be appropriate.

The existence of two distinct types of environmental problems, arising in different settings, further limits the possibility of common approaches to local decision-making in the North and the South: "... in the first group are those related to the application of modern technology, ... and to high income and consumption levels; and in the second group are the problems related to economic backwardness, ... stagnant technology and slow growth..." (Karshenas 1992:16). Nonetheless, it appears that the efforts to confront and adapt to the latter may provide guidance on how to respond to the former. Perhaps the imperatives of providing for immediate needs for the current generation under difficult conditions generate more sensitivity to the necessity of empower future generations to do the same for themselves. A real sustainability ethic may be more prevalent among the world's poor than among the affluent. If so, the rich in the North need to learn from it.

The principles for self-generating sustainability that appear to be essential or universal (and to which other conditions or principles may be added in particular settings) may nonetheless be enumerated. The seven precepts below recognize the importance of instrumentalism, but do not necessarily presume the dominance of a capitalist ethos and *individual* instrumentalist pursuit of goals. We find that, in order to promote sustainability,

1. The proposed actions must provide rewards to those engaging in or supporting the effort, however, the returns need not be wholly monetary or tangible.
2. They must contribute to reduced through-put, that is, lower levels of utilization of the natural resources or disposal capacities of the planet.
3. They must contribute to strengthening localist beliefs and institutions, since their implementation relies on such common bonds.
4. They must contribute to greater equality on common measures of economic and environmental conditions (without which condition #3 become a universal.)
5. In their management of the ecosystem, or any of its components that comprise common pool resources, they must acknowledge and respect all individuals' property rights in the environment (including those of future generations).
6. Both with respect to common pool resources and others, they may have to tend towards forms of collective management, both to promote greater equality and to contribute to a sense of power and control.
7. In sum, they involve a change in ethic, and valuation of alternatives, with a premium placed on preservation, not change.

The SNA is clearly inadequate as an accounting system to assess and appraise the adequacy of alternative courses of action to serve these objectives and thus promote sustainable development.

ON DIVERSITY IN OBJECTIVE FUNCTIONS AND THE PURSUIT OF ENVIRONMENTAL AND ECONOMIC JUSTICE AND "EFFICIENCY"

We have thus far provided an overview of both the need for, and some logical and empirical impediments to, the derivation of a system of accounts that recognizes noncommensurability and provides for simultaneous accounting for economic and environmental outcomes; we have also examined the dangers inherent in centralization of decision-making and the incompatibility of global decisions with local sustainability. Despite the problems involved, notable ongoing efforts to build such accounts include those of the United Nations in promoting an extension of the accepted SNA to include environmental factors (United Nations 1993). However, this effort is directed strictly at a single geographic scale, that of the nation-state (UN members), ignoring both sub-state and global valuation problems except with respect to the problems of measuring environmental impacts and protection measures undertaken by individual production facilities or units (UN 1993:40-41).

More significantly, the current UN effort (which mirrors those of analysts scattered across the globe, cf: United Nations 1992) is directed almost exclusively to identifying the physical environmental impacts of production *as measured by the traditional system of national accounts*. Thus the effects of environmental change on factors contributing to socioeconomic well-being that are ignored by GNP accounting are not considered. Admittedly the UN effort is in its early stages, but the integration of methods for accounting for environmental change to the seriously flawed SNA accounts will not move us far, perhaps most significantly because of the failure to address issues of *scale*.

The scale issue is brought into sharp relief by a simple summary statement of the value placed on ecological resources:

(1) VALUE = USE + NONUSE + DIVERSITY,

where the first term in the sum is the value derived from actually utilizing the resource in direct provision for human needs and wants (whether through consumption or commodification), the second addressing the "existence" value assigned to the resource, and the third reflects the unanticipable contingent value that the resource may play as a key factor in overall ecosystem adaptive capacity (or as a resource for direct use by humankind in the future).[7] The relative magnitude of these three terms changes with the scale at which VALUE is computed. Such price inconsistency may effectively preclude reliance on the SNA-based flow calculations as a platform on which new accounts might be constructed.

Specifically, consider the example of three scales, local, national and global (which could be local, regional and national as well, for a large nation-state). In the immediate area, the local resource is either employed to contribute directly to human welfare (through consumption or through sale) or it is not; at this level, USE dominates. At the national level, not all parties may be able to realize a USE value, perhaps because of distance. However, some economic actors may value particular resources as a matter of cultural or national pride, or for other noninstrumental purposes. NONUSE thus grows in relative importance, although USE may grow as well. At the global level, the value obtained by the defensive action of not reducing ecosystem dynamics and adaptive capacity becomes relevant, although it may have been disregarded at a smaller scale; thus DIVERSITY enters as a significant contributor to VALUE. While DIVERSITY may be said to never actually drop to zero, even in the local accounting for VALUE, clearly, the per capita value assigned to a collective consumption environmental resource (the "public good" it provides) changes with the scale at which it is computed. Decisions made at different scales, then, will price outcomes and alternatives differently, so a system that accepts the national scale as *the* scale for valuation of choices, will make decisions that will damage localities. Far more significantly for the ongoing stability of the global ecosystem and the continued existence of the species *homo sapiens* such decisions, *virtually by definition*, are not likely to be appropriate for overall global sustainability.

Why, then, does a system for making decisions that fails to deal with people where they live and work, never directly confronts the myriad issues of equity and equality associated with alternative patterns of spatial distribution of the boons and banes of human activity - and ignores cumulative impacts on the globe - continue to dominate the political debate? The true challenge to the derivation of a system of accounts that addresses the types of considerations we have raised may well have other roots. Bishop and Welsh (1992:415) warn us of a new danger inherent in knowledge:

> "If ways can be devised to measure existence values with sufficient accuracy, ... It is conceivable that a major realignment of national priorities in the direction of environmental protection and rehabilitation could result."

Yet, as Rosenthal and Nelson (1992:121) observed approvingly, the professional economist in practice plays the role of a "'partisan advocate' for what amounts to an economic 'ideology'." The

[7] The term "USE" in equation (1() thus incorporates both the "use" and "exchange" values of Marxist theory, ignoring the distinction and implicitly assuming the permeation of a commodity-based economic system. We thus can see the impact of scale on accounting value even if all economies were fully monetized.

ideology of market-driven and market-valued production certainly dominates the global economy (and many of the practices of the United Nations and other international organizations). Perhaps, then, the real problems to be overcome in deriving an alternative measure of humankind's intended and unintended impacts on the well-being and prospects of its members in different locales and across the globe as a whole are not socio-economic or analytical, but political. Assuming this conclusion to be valid, we turn now to speculation about possible mechanisms for generating the needed political imperatives.

ON THE IMPLEMENTATION OF SUSTAINABILITY AS AN OBJECTIVE: TOWARD REQUISITE ATTITUDINAL AND INSTITUTIONAL CHANGES

Sustainability is not something that needs to be introduced; rather what is needed is its *re*-introduction. A sustainability ethos is plausibly a human organizational tenet. Certainly resource consumption in pre-history was largely utilization of renewables more than depletion. The now long-standing pattern of resource depletion and environmental despoliation in pursuit of short-term gain in the North has a shorter history in the South. Moreover, the nations of the South have retained more cultural patterns and economic practices that are amenable to or support sustainable practices than has the North.

Thus, the pursuit of sustainability as an objective must involve a concentration on *changing the non-sustainable attitudes and institutions of the North*. However much the natural resources warranting special attention and preservation may lie in the territories of the South, the North, both as the dominating economic powers and as the source of capitalist- and electoral-system cultural values and of idealized economic practices and concepts of efficiency, sets the agenda for economic policy, and thus for "sustainable development" practices.[8] We thus examine both indications of changes and shifting attitudes in the North and the impediments and barriers to the requisite institutional reorientations.

For our purposes here, we shall avoid discussion of the desirability of quantification and its potential pitfalls; the acceptance of numerical comparisons and over-simplifications is so pervasive that, regardless of the problems it may cause, it must be considered immutable, at least in the short run. Within an immediate time horizon, however, two possible reorientations within the quantitative assessment rubric are possible: first, modification of the socio-economic and political objective(s), that is reformulation of the SNA, and, second, modification of the optimization imperative that has dominated, at least since the advent of the industrial revolution.

We address these two issues in order, utilizing two distinct bodies of data. First, we make reference to the growing recognition of problems with the SNA and the pursuit of unlimited growth in production, output and throughput that we have already presented above. Second, we examine in

[8] We need not dwell on this dominance here, evident in a number of institutions:
(1) The Group of Seven industrialized nations that shape world economic conditions by their policies;
(2) The twenty-five nation Organization for Economic Cooperation and Development that recommends national accounting systems and policies for greater "efficiency" to its member states - and thus to the world; or,
(3) The worldwide organizations they dominate that govern financial flows and trade, the International Monetary Fund, the World Bank, and, now, the World Trade Organization that some environmentalists contend will find ecosystem preservation provisions to be constraints on free trade.

some detail the efforts of the state of Kentucky, USA, which is now attempting to identify alternative environmental futures, and pursue sustainable development. This effort, funded in part by the United States' Environmental Protection Agency, is similar to those in a number of other US states and in several of the German länder to devise sub-national policies that can promote sustainability, and to marry local to more global environmental concerns and priorities.

Changing Objective Functions

That the SNA is inadequate is now widely recognized, at least among economists. Data also show that, even in the United States, people surveyed about the supposed environment-economy tradeoff express increasing willingness to sacrifice economic growth to environmental quality, at least in principle (Dunlop 1992). When asked to list "environmental policy issues facing Kentucky in the next twenty-five years," participants in a planning process for assessing environmental alternatives in Kentucky, working in three groups, enumerated 98 preliminary items (raw data are in Appendix A). Table 1 classifies the entries as to generic type of issue.

Clearly, this enumeration indicates that the participants in this planning effort, looking toward more sustainable economic development policies for one of the poorer states in the US, were most concerned over the intersection of social, economic and environmental issues. However, it is noteworthy that only seven items listed out of 98 specifically alluded to environment-economics conflicts. At a minimum, we might argue that *claiming* such direct conflicts is no longer acceptable, and the participants were in some sense self-censoring. However, given the total of forty-four issues identify under the general rubric of socio-economic policies and practices and the environment, it seems that a more generous interpretation may be in order: that issues of mores and values are recognized to be of critical importance in shaping future quality of life and environmental conditions in Kentucky. (This perspective is bolstered by the language used in specification of issues - see the lists in Appendix A.)

Table 1

Topics Covered in Initial Listing of Environmental Issues Facing Kentucky

GENERIC TOPICAL AREA	Group A	Group B	Group C	Total
Technical/Engineering/Problem-Solving	8	8	8	24
Knowledge (lack thereof)/Data Problems	4	3	4	11
Social-Economic-Environmental Policy Issues	19	11	14	44
Social Problems and Environmental Issues	7	4	3	14
Socio-Econ. Issues and the Environment	10	3	10	23
Economy - Environment Conflicts	2	4	1	7
Emerging Ecological Issues	9	5	4	18

We may thus be encouraged by some indications of change on the ground, so to speak, among policy-makers, not just recognition of measurement problems by scholars or statisticians, such as Adger and Whitby (1991) and Hartwick (1991). Yet we note limitations on willingness to change attitudes and thus objectives. First, the relatively low number of ecological issues listed may be interpreted as homo-centrism: ecological problems and species loss may only be important insofar as those events have recognized impacts on humankind. We thus have limited expansion of any stated objective top include ecological concerns beyond impacts on humans. Second, the technological and knowledge-based issues identified, which outnumber the ecological issues almost two to one, may be indicative of continued reliance on technological "fixes." The expectation that advances in knowledge will inevitably permit problems to be more readily resolved may limit the attention provided to longer term effects on complex multidimensional and multiscalar ecosystems and environmental issues in any reformulated objective.

A finer fix on the extent to which there is evidence of a shift towards pursuit and promotion of more sustainable practice in the objectives of the North may be obtained from the final step of the small group processes in the Kentucky exercise. After examining their initial issues lists and combining some while splitting others as too complex, each of the three groups voted on their seven most important or significant issues, those most likely to prove critical or important. The results across all three groups, are presented in Table 2 for the four major categories of Table 1.

The shift in emphasis given the different topic areas in Kentucky when the question is shifted from what issues exist to what are the most significant or important issues is not promising as a mirror on the flexibility and adaptive capacity (or understanding) of the North. First, we see a major emphasis emerging on technological fixes, suggesting an objective function shift towards more, not less, tampering with the environment and complex ecosystems. Secondly, the drop in emphasis on knowledge and data problems is actually much more acute than Table 2 suggests: the one issue left as a priority by the participants was "environmental literacy" for the population at large. In effect, there was no acknowledgement in the priority voting of any critical missing data or knowledge! This finding, especially when combined with a halving of the emphasis placed on ecological issues, does not hold out much promise for constructive realignment of traditional growth-oriented objective functions.

Table 2

Topics in Highest Priority Listing of Environmental Issues Facing Kentucky

GENERIC TOPICAL AREA	Original Percentages (N = 98)	Prioritized Percentages (N = 21)	Priority Items Total
Technical/Engineering/Problem-Solving	24.9%	42.9%	9
Knowledge (lack thereof)/Data Problems	11.2	4.8	1
Social-Economic-Environmental Policy Issues	44.9	42.9	9
Emerging Ecological Issues	18.4	9.5	2

In effect, the Kentucky findings briefly summarized here put flesh on the bones of the rationalist and instrumentalist logic that still prevails in the latest round of SNA revisions.[9] Both the revised SNA and the priorities expressed by state policy makers rely on the validity of critical assumptions and attitudes whose validity is increasingly questionable:

(1) Adequate knowledge of environmental conditions - and measures of those conditions - are presumed to exist;
(2) Development of the ability to respond and react and adapt and correct is a priority, which may lead to acceptance of "short-term" environmental damage as a result of research; and,
(3) The possibility of (unanticipated) irreversible ecosystemic damage that adversely affects humanity is implicitly, if not explicitly, presumed to be zero.

Thus, the priority placed on changing objectives - at least with respect to environmental impacts - is relatively low. As is often the case in democracies, it would appear that Kentuckians' willingness to act on difficult problems, even to the limited degree of altering objective functions and problem specifications, awaits a disaster or other occurrence that forces an adaptive response.

Moderating the Drive to Optimize

Inherent in the concept of sustainability is balance. We have already examined how pursuit of "efficiency" in the short run can undermine human cultural and economic diversity and adaptive capacity whether or not it reduces ecosystem diversity. A single-valued function (such as a mathematical measure of productivity or efficiency) can be maximized. A multi-valued function is not amenable to mathematical optimization.[10] Any reconceptualization of socio-economic wellbeing that promotes multidimensionality or acknowledges problems in arriving at common measures for outputs and outcomes thus *must*, by its very nature, moderate the drive to optimize.

The issue of "noncommensurability," the inability to measure along a common metric or to apply a common numeraire to different outcomes, is well-recognized by the critics of and commentators on the SNA. Victor Anderson (1991), for example, offered "Alternative Economic Indicator***s***," not a new single measure, as the subject of his brief volume on improving approaches to the measurement of economic success. While the UN (1993) proposals for new measures are presented under the title "Integrated Environmental and Economic Accounting," the discussion addresses new measures to augment the SNA, *but not be integrated into them*.

Other examples of well-informed discussion of the problems noncommensurability abound, including extensive examinations in the literature on cost-benefit analysis and project appraisal. It is

[9] Ruggles, 1994, discussing weaknesses in the UN's 1991-1993 revisions to the SNA, enumerates problems in their application to "developing countries," never once mentions environmental accounts, but concentrates on the narrower questions of promoting consistency between statistical measures of different traditional GNP components. Although the UN did address the issue of environmental accounts at the same time as it revised the SNA, the environmental measures were addressed as distinctly different measures, and the role of environmental depletion and other related considerations intentionally excluded from consideration as elements of the SNA revisions (United Nations 1993).

[10] This statement is mathematically demonstrable and has been examined in detail elsewhere. A simple example may suffice: with a given budget one can maximize the number of "fruit" one purchases in a market, but not the number of apples *and* the number of oranges *simultaneously*.

unfortunate that the UN, David Pearce (1993) and many others have responded to the problem of measuring well-being deriving from both environmental conditions and material commodity production by recommending reliance on contingent valuation. The method, being a survey technique intended to emulate market decision-making, presumes that respondents are (a) well informed as to the effects of them of ecological changes that they are asked to value in monetary terms, and (b) comfortable with monetized exchange, which is less likely in the South than the North. The growing advocacy of this technique reflects the continued dominance of optimization as a decision ethos, a belief pattern emanating from a teleological ethic, that all actions must be instrumental, and a presumption that utility can never turn negative as quantity rises. In fact, the problem raised over a decade ago by the United Nations Environment Program (UNEP 1982:52), that "many environmental values and effects cannot be expressed in monetary terms" was an issue only insofar as optimization was to be pursued.

Yet there is indication of a weakening of both the rigid adherence to the neoclassical economics paradigm and the presumption that a single-valued optimizable function can guide policy. The OECD, for example, summarizing the findings of studies on environmental policy benefit estimation based on contingent valuation techniques (that Pearce himself helped to conduct), observed that, "... it is important not to make exaggerated claims for the valuation procedure, nor to imply that the resulting values are the **only** ones that are relevant" (1992:51; emphasis in original). So, while neoclassical logics are being extended to incorporate "environmental values," the limits of the measures are coming to be acknowledged. Similarly, officials in the US Environmental Protection Agency, long the leader in risk-based assessment in the one OECD country in which benefit estimation does *not* seem to have a credibility problem, recently argued the incompatibility of the risk assessment paradigm and the pursuit of sustainable development. Risk assessment, an intellectual and logical outgrowth of the neoclassical paradigm, is assessed by the authors, leaders of the EPA Future Studies Unit, as a potential impediment to sustainability:

> "... our present forms of economic growth, and associated increases in personal affluence, are not necessarily leading us in the direction of a sustainable environmental future.
>
> "... an overreliance on risk will limit our ability to create a national or international vision of a sustainable future which is comprehensible, achievable, and social and politically contagious." (Manning and Rejeski 1994:7)

We thus find that the initial acceptance of the principle of noncommensurability as a basis for examining environmental policy choices posited by the UNEP, and the World Commission on Environment and Development (Brundtland Commission) appear to be gaining acceptance. UNEP (1982:51) advocated "... giving equal importance to accelerated economic development and to careful management, preservation and enhancement of the natural resources of the earth..." UNCED focussed more on current inequality across humans, but similar posed noncommensurate elements in its objective: "... [S]ustainable development requires that societies meet human needs both by increasing productive potential and by ensuring equitable opportunities for all." (Brundtland Commission 1987:44) Both the OECD work and benefits estimation and the USEPA concerns over the reliance on pure risk estimation suggest that pursuit of optimization in practice may be increasingly understood to be chimerical.

The growing influence of the United Nations Environment Program even in the thinking of the North may indicate the accuracy of Klaasen and Opschoor's observation (1991:110) that, "... the value society attaches to natural resources and the environment is not merely the sum of all individual values. Environment is a 'merit good'..." which means that market-based valuations of its worth will always understate its aggregate value to people.[11] This characteristic of ecosystem preservation as a merit good is even recognized by the Organization for Economic Cooperation and Development, one of the *bêtes noires* of those who blame environmental deterioration on the excesses of capitalism (OECD 1989). Unfortunately, the contingent valuationists appear to ignore this issue, which reduces their sophisticated maneuvers to adjust "quasi-market" questions to irrelevance, given the inherent (and unmeasurable) underestimation that must result.

At the level of actual policy formation, the theoretical concerns with reliance on contingent valuation and forcing a common metric, driving toward an optimizable objective function, are mirrored in argument over combining issues once raised. The discussion in the Kentucky case parallelled the arguments raised by Hanley and Spash (1993) over the damage done by the tendency to reduce ethical principles to utilitarian constructs under the rubric of the Kaldor-Hicks potential compensation ("Potential Pareto") logic. The widespread resistance on the part of members of all three participating groups to all efforts to combine different issues originally raised suggested stands on principles and unwillingness to compromise issues for analytical simplicity.

This tolerance for complexity was evident in the deliberations of all three groups as they considered their original lists (notwithstanding what may appear to be obvious duplication in the language evident in Appendix A). It became even more extreme after the three groups were combined for review and discussion of the combined priority lists. The argument raised dwelt repeatedly on issues of common measurement or metrics, with the case against combining issues grounded in the noncommensurability of the different elements.[12] For example:

(1) Combining the issue of "protection of ecosystems" with that of "property rights and land uses" was rejected in some argument since the former was difficult to measure in any form, while the latter involved income distribution issues as well as the public - private sector balance. (A direct conflict has been drawn in the US between the private rights of landowners to develop their property as they wish and the public's rights to environmental preservation and safeguarding; the legal issues remain unresolved.)

(2) Seeing a priority in providing "environmental services to rural [areas] and poor cities," many participants rejected combining this issue with "changing the economic/environmental paradigm," for fear that the specific redistributional issues - and the ethical principles on which they were based - would be reduced to an element of a broader proposition.

(3) While "sustainable agriculture - tobacco" ended up a priority topic, there was no general agriculture issue (or, for that matter, other industry- or product-specific) issue in the final 21 items listed. This specificity appeared to reflect the unique position of the crop in the agricultural economy across the state - and its predicted 40 percent decline over the coming decade. Issues facing other sectors were combined into broader propositions, but not this one,

[11] Note that this concept is incorporated in Equation (1), above, under the rubric of DIVERSITY, the value of which to him or her is not likely to be recognized by any one individual.

[12] The resistance to collapsing the categories posed by the different groups when the priorities were combined may be explained away as territoriality. However, the arguments presented generally took the form of statements about the individual groups' efforts to find common metrics and combined items. In effect, the argument presented most often was "we have gone as far as we believe is reasonable towards assuming commensurability."

reflecting its unique political and cultural importance as a part-time crop and supplement to non-farm incomes, including those of "urban" factory workers.

Each of these cases reflects a different element of noncommensurability that is easily recognized and respected in specific decision making contexts. First, conflicting objectives, part of the first example, are unlikely to be measurable on the same metric; the maintenance of property rights and ecosystems cannot, therefore, be meaningfully combined into a common "preservation" measure. Second, any concern for *distribution* is difficult to combine with nondistributional issues; no socioeconomic system can afford to totally ignore distribution for long if it is to remain stable, so a rational SNA must have, at a minimum, two dimensions - and thus is not optimizable. Finally, uniqueness or high significance assigned to issues appears to be evolve into an unwillingness to reduce a specific measure of impact or change to a mere component of a larger aggregate.

To the extent that the Kentucky planning process is a reflection of attitudes and practices evolving at the sub-national level in the North, then, faith in maximization appears to be waning. The very acceptance of complexity reflected in the multiple measures to which participants remained committed provides hope that more realistic decision-making logics and criteria for making hard choices may evolve in the nations of the North.

Re-Examining Objectives and Decision-Making

The discourse in the North, and the changing and shifting concerns of policy-makers, taken in combination, hold promise for changes that may filter through to assist sustainable development in the South as well as the North. This optimistic assessment is based less on *what has been accomplished* than on the *questions being raised*, and to some degree, on emerging policy and new institutions. Prominent developments include the following:

(1) The European Union finally activated the European Environment Agency in January, 1994, after a lengthy delay. This action may raise the visibility, credibility and policy impact potential of environmental concerns to a higher level than they have previously enjoyed in the EU.
(2) The United States is broadening sub-national environmental control powers and community-based organizations are forming coalitions to press environmental agendas, even as the national Environmental Protection Agency comes under increasing attack. The Supreme Court of the US recently enhanced state and local powers to control waste flows and disposal in the face of a broad attack on environmental controls by conservatives, land-owners, and Republican politicians.
(3) The issue of "sustainable development" is replacing that of "economic development" in policy debates and planning efforts from local to national and trans-national levels in the North and beyond. While the definition of sustainability varies, and sometimes may seem as little more than new language to justify the status quo, the very fact that economic development as measured by SNA criteria is no longer the sole economic policy concern suggests either a shift in criteria, the imperative of optimization, or both.
(4) The North's support for the Rio Conference, the growing influence of the United Nations Environment Program and the commitment of UN resources towards the development of the SEEA, a new set of national accounts that augment the SNA all attest to the erosion of support for accounts that have been unchallenged for decades. Decreasing reliance on the traditional SNA as the sole criterion for assessing national economic policy leaves open a

path to a different objective function - and, in the interim, constrains the tendency to pursue optimization of any pure SNA-based economic objective.

(5) The North supported the World Bank in opening the Global Environment Facility in 1991. That facility, despite its weaknesses and limited resources, reflects a growing understanding that financial flows are not the only investment returns that are important to lenders, to nations, and to humankind. More important, the GEF may mark the first international recognition of the fact that actions taken by one country (or sub-national state or group) can and does affect the environment of the globe. To date, this recognition has only been applied to actions by the South, but it offers hope that the same questions can be raised of actions by nations in the North - who are, by their actions, the dominant forces shaping environmental change.

There is no assurance that these trends will produce more sensitive investment criteria, trade policies, or other practices. When, however, the German sub-national efforts to pursue sustainable development raise questions about applying sustainability criteria to imports and standards for the production of goods and services, as has been proposed in Baden-Wurttenberg, we have reason to hope that the direction of change will be toward broader measures of human welfare, to the impacts of human actions on the environment, and to the effects of environmental and ecosystem changes on humankind.

IN CONCLUSION: PROSPECTS FOR CONTINUING PRO-ENVIRONMENTAL INSTITUTIONAL AND ATTITUDINAL CHANGES

Globalization is an over-used term, but it is clearly a strong trend in several dimensions. First, it is evident in production and distribution processes for goods and services. Second, it appears in political processes, whether in free trade or open market pacts, including the European Union and the North American Free Trade Agreement. Third, it characterizes information flows and communications - especially in the technologically advanced countries of the North.[13]

In all three dimensions, this process alone can be expected to increase the sensitivity of the North to the differences in economic and ecological conditions shaping decisions across the globe. However, it also produces a response: the growth of localism, which, as we have noted, could increase parochialism. There is thus the danger of an inward turning by communities in the North that ignores geographically and politically "distant" consequences of local actions that, if properly understood, may involve changes in global environmental conditions. The prospects for pro-environmental institutional and attitudinal changes is shaped by the interaction between the pressures toward globalization and the localist response.

On the level of production of commodities and trade, globalization implies growing interdependence: the center-periphery relations that have characterized the relationship of the ex-colonial powers to the rest of the globe have been under pressure due to resource constraints in the North and increasing understanding of their economic power on the part of the resource-rich countries of the South. At the same time, the globalization of the location of manufacturing and other

[13] We ignore here the emergence of a more activist and interventionist United Nations. It may, however, be argued that the very problems the UN has faced in attempting to solve armed conflicts and in responding to environmental disasters may lead the world organization to consider other forms of humanitarian interventions, such as efforts to avoid environmental problems before they emerge.

production has forced the North, at least marginally, to concern itself more with worker education, health and productivity in the South. Thus, we see not merely concerns with pesticide use in the South that could taint agricultural products exported to North, but also growing interest in aspects of working conditions and levels of environmental pollution, at least insofar as these problems may affect the productivity of establishments owned or controlled by the corporate interests from the North.

This concern is heightened by the spread of trade pacts that link more and less technologically advanced nation-states. Both within the EU and under NAFTA, concerns about the maintenance of a "level playing field" for inter-local competition for production facilities have led to the advanced states' increased interest in the introduction and enforcement of environmental regulations in the less advanced countries. There may be little "true" concern at the emotional level of the working and living conditions of workers in Greece on the part of Germans, or of city dwellers in Mexico on the part of the United States. However, interest in retaining jobs and other economic activity lead the nation-states with greater levels of environmental regulation to pursue higher regulatory standards in their trade "partners" simply as a means of reducing differences between them in costs of production.[14] The pacts themselves also provide more direct flow of information on economic, cultural and environmental condition differences between their member-states, that can also increase sensitivity and concern about environmental spillovers.[15]

Finally, increasingly global information flows, experienced above all in the nations of the North with expanded telecommunications coverage of events and people world-wide, cannot help but sensitize people to the problems in other lands. Certainly, television news coverage can affect public opinion, and the footage on economic and environmental problems in the South visible on the most insular of the television systems of the North, that of the United States, has increased markedly. The broadened telecommunications links available through the INTERNET and the World Wide Web to residents of nations with widespread computer access and usage are also a potentially very powerful factor in stimulating pro-environmental attitude shifts: the 'NET both informs about issues worldwide and mitigates against excessive localist parochialism through the provision of easy access to information on other locales facing similar problems, leading to information sharing and alliance formation.

On balance, then, the trends can be said to be positive. Strengthening them should be a strong priority for the South: demonstrating ecologically sustainable production and forms of human organization to the North has never been easier - but its importance grows with each passing day.

---

[14] The EU, for example, is rethinking its previous findings that issues of environmental policy are matters for member-state, not European action: the principle of "subsidiarity," that actions be taken at the lowest possible level of government, is being questioned in light of the impact of different regulatory policies on costs of production and thus the location of firms across the member-states of the EU. In the US, NAFTA ratification by Congress was made possible only by the adoption of two specific side agreements, one with respect to environmental standards and the other with regard to working conditions.

[15] The US shares the Rio Grade river with Mexico - and concern over the contamination of those waters predates NAFTA. The new pact makes common actions to address the problem easier. German reunification, and now the increasing interest in incorporating nations of Central and Eastern Europe into the EU or broader trade pacts, has led to greater sensitivity to the spillovers that do not respect national boundaries. (The Rhine fire and, of course, the radiation from Chernobyl, provided a foundation for the growth of such concerns.)

References

Adger, N., and M. Whitby. 1991. "Accounting for the impact of agriculture and forestry on environmental quality." European Economic Review XXXV: 629-641.

Anderson, V. 1991. Alternative Economic Indicators. London: Routledge.

Ashby, W.R. 1968. "Variety, Constraint and the Law of Requisite Variety." Pp. 129-136 in W. Buckley, ed. Modern Systems Research for the Behavioral Scientist. Chicago: Aldine Publishing.

Ayres, R.U. 1993. "Cowboys, Cornucopians and Long-Run Sustainability." Ecological Economics 8:189-207.

Berrien, F.K. 1968. General and Social Systems. New Brunswick: Rutgers Univ. Press.

Bishop, R.C., and M.P. Welsh. 1992. "Existence Values in Benefit-Cost Analysis and Damage Assessment." Land Economics LVIII(4):405-417.

Brown, L. 1991. Saving the Planet. New York: W.W. Norton & Co.

Brundtland Commission (World Commission on Environment and Development). 1987. Our Common Future. Oxford Univ. Press, New York.

Bryant, B., and P. Mohai (eds.). 1992. Race and the Incidence of Environmental Hazards; A Time for Discourse. Boulder, CO: Westview Press.

Bullard, R.D. 1990. Dumping in Dixie: Race, Class and Environmental Quality. Boulder, CO: Westview Press.

__________ (ed.). 1993. Confronting Environmental Racism: Voices from the Grassroots. Boston, MA: South End Press.

Daly, H.E. 1991. Steady-State Economics. Second Edition. Washington, DC: Island Press.

__________, and J.B. Cobb. 1989. For the Common Good. Boston: Beacon Press.

Dunlap, R.E. 1992. "Trends in Public Opinion Toward Environmental Issues: 1965-1990," pp. 89-116 in R.E. Dunlap and A.G. Mertig (eds.), American Environmentalism: The U.S. Environmental Movement, 1970-1990. Philadelphia, PA: Taylor and Francis.

Ecologist, The. 1993. Whose Common Future? Reclaiming the Commons. Philadelphia: New Society Publishers.

Edelstein, M. 1988. Contaminated Communities: The Social and Psychological Impacts of Residential Toxic Exposure. Boulder, CO: Westview.

European Union. 1993. Fifth Environment Action Programme: Towards Sustainability. Official Journal C-138. May 17.

Fisher, J. 1993. The Road From Rio: Sustainable Development and the Nongovernmental Movement in the Third World. Westport, CT: Praeger Publishers.

Friedmann, J., and H. Rangan (adds.). 1993. In Defense of Livelihood: Comparative Studies on Environmental Action. West Hartford, CT: Kumarian Press.

Hanley, N. and C.L. Spash. 1993. Cost-Benefit Analysis and the Environment. Aldershot, UK: Edward Elgar Publishing, Ltd.

Hartwick, J.M. 1991. "Degradation of environmental capital and national accounting procedures." European Economic Review. XXXV: 642-649.

Hofrichter, R. (ed.). 1993. Toxic Struggles: the Theory and Practice of Environmental Justice. Philadelphia: New Society Publishers.

Kapp, K.W. 1950 [1971]. The Social Costs of Private Enterprise. New York: Schocken Books.

Karshenas, M. 1993. "Environment, Development and Employment: Some Conceptual Issues." Pp. 11-40 in A.S. Bhalla (ed.). Environment, Employment and Development. Geneva: International Labour Office.

Klaasen, G. and J. Opschoor 1991. "Economics of Sustainability or the Sustainability of Economics." Ecological Economics IV:93-116.

Kopp, R.J. 1992, "Why Existence Value *Should* be Used in Cost-Benefit Analysis." Journal of Policy Analysis and Management XI(1):123-130.

Krimsky, S., and D. Golding (adds.). 1992. Social Theories of Risk. Westport, CT: Praeger.

Krutilla, J.V. 1967. "Conservation Reconsidered." American Economic Review. LVII(4):777-784.

Lane, R.E. 1978. "Markets and the Satisfaction of Human Wants." Journal of Economic Issues. XII(4):799-827.

Lindell, M.K., and R.W. Perry (adds.) 1992. Behavioral Foundations of Community Emergency Planning. Washington, DC: Hemisphere Publishing Corp.

Logan, J.R., and H.L. Molotch. 1987. Urban Fortunes: The Political Economy of Space. Berkeley: University of California Press.

Lutz, E., and M. Munasinghe. 1991. "Accounting for the Environment: An improved way of preparing national accounts could help achieve more sustainable development." Finance & Development March: 19-21.

Manning, M., and D. Rejeski. ND (1993). "Sustainable Development and Risk: A Fit?" Discussion paper, Future Studies Unit, US Environmental Protection Agency. Unpublished Mimeo.

Makhijani, A. 1992. From Global Capitalism to Economic Justice. New York: The Apex Press.

Meadows, D.H., et al. 1972. The Limits to Growth. New York: Universe Books.

Meyer, P.B. 1976. "Optimization and the Sacrifice of Diversity to Efficiency." Journal of Economic Issues. X(2):328-341.

__________. 1991. "Meaning and Action in Local Economic Development Strategies: A Comparison of Policies in Britain and the United States." Environment and Planning C: Government and Politics. IX:383-398.

__________ (ed.). 1993. Comparative Studies in Local Economic Development: Problems in Policy Implementation. Westport, CT: Greenwood Press.

__________. 1994. "Economic 'Development' and Environmental Threats: Institutional Factors Shaping Socio-Economic Impacts." Paper presented at the SASE Sixth Annual International Conference on Socio-Economics, Paris, France, July.

__________, and M.A. Burayidi. 1991. "Is Value Conflict Inherent in Rural Economic Development? An Exploratory Examination of Unrecognized Choices" Agriculture and Human Values VII(3):10-18.

__________, and K. Chilton, 1994, "Can Economics Provide an Ethically-Sensitive Framework for Environmental Choices? The Prospects for Transcending the Limitations of Cost-Benefit Analysis." Pp. 189-205 in D. A. Brown, ed., Proceedings of the Interdisciplinary Conference on The Ethical Dimensions of the United Nations Program on Environment and Development, Agenda 21. Camp Hill, PA: Earth Ethics Research Group, Inc., Northeast Chapter.

__________, R.H. Williams, and K.R. Yount. 1995. Contaminated Land: Reclamation, Redevelopment and Re-use in the United States and the European Union, Cheltenham, UK: Edward Elgar Publishing, Ltd., forthcoming.

Mittelman, J.H. 1988. Out from Underdevelopment: Prospects for the Third World. New York: St. Martin's Press.

Morphet, J. 1994. "Environmental Policy in the EU." Local Government Policy Making XXI(1):26-29.

National Commission on the Environment. 1993. Choosing a Sustainable Future. Washington, DC: Island Press.

Organization for Economic Cooperation and Development (OECD). 1989. Environmental Policy Benefits: Monetary Valuation. Paris: OECD Publications.

OECD. 1992. Benefits Estimates and Environmental Decision-Making. Paris: OECD Publications.

Pearce, D.W. 1993. Economic Values and the Natural World. Cambridge, MA: MIT Press.

_______, and J.J. Warford. 1993. World Without End: Economics, Environment and Sustainable Development. New York: Oxford University Press.

Rosenthal, D.H., and R.H. Nelson. 1992. "Why Existence Value Should *Not* be Used in Cost-Benefit Analysis." Journal of Policy Analysis and Management XI(1):116-122.

Ross, D.P., and P.J. Usher. 986. From the Roots Up: Economic Development as if Community Mattered. Croton-on-Hudson, NY: The Bootstrap Press

Ruggles, R. 1994. "Issues relating to the UN System of National Accounts and developing countries." Journal of Development Economics XXXXIV: 77-85.

Schnaiberg, A., and K.A. Gould. 1994. Environment and Society: The Enduring Conflict. New York: St. Martins Press.

Singh, K. 1994. Managing Common Pool Resources. Delhi, India: Oxford University Press.

Solo, Robert. 1974. "Problems of Modern Technology." Journal of Economic Issues VIII(4): 859-876.

Swaney, James A. 1987. "Elements of a Neoinstitutional Environmental Economics." Journal of Economic Issues XXI(4):1739-1779.

Swanson, T.M., and E.B. Barbier (adds.). 1992. Economics for the Wilds: Wildlife, Diversity, and Development. Washington, DC: Island Press.

Treitler, I.E. 1994. "Merging Methodological Rigor with Interpretive Sensitivity in an Intercultural Communication Strategy." Paper prepared for the conference on Wilderness Areas, Regional Planning and the Quality of Life, Lexington, KY, October.

United Nations, Department of Economic and Social Development, Transnational Corporations and Management Division. 1992. Environmental Accounting: Current Issues, Abstracts, and Bibliography. United Nations, NY: UN Publications Office.

_______, Department for Economic and Social Information and Policy Analysis, Statistical Division. 1993. Integrated Environmental and Economic Accounting (Interim Version). Studies in Methods (Handbook of National Accounting) Series F, No. 61. United Nations, NY: UN Publications Office.

_______ Environment Program. 1982. Review of the Major Achievements in the Implementation of the Action Plan for the Human Environment. Nairobi, Kenya: Author.

Appendix A: Items Logged in Initial Nominal Group Technique Listing of Environmental Issues Facing Kentucky (*)

Group A

1. Risk based clean up
2. changes in rural population
3. protection of ecosystems
4. lack of water quality data
5. relationship between economy and environment
6. political expediency vs. leadership
7. social infrastructure for water and waste
8. destruction of riparian areas
9. education of adult population
10. measuring a protecting public health
11. solid waste disposal
12. hazardous waste disposal
13. lack of creative and reflective problem solving skills
14. changing environmental paradigm
15. obsession with private car
16. loss of assimilative ability of the stream
17. general forestry issues
18. amending urban development patterns
19. loss of agricultural lands and open space due to urban expansion and excessive auto uses
20. recycling of paper, glass, and plastic.
21. Increasing structural auto independence
22. urban air pollution/air toxic
23. green grass obsession
24. increasing cost/maintaining waste water treatment plants
25. government as enemy
26. lack of civic responsibility
27. non-renewable base ecosystem
28. decrease fund while increase demand for environmental protect
29. roles of different levels of governments
30. overuse of package treatment plants
31. loss of federal standards and funds research
32. abandoned urban land
33. intensive live stock operations
34. bio-accumulation of solids
35. purchase of natural lands
36. global air pollution
37. incentives for conservation
38. public ability to believe talk, radio -perception
39. changing the environment and economy paradigm
40. water infrastructure and waste water treatment

---

* The members of each of the three groups listed generated topics individually, then listed them together; each group (numbering 7-9) contained state environmental officials, environmentalist representatives, natural scientists and/or engineers, and representatives of other public organizations as well as of industries subject to environmental regulations. These are the items as originally listed by each group leader for use in discussion by the team; no rephrasing has been done, and clarifications, if any, are in italics. Data are from a May, 1995, meeting.

<u>Group B</u>

1. air quality attainment and maintenance in Jefferson county and Northern Kentucky and other urban areas
2. educate public on how to achieve balanced growth (continuing need)
3. implementation of laws that relate air and water quality and relation to economies by coordinating regulations and training personnel
4. coordinate regulation requirements between cabinets
5. forest management: grow to full value or sell too early
6. energy use / changes - alternative fuels
7. future of Kentucky water quality (lakes and streams) as results from agricultural development
8. global climate change effects
9. regulation / multimedia permitting incentives based regulations and pollution prevention planning
10. provide trained environmental personals at all levels
11. continued conflict between non-renewable resources extraction and environmental degradation and sustainability
12. allocate resources according to health and safety impact (risk)
13. pollution prevention vs. assimilation of waste into natural environment
14. herbicide - pesticide use
15. hazardous waste
16. tobacco industry sustainability as use is regulated
17. coal industry sustainability and environmental impact
18. State / local support for environment
19. how clean is clear?
20. nuclear winter with continued global radiation release
21. flat aging population requiring adjustments from growth based economy
22. loss of plant / animal life
23. poor agricultural practice reduces land and water quality
24. landfill alternatives/municipal source/solid waste reduction
25. recreation use
26. ecological risk assessment
27. sustainable agriculture

Group C

1. produce environmental literacy (children and adults)
2. building coalition between environmental groups
3. water quality / quantity
4. economic development/sustainability
5. property rights issues
6. public works and infrastructure for water/sewage treatment / transport
7. land use issues ("development and environmental protection)
8. environmental service to rural areas and environmental equity
9. preventing pollution/destruction of natural resource bases
10. forest management
11. protect of usable farm land
12. scientific merit of health care laws and legislative actions
13. protection of critical natural areas
14. worker attitudes towards environment
15. environmental justice
16. changing consumption habits
17. SLAPP *["Strategic Lawsuits Against Public Participation;" a new tactic of legal harassment of environmental groups by those in the US seeking government permits for actions that disregard ecosystem or human health effects]*
18. water quality (drinking)
19. biodiversity
20. public/private partnerships
21. technological transfer -> urban development
22. toxic chemicals
23. non-point source pollution
24. environmentally misinformation
25. development of ecologically based environmental legislation
26. solid waste (waste) management
27. health import of waste
28. building coalition / partnerships between environment and business and governments
29. property rights/land use issues
30. sustainable development/economic development
31. water management (quality and quantity) - non-point sources