

Valuing Wildlands

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Valuing wildlands is complex. (1) In a philosophically oriented analysis, I distinguish seven meaning levels of value, individual preference, market price, individual good, social preference, social good, organismic, and ecosystemic, and itemize twelve types of value carried by wildlands, economic, life support, recreational, scientific, genetic diversity, aesthetic, cultural symbolization, historical, character building, therapeutic, religious, and intrinsic. (2) I criticize contingent valuation efforts to price these values. (3) I then propose an axiological model, which interrelates the multiple levels and types of value, and some principles for wildland management policy.

About 2 percent of the contiguous U.S. is wilderness (1.2 percent designated; 1 percent under study); 98 percent is developed, farmed, grazed, timbered, designated for multiple use. Another 2 percent might be suitable for wilderness or semiwild status—cut-over forests that have reverted to wilderness or areas as yet little developed. Decisions are being made about how to value these relict wildlands. Since they are almost entirely public lands, these are political decisions; but they are also taking place in the midst of a philosophical reassessment, coupled with ecological concerns, about how humans should value nature. They are political decisions entwined with reforming world views.

Since these are public land use decisions about wild nature, there is a tendency to think that the most useful principles and strategies are likely to be economic: that the nearest thing to an adequate theory of "resource use" is going to involve an estimate of benefits over costs in dollars; that wise use will be "efficient" use. Decisions ought to be democratic, since they are political and about public lands, but pitfalls in the democratic process are many. Those with political clout and savvy, those with concentrated high-order interests, a lot to gain or lose, shout or outmanipulate the disorganized majority whose interests are diffuse and low-leveled. Organized small groups typically outact large latent groups; legislators react to pressure groups and defend their own interests. Agencies grow bureaucratic and sluggish; citizen preferences are difficult to register and aggregate; voters never have the options they prefer presented at the ballot box; and so on. One way

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to minimize these pitfalls is to insist on a decision analysis which is more systematic, more scientific, which often means, more economic.

While it is widely recognized that some "amenity values" or "environmental values" are recalcitrant to quantification in dollars or other units, nevertheless, the effort to see how far cost-benefit analysis introduces some sense of order into an otherwise sprawling dispute over values continues. Legislators and government professionals are always sensitive to the charge of misusing public funds and resources, and if they can make economically based wildland decisions, they think that their decisions will then be as nearly scientific and democratic as can be. They believe that one sure route into human caring is by pricing, not in all cases, but routinely in matters of resource use. Some consideration of the just distribution of such costs and benefits will be needed, but that can come later. Initially, they say, an economic assessment of what these relict wildlands are worth is all that is required.

In the discussion to follow I challenge this strategy. My discussion is not a criticism of the utility of cost-benefit analysis, only an inquiry into whether the sorts of values to be protected on relict wildlands can be captured in economic terms. In section one I outline seven levels of value, applicable independently of wildland decisions, followed by twelve types of value associated with wildland use. In section two I question whether efforts to register these values in monetary terms succeed. In section three I suggest several philosophical principles which might improve wildland decisions. Section one is descriptive; section two is critical; section three is partisan; all sections are analytic.

I. A TAXONOMY OF VALUES

In the taxonomic levels and types narrated here, there is no reason to think of mutually exclusive categories, but there is every reason to think of identifiable dimensions of value that need to be factored into any complete analysis.

MEANING LEVELS OF VALUE

(1) *Value_{ip} = individual preference value.* Value_{ip} is what individuals prefer in contexts of choice. Valuing and its product, value, lie in the experience of interest satisfaction. In this sense valuing is subjective—valuing brings value into being within subject-owners, typically in their relationship to the world. Mere objects, including organisms that have no psychological life, no felt preferences, can have no individual preference value, though they may be resources for preferences. In our private case, for normal adults, what we ourselves prefer is reasonably evident from introspection coupled with action. The values_{ip} of others can be known from verbal preferences and behaviors, although some situations compel discrepancies between attitude and action. Where there are constraints, it may be difficult to

ferret out true values. We also have to separate goals from failed performances, latent from manifest preferences, etc. $Value_{ip}$ has seemed to many to be the motor force of all value, from which all the rest are derived.

(2) $Value_{mp} = \text{market price}$. Often an illuminating way out of the subjectivity of $value_{ip}$ is to look to the market, which, though produced by $value_{ip}$, has empirical objectivity. Articles and services are regularly exchanged on the market, which in nonbarter societies invests them with a going price, a public, observable quantity, resulting from many individuals estimating the worth of having these commodities. $Value_{mp}$ is a derivative of usefulness, rarity, labor, advertising, government regulation, etc., but in the end things are traded instrumentally to satisfy human interests, and their price must reflect preferences. If no one desired these things, the market would collapse. In wild nature, no monetary or barter economy exists, but humans, nevertheless, buy and sell natural things incessantly. They labor, trade, and own property, using nature for interest satisfactions, and this brings wild nature into the economic sphere.

(3) $Value_{ig} = \text{individual good value}$. If valuing is just preferring, one can hardly make mistakes about what one has valued, any more than one can be mistaken about having made a target of something, though mistakes abound with regard to whether what is preferred really brings satisfaction. We can make choices and purchases that are not in our best interest, not really. They bring momentary goods, or none at all, and soon leave us worse than before. $Value_{ig}$ is what is in a person's interest, whether or not the individual chooses it. Preferences need to be constantly revised accordingly in terms of it. There is something raw about untutored preferences; individuals need education (even perfect knowledge) before they can competently say what (all) their goods are. Many things happen (such as the rain) which are of value whether we welcome them or not. Biological processes (photosynthesis) are vital even in our ignorance of them. $Values_{ig}$ may not involve exercising preferences, much less marketing.

(4) $Value_{sp} = \text{social preference value}$. Through politics, ethics, religion, etc., individuals express a social will, often conflicting with some particular wills. $Value_{sp}$ is what a society prefers when optionally allocating its time, resources, skills, energy, and money. Values characterize groups, not just individuals. $Value_{sp}$, a social trait, represents some amalgamating of $value_{ip}$, a psychological trait, though it is not clear how this does, or should, take place. Sociologists debate whether there is any social whole above the individual person-parts who compose it. Society itself has no center of experiences; only individuals do. Society is not capable of interest satisfactions; it enjoys no pleasures, suffers no pains. Such considerations lead many to claim that $value_{sp}$ is some kind of fiction, a pragmatic operational concept (like a center of gravity) which is only apparent. Still, some social preferences seem to serve society at large, beyond the fact that, or regardless of whether, they satisfy individual interests. Social preferences, unless oppressive, seem to command more importance than particular individual preferences. At least they are relatively more enduring.

(5) *Value_{sg} = social good value.* Society can err about what contributes to its well-being. Social choices too can be out of touch with reality. Further, given the prevailing pluralism, a negotiated consensus of *values_{sp}* is likely not to be consistent. Even if only individuals have a well-being (society being an aggregate of related individuals), at least society functions and dysfunctions. The vague, beguiling slogan, "the greatest good for the greatest number," can mean "what most prefer on average" (*value_{sp}*) but usually means "what is on average functional in society" (*value_{sg}*). Part of the worth of a practice is whether it keeps society functioning smoothly, regardless of whether this agrees with the corporate will. The "open space" of the Indian Peaks Wilderness serves as a pressure release valve for the Denver-Boulder metropolitan area, and it might be more functional for Colorado society to maintain it so, even though the legislature voiced a preference, reflecting polls, that federal managers log the area for jobs and firewood.

(6) *Value_{or} = organismic value.* Value is not just an economic, psychological, social, and political word, but also a biological one. *Value_{or}* is what is good for an organism, and all preferences and goods of humans are really subsets of this more comprehensive notion. Various instrumental organic and environmental goods contribute to an organism's well-being, and that well-being is for the organism a telic end state, an intrinsic value, not always a felt preference. Survival value, lies at the core of evolutionary adaptation. Genetic information is of high organismic value, but has no necessary connection with sentience, experience, preference satisfactions, or markets. Wild creatures defend their lives as if they had goods of their own. An organism grows, repairs its wounds, resists death, and reproduces. Every genetic set is in this sense a (nonmoral) normative set, proposing what *ought to be* beyond what *is*. At this level, wild nature is a place of values prior to human decisions, and one thing the reforming world view asks is whether any concern for wild organismic value limits human decisions about land use.

(7) *Value_{es} = ecosystemic value.* Like persons in society, organisms live in ecosystems, with a parallel between the good of the system and that of the individual. Persons are good in the roles they serve—mothers, wildlife biologists. Organisms fill niches and sustain a flourishing system, though not intentionally, perhaps unwillingly. Songbirds, which have intrinsic *value_{or}* in themselves, have instrumental value regulating insect populations. Ecologists too (coached by sociologists?) have doubted whether ecosystems exist as anything over their component parts. *Value_{es}* is even more convincingly a kind of fiction than *value_{sg}*, because in ecosystems there are no policy makers, no social wills, no goals. Though the ecosystem can seem more biologically real than the social system, it less evidently has a locus of value. Nevertheless, in some way that we poorly understand, some creativity (accidental or not) in the evolutionary ecosystem has formed all its organic species and processes, and we as humans are now much concerned with keeping these ecosystems running as they do. Some events can be better, some worse for the integrity of a biological community, as in the choice for a biodegradable pesticide.

TYPES OF WILDLAND VALUES

(1) *Market value.* Wildland products have value_{mp}. Individuals value_{ip} them, a use expressed in the social will, value_{sp}. The goods of individuals and society are thereby increased. Nature can be used instrumentally to render human existence more materially comfortable. Humans have no options about some consumption of nature in our economy, but we have options concerning how much. Until recently, especially in the vast undeveloped New World, nature seemed an almost unending resource. By an increasingly competent use of natural resources our economy could grow forever. Lately, however, in a revising world view, we are decreasingly confident about the myth of inexhaustible resources. We seek renewable resource use, or expect rationing of nonrenewable resources, perhaps because of rising value_{mp}, and hope for substitutes. Growth pressures have increasingly forced market values into competition with all those values to which we next turn.

(2) *Life support value.* So far as culture is entwined with ecosystems, our choices (value_{ip}, value_{sp}) need to be within the capacities of biological systems, paying some attention to value_{es}. But the latter are not values that go on in the human mind. The central goods of the biosphere were in place before humans arrived, though they have lately become our resources. Further, such things as air flow, water circulation, sunshine, nitrogen-fixation have never figured much in market prices, individual preferences, or collective choices. They were just natural givens which supported everything else. Lately, however, the scope of human activity has increasingly threatened crucial life support functions (soil depth, the ozone layer, groundwater purity). One reason for managing wildlands with care is that their cumulative impact on hydrologic cycles, photosynthesis, biomass decomposition, insect regulation, and pollution scrubbing is considerable. Another is that we want to know what the unmolested system was in order to fit ourselves more intelligently in with its operations when we do alter it.

(3) *Recreational value.* Wildlands have two kinds of positive recreational value. We want (a) to see what we can do (activity) and (b) to be let in on nature's show (contemplation). Wildlands are valued_{ip} for sports (fishing, skiing) that demonstrate skills in the challenge of the wild. Nevertheless, people also enjoy watching wildlife and landscapes with the focus on nature as a wonderland, a rich evolutionary ecosystem where truth is stranger than fiction. There are trails to be hiked, a rare bird or fern to be admired, or just a hypnotic vortex below a waterfall to capture our attention. The continuing existence of an outdoor gymnasium and theatre is valued by two-thirds of Americans, especially by the young and educated, as a matter of preference and well-being. There is even a push-pull effect. Not only are persons drawn to the wildland, they escape to it, driven from the city. Wildlands absorb a kind of urban negative disvalue, a tandem effect.

(4) *Scientific value.* Nature is a laboratory for the pursuit of science, good not just because individuals like it (value_{ip}), but because society gains pure knowledge, which enlarges our understanding of the world and our roles in it, and gains

better applied science, which enables us to manage and rebuild our environments (value_{sg}). These benefits to "science" are vaguer than economic or recreational benefits, where the affected citizens can be easily identified. They do not belong merely to Americans but rather enter the global culture. Although it is hard to say whether they are individual or social, they are not minor. The most juvenile natural science is ecology; the least known level of organization is the mosaic of communities that compose a biome. We have no theory of evolution at the ecosystemic level; biologists are divided over whether interspecific competition is a minimal or a major force in evolution; indeed we are not very clear on what the natural successions are over a few hundred years. Relict wildlands are the only places where these disputes can be settled. Destroying wildlands is like burning unread books.

(5) *Genetic diversity value.* Humans eat remarkably few plants in any volume (about thirty), and still remarkably fewer come from North America (one or two). With the loss of fifteen cultivars, half the world would starve. Ten species provide 80 percent of the world's calories. Given increasing pressures from agriculture (monocultures, pesticides, herbicides, hybridized strains, groundwater pollution), given increased mutation rates from radioactivity, the nuclear threat, exotic blights, it seems important to preserve the genetic reservoir naturally selected here, just in case we need to crossbreed against such microorganisms as produced the corn blight of 1970, or to turn to food stocks adapted to North American habitats. Such resources, presently unknown, cannot be well protected *ex situ* (in zoos, seed depositories), but only *in situ* by preserving natural ecosystems. Nor can laboratory genetic recombinations substitute for wildlands; we need natural diversity for the startpoint materials.

(6) *Aesthetic value.* Nature's problem solving yields works of grace—an eagle soaring, a snake slithering, a coyote on the run, the fiddleheads of ferns, even mud flats with the 120-degree stress fracture symmetries. On small scales and large, both ensemble and individual, nature's patterns can please the eye. Further, the sense of abyss overlooking a gorge is aesthetic, as is the eerie chill when, nearing a stormy summit, one's hair stands on end in the charged air. So also is the thought that in one cone lies a possible forest. All are experiences unlikely to be had in the Metropolitan Museum. We do not need to settle whether or how far beauty is in the eye of the beholder; it is enough that such experiences come. But we do need to notice that sensitivity to this value takes an educated eye. Plain places (as may be judged swamps and flatlands) have a coherence and completeness of which plain persons never dream. Here, familiarity breeds no contempt. Valuing wildlands is vastly more than soaking up scenery, as one travels slowly in intimate contact with the environment.

(7) *Cultural symbolization value.* The bald eagle symbolizes national self-images and aspirations (freedom, strength, beauty), as does the bighorn ram, a "state animal" for Coloradoans. The pasqueflower is the state flower of South

Dakota; the alligator a symbol for Florida. Natural areas enter local cultural moods—Grandfather Mountain in western North Carolina; Natural Bridge and the Shenandoah in central Virginia. Horsetooth Mountain, overlooking the city, provides the logo for Fort Collins, Colorado. Culture commingles with landscape and wildlife in places named after geomorphic, faunal, or floral features: Tinkling Springs, Fox Hollow, Aspen, Crested Butte. We want some wildness preserved because it comes to express the values of the culture superimposed on it, entering our sense of belongingness and identity. This involves $value_{ip}$, but even more $value_{sp+sg}$. What would be the impact on American hopes if the bald eagle became extinct? On the perceived quality of Colorado life with the death of the last bighorn?

(8) *Historical value.* Wildlands provide historical value in two ways, cultural and natural. America has a recent heritage of self-development against a diverse and challenging environment, seen in pioneer, frontiersman, and cowboy motifs. Forests, prairies, and ranges ought to be preserved as souvenir places for each generation's learning (however secondarily, playfully, or critically) of our fore fathers' moods, learned there quite as much as in the Minuteman Historical Park. They provide a lingering echo of what we once were, of a way we once passed. There is nothing like the howl of a wolf to resurrect the ghost of Jim Bridger. A wilderness trip mixes the romance and the reality of the past in present experience, lifting historical experience out of books and recapturing it on a vivid landscape. But wildlands also provide the profoundest historical museum of all, a relic of the way the world was in 99.99 percent of past time. We are relics of that world, and that world, as a tangible relic in our midst, contributes to our sense of duration, antiquity, continuity, and identity. We passed that way once too.

(9) *Character building value.* Wildlands are used by organizations that educate character—Boy and Girl Scouts, Outward Bound, and church camps. Similar growth also occurs in individuals independently of formal organizations. What is valued is the challenge of self-competence, in teamwork or alone, with reflection over skills acquired and one's place under the sun. Wildlands provide a place to sweat, to push yourself more than usual, perhaps to let the adrenalin flow. They provide a place to take calculated risks, to learn the luck of the weather, to lose and find one's way, to reminisce over success and failure. They teach one to care about his or her physical condition. They provide a place to gain humility and a sense of proportion. Such growth experiences can be sought ($value_{ip}$), as with the goose pimples and quickened pulse of the first solo backpack. They can also be unsought and even traumatic (caught in a storm, injured or ill in a remote location). Still, integrated into character, they increase well-being ($value_{ig}$), and the social good ($value_{sg}$) is benefited by having such citizens.

(10) *Therapeutic value.* An entirely normal use of wildlands, reported by a majority, is for semi-therapeutic recreation. A minority use, less well explored, is as a setting to treat psychologically disturbed persons. For the mentally ill, the

ambiguity and complexity in culture can be disorienting. It is hard to discriminate friends, enemies, and the indifferent, hard to get resolve focused on what to do next, or to predict the consequences of delay. But in the wilds supper has to be cooked; one needs firewood. And it is getting dark. Exertion is demanded unambiguously; accomplishment is evident in a low-frustration environment. The self is starkly present and the protocol is simpler. One really is on his or her own; one's friends are few and he or she utterly depends on them. All this can mobilize the disturbed for personal recovery. So far as humans have been selected over the evolutionary course to need challenge, adventure, exertion, and risk, society must provide avenues for such archetypal emotions, or expect deviant behavior—gangs and rebels without a cause. Wildness may provide a "niche" that meets deep-seated psychosomatic needs.

(11) *Religious value.* The wilderness works on a traveler's soul, as well as on muscles and character. Mountaintop experiences, sunsets, canyon strata, or a meadow of dogtooth violets can generate experiences of "a motion and a spirit, that impels . . . and rolls through all things."¹ Wildlands thus become something like sacred texts. Whether in the majority or minority, the rights of such "users" are to be protected. For wilderness purists intensely, and for most persons occasionally, wildlands provide a cathedral setting. The wilderness elicits cosmic questions, differently from town. Some of the most moving experiences attainable are to be had there. Those who do not attend religious services can value nature more than those who do. Church leaves them cold; they are pantheists or non-ecclesiastical monotheists. They have a diffuse naturalistic religion, not a supernaturalistic creedal one. They do not like indoor liturgies, but prefer outdoor awe, solitude, vastness. Since the constitution protects religious freedom, so far as wildlands are essential for or facilitate this, they need preserving.

(12) *Intrinsic natural value.* Each preceding type makes nature tributary to human experiences, but several hint at more. They recall how, on the concluding two levels, wild organisms have goods of their own (value_{or}), how they are selected (blindly, but nevertheless effectively) as good fits in their environments, so that a spontaneous ecosystem is typically healthy (value_{es}). All this occurs premorally, but when humans appear with their reflective consciences, do they have some duties toward these storied natural achievements? Typically such convictions mix a derivative anthropocentric prudence (recreation, genetic vulnerability) with an ethical concern, often inarticulate, that grizzly bears, pileated woodpeckers, even wildernesses, have a right to continued existence for what they are in themselves as neighbors and wonderlands on Earth. Two-thirds of Americans doubt whether humans ought intentionally to destroy endangered species or rare environments. Diffuse but deeply felt, such values are difficult to bring into decisions; nevertheless, it does not follow that they ought to be ignored.

¹ William Wordsworth, "Lines Composed a Few Miles above Tintern Abbey" (1798).

II. CONTINGENT VALUATION OF WILDLANDS

Can the preceding array of value levels and types be reduced, wholly or in part, to economic terms, as a prerequisite for a cost-benefit analysis? J. V. Krutilla and A. C. Fisher noticed the difficulty and suggested some categories. "In confronting the need to evaluate preservation benefits, we find that there are a number of aspects of such benefits that we do not know how to estimate quantitatively. These are the value of natural environments that have remarkable qualities for scientific research; the value that individuals place on retaining an option when faced with actions having irreversible consequences; and the value that some individuals place on the knowledge of the mere existence of the gifts of nature, even when they feel certain they will never have or choose an opportunity to experience them *in situ*."²

Taking up the challenge, there have been a number of proposals to make economic estimates of various wildland values, typically (1) scenic value, (2) recreational value, (3) option value, (4) existence value, and (5) bequest value.³ *Option value* is the value of retaining options that a set of natural entities, threatened with erosion or destruction by development, provides now and henceforth to a prospective user. *Existence value*, separable from option value, is the satisfaction to an individual of just knowing that the wild set exists, even if unvisited by himself (or others?). *Bequest value*, thought also separable, is the value that an individual places on bequeathing a wilderness to children and future generations.

² J. V. Krutilla and A. C. Fisher, *The Economics of Natural Environments* (Baltimore: Johns Hopkins University Press, 1975), p. 124; J. V. Krutilla, "Conservation Reconsidered," *American Economic Review* 57 (1967): 777-86.

³ For contingent valuation of aesthetic, scenic visibility, see: Alan Randall, Berry C. Ives, and Clyde Eastman, "Bidding Games for Valuation of Aesthetic Environmental Improvements," *Journal of Environmental Economics and Management* 1 (1974): 132-49; Alan Randall, Berry C. Ives, and Clyde Eastman, *Benefits of Abating Aesthetic Environmental Damage from the Four Corners Power Plant, Fruitland, New Mexico*, New Mexico State University Agricultural Experiment Station Bulletin 618 (Las Cruces, 1974); David S. Brookshire, Berry C. Ives, and William D. Schulze, "The Valuation of Aesthetic Preferences," *Journal of Environmental Economics and Management* 3 (1976): 325-46; R. D. Rowe, Ralph C. d'Arge, and D. S. Brookshire, "An Experiment on the Economic Value of Visibility," *Journal of Environmental Economics and Management* 1 (1980): 1-19. For contingent valuation of wildlife experiences see: Judd Hammack and Gardner Mallard Brown, Jr., *Waterfowl and Wetlands: Toward Bioeconomic Analysis* (Washington, D.C.: Resources for the Future, 1974); David S. Brookshire, Alan Randall, and John R. Stoll, "Valuing Increments and Decrements in Natural Resource Service Flows," *American Journal of Agricultural Economics* 62 (1980): 478-88; David Brookshire, Alan Randall, et al., *Methodological Experiments in Valuing Wildlife Resources: Phase I Interim Report to the United States Fish and Wildlife Service*, 1977. For contingent valuation of option, existence, and bequest value in wilderness preservation see: Richard G. Walsh, John B. Loomis, and Richard A. Gillman, "Valuing Option, Existence, and Bequest Demands for Wilderness," *Land Economics* 60 (1984): 14-29. For a sensitive overview, cautiously advocating contingent valuation, see: William D. Schulze, Ralph C. d'Arge, and David S. Brookshire, "Valuing Environmental Commodities: Some Recent Experiments," *Land Economics* 57 (1981): 151-72. See also George L. Peterson and Alan Randall, eds., *Valuation of Wildland Benefits* (Boulder, Colo.: Westview Press, 1984).

The most plausible of the five to be measured economically is recreational value. Recreation is sold elsewhere on the market and can perhaps be shadow priced. Though wilderness experience is unsold, it costs something—gas, meals, lodging enroute, fishing licenses, gear (?), campground fees. Access costs are typically \$10-15 per day. Does this represent the value of the visit? Difficulties arise. Wilderness is a free good provided by Mother Nature, like fresh air and sunshine. Wilderness is a nonmarket service provided by governments, like the military and public schools. The wilderness experience is an atypical recreational experience and what the user actually spends poorly reflects its value.

To overcome this difficulty, contingent valuation is proposed. We can discover what users would be willing to pay. "The applicable rule to follow... is to use that procedure which appears to provide the best measure or expression of willingness to pay by the actual consumer of the recreation good or service."⁴ "Techniques of benefit estimation have been developed sufficiently to make benefit-cost analysis fully applicable to appraisal of recreation alternatives on public forests. Willingness of users to pay is the appropriate way to measure benefits, and can be estimated from either the participation behavior of recreation users or by surveying a sample of participants to learn their preferences."⁵ From what the users (think they) are willing to pay, we now subtract access costs for the net benefit supplied by the government, the "consumer's surplus," a value_{ip} received but not paid for.⁶ Aggregated over multiple visits and visitors, the total renders objective the otherwise subjective (though real) wildland recreational value, which can be compared with timber sales.

This is imaginary money, which the users pay no one and which also does not remain in their pockets. Still it might provide a reliable estimate, provided the user has a congenial context of judgment. But on wildlands there is little reason to ask willingness to pay except under the shadow of protecting wildlands from alternative uses, and in this context the answer becomes a competitive bid. Rather ill-defined, it is something akin to a proposal that we take from them what they have had by tradition, public benefit, or right, and then ask what they are willing to pay to defend it. The precise status of any "right" to recreation, scenic views, open space, wildlife encounters, religious experiences (all integrated with recreation)

⁴ U. S. Water Resources Council, "Principles and Strategies for Planning Water and Related Land Resources" *Federal Register* 38, no. 174 (10 September 1973): 24,778-866, citation on p. 24,804; U. S. Water Resources Council, *Procedures for Evaluation of National Economic Development (NED) Benefits and Costs in Water Resources Planning*, Subpart K, *Recreation*, *Federal Register* 44, no. 242, (14 December 1979): 72, 950-65.

⁵ J. F. Dwyer and M. D. Bowes, "Benefit-Cost Analysis for Appraisal of Recreation Alternatives," *Journal of Forestry* 77, no. 3 (1979): 145-47, with comment by A. A. Dyer and J. G. Hof, 147-48, and vigorous discussion by others, *Journal of Forestry* 78, no. 1 (1980): 21-28.

⁶ Consumer's surplus is "the maximum a consumer will pay for a given amount of a good, less the amount he actually pays" (E. J. Mishan, *Cost-Benefit Analysis: An Introduction* [New York: Praeger Publishers, 1971], p. 31).

on public lands is obscure, and, of course, developers also have "rights" on "lands of many uses." But citizens have long been told that these are "your national forests" (as the signs say on entry), which they are encouraged to use, managed by public servants whom (directly or indirectly) they have elected. They are wholly unaccustomed to paying to keep developers out; their presumptions are the other way round: that the developers who gain (and not the losers) ought to bear the full cost of what they remove from the public till.

The better question might be what the users would accept in payment to give up their recreation. But now we are asking a quite unfamiliar question. Although it does presume a willing seller rather than a defender of a threatened good, the user is made the owner of a good—a unit of recreation (integrated with historical, cultural symbolization, or life support values)—that he is ill-adept at selling. It introduces a host of concerns (examined below) about whether a citizen can entertain the thought of selling, corporately with others, a public good for private gain, x dollars. The upshot is that in these surveys economists are unsure whether to ask willingness to pay or to accept payment. Even if they have theories about what should be the starting reference point, their survey respondents do not operate out of these theories.

Clever respondents might bid or sell high to save the wilderness. (Or should they bid low to prevent entrance fees?) They could misrepresent to gain the outcomes they value. However, strategic scheming seems beyond most respondents, and can (in part) be checked against by alternative questions that put all on a limited budget. A better grounded fear is of nonstrategic pricing. If they think their estimates are not going to set any policy, they will not care what they say, especially if busy or puzzled. They must not simply be preferring but helping to project what will take place. The incentive for being responsible is the same as that for bias. Even if earnest, one is being asked to price what one has little clear strategy for pricing. This is especially true in the package of up to a dozen goods, some of which (re-creation beyond recreation, aesthetic experience, religious experience, amateur scientific study, character building) make it difficult to differentiate recreational value in isolation from the rest.

The difficulties are compounded if we try to price aesthetic value. (Is this a subset of, or something else than, recreational value?) "This is a national park, to be affected by a proposed coal-fired power plant nearby. How much additional entrance fee would you pay to have for thirty days a year (of relevant atmospheric conditions) a scenic visibility of 25,50,75 miles? What would you sell such views for?" This supposes that an individual in private trade might gain or sell a public good such as air quality or scenic vistas, more or less murky. It asks him to translate a good which is collective and nonmarket (scenery) into a good which is private and market (consumer dollars). It asks an individual to presume the right to sell (not only on his part but implicating others) what he thinks of as a nonexclusive, nonrival public good. "This wilderness has coal under it. How much would

you pay (taxes, utility hikes?) not to lose x encounters with elk, coyotes, brown creepers?" (Is this an aesthetic value or respect for value_{or} mixed with value_{es}?) These questions suppose a voluntary exchange (power for scenery, dollars per wildlife encounter), but in fact the exchange will be individually involuntary; it will be an agency decision levied upon all. The sets of persons who lose the vistas and the wildlife are really quite different from the persons who gain the power or the operators who profit.

The frequency of "infinity," "zero," or "not for sale" responses indicates that for many (up to half) the question is in one way or another off the map.⁷ Persons expect to pay for some good produced, an artifact or service, some material that has been or can be labored over. But here on wildlands there is no "producer" or "supplier" whom it seems right to compensate.⁸ No one has labored over anything, and why should anyone pay or be paid? In a way, the "victim-must-pay" inquiry is like paying to prevent the theft of a good one thought he had by democratic process or by gift of nature. It is something like paying for protection on the streets of Chicago, hardly a free market. It forces the user to be a consumer and compromising pragmatist in a decision context in which he ought to be a citizen, esthete, philosopher, and ethicist.

The format allows no account of what the recreator thinks in the fuller dimensions of his person about the larger benefits of public wildlands, free goods provided by nature and preserved by the government, about income constraints, the inequitable distribution of wealth, or the best things in life being free. The respondent is blinded to such considerations as the need for diverse options in recreation, rights of minority users, future trends, needs of future generations, intrinsic natural values, the psychological or social desirability or the quality of various forms of recreation. He must skip all historical, therapeutic, or cultural symbolization values. Already a victim who must estimate his willingness to pay to defend something he owns, the citizen is further victimized by the narrowed context into which he must squeeze his preferences. Only dollar answers count.

If we try to press beyond recreational and scenic values to option, existence, and

⁷ See I. M. Gordon and J. L. Knetsch, "Consumer's Surplus Measures and the Evaluation of Resources," *Land Economics* 55 (1979): 1-10; Randall, Ives, and Eastman, *Benefits*, pp. 19, 24; Shultze, d'Arge, and Brookshire, "Valuing Environmental Commodities," p. 166; Rowe, d'Arge, and Brookshire, "Experiment," p. 9.

⁸ Subsidized public recreation is not at issue here. On-site wildland users may be enjoying benefits which have maintenance costs (upkeep of roads, trails, game supervision, ranger salaries) and which taxpayers at large are bearing. Questions about whether on-site recreators should bear more of the actual costs are plausibly subject to willingness-to-pay evaluation, although the lack of a realistic market context troubles answers here too. The unspecified mix of recreational with other benefits preserved on public lands (life support, genetic diversity), which taxpayers do enjoy, complicates the issue. But should-users-bear-the-maintenance-cost questions are conceptually different from willingness to pay to prevent economic development, pollution, species extinctions, scenic despoliations, which impinge on recreational opportunities.

bequest values, the problems rapidly grow worse. While some economists caution that we do not know how to price these values, others suppose that here too willingness to pay is the appropriate measure. A Colorado household is willing to pay, on average, about \$4.04 annual option value, \$4.87 annual existence value, and \$5.01 annual bequest value, for a total of \$ 13.92 annually for 1.2 million acres of wilderness. This sum rises to \$18.75 for 2.6 million acres (\$5.44 option value, \$6.56 existence value, \$6.75 bequest value). For 5 million acres, the total willingness to pay is \$25.30 (\$7.34 option value, \$8.86 existence value, \$9.10 bequest value). Multiplied by the number of Colorado households, we calculate the benefits to the state.⁹ But why not use willingness to sell here? Perhaps because no one could seriously imagine that compensation would be paid the sellers. In any case, what have such numbers measured?

Such categories as existence, option, and bequest values promise to package up a fuzzy assortment (roughly the range of types 2-12, minus some recreation), but as values grow intangible, social and ecosystemic, the individual's capacity to price them becomes progressively poorer. All the problems met with in pricing recreational or scenic value return with a vengeance. As consumers, respondents are being asked to express their convictions in dollars about things over which they have no market experience, and dollars are, after all, units that have their everyday home in markets. Even as citizens voting in referendums they are accustomed to answer "Is-it-worth-it-in-dollars?" kinds of questions that have to do with the purchase of market materials and services (bombers, library books, real estate, building construction, man-hours of police time). They are unaccustomed to citizen "purchases" of genetic diversity, wildlife encounters, scenic vistas, or wild cultural symbols, especially on lands that the citizens already own and in situations where no money changes hands.¹⁰

The respondent has never operated in any market vaguely resembling these kinds of goods. How do we price, for instance, "the value that some individuals place on the knowledge of the mere existence of the gifts of nature, even when they feel certain that they will never have or choose an opportunity to experience them

⁹ Walsh, Loomis, and Gillman, "Valuing Option, Existence, and Bequest Demands," p. 25.

¹⁰ Contingent valuation needs to be distinguished from citizens' referendums. In April 1981 Larimer County, Colorado, citizens voted for a half cent sales tax over six months to purchase the Soderberg Ranch containing Horsetooth Mountain, on the skyline of Fort Collins. Following public debate, a local jurisdiction voted to use mutual coercion to buy something on the market, which they did not own, in order to preserve wild recreational, aesthetic, and cultural embodiment values. There is nothing hypothetical and nonmarket here, and no victim-must-pay-for-what-he-already-owns overtones. They were buying a working ranch, with the owner using the proceeds to relocate, competing with offers from real estate developers. They were not separately bidding, but had a corporate target figure, translated into a tax, on which they were voting yes or no. That is a citizen choice using votes to allocate dollars. By contrast wildlands are already public lands, and citizens (if they so regard themselves as respondents) are being asked about a hypothetical willingness to pay to protect what they already own, with nothing traded that bears any relationship to actual markets.

in situ"?¹¹ Since biological diversity, a value we are only learning to appreciate, is not something on the market, how can one price it? Does one include it somewhere within option, existence, or bequest values, or is it omitted in such a survey? Might it be that for \$3.00 per person Americans will sell the whooping crane into extinction? Most respondents do not know how to resolve questions of extinction even within their own hierarchy of personal needs, much less to price these for social policy. Does it matter whether the respondent is ignorant about the intricacies of the ecosystem he judges, whether the estimator of scientific value is a scientist? Even allowing, as economists often do, that some environmental values remain uncaught, how do we know which ones are left out and not confusedly stated somewhere in the dollar amounts for option, existence, and bequest values?

It might first seem to help to cast the whole question into a citizens' rather than a consumers' orientation. Respondents are cautioned that they must not think of their replies as consumer purchases, despite the fact that their dollar figures go into cost-benefit equations, and even though a frequent economist's term for the value so captured is "consumers' surplus." They must think of them more like citizen votes, using dollars as a kind of proxy, indicating what they think citizens ought to pay for wildland benefits, comparably to the way they pay for law courts or military protection. The survey is a citizen's device only partly to cooperate with but more to counter the real market. Willingness to pay levied taxes will have more citizen orientation than individual entrance fees, purchasing a day's recreation, or utility hikes, consumer-style transactions. But the payment of extra taxes does nothing to eliminate the victim-must-pay distastefulness of the procedure.

Willingness to pay becomes a kind of game, used not so much to imagine anything on a consumers' market as to elicit citizen choices, preferences stated in monetary amounts in order that these can be weighed into the equations, competing with alternate uses which do involve marketed goods. Despite appearances, we are not asking a "What's-it-worth-to-you-personally?" question, where each bids dollars depending on tastes and purchasing power. We are asking, "What's it worth to citizens on average, yourself included, in tax dollars, if all pay fairly proportioned amounts, and if all have the same nonconsumptive access to these public benefits that we cannot expect the market to supply?" In terms of the value level analysis, we are not asking a value_{mp} question, despite the dollar appearance of the answers, nor even a value_{ip} or value_{ig} question, but a value_{sp} and value_{sg} question.

¹¹ Those who value the mere existence of wildlands, though they never expect to visit them, are often called "off-site users," a term revealing the utilitarian, anthropocentric coordinates of this value-mapping system, made worse by contingent valuations treating them as off-site consumers. Such categories lie in an alien reference frame from that of those trying to report convictions about intrinsic values in nature. "Off-site users" grotesquely illustrates the extent to which a non-negotiable paradigm ("resource use") can be twisted to accommodate anomalous phenomena. It exactly reverses what those so categorized would say of themselves: that wildlands are valuable when left alone, apart from questions of human use.

The difficulty now is that the question is not what it appears, and even if the respondent comes to understand the pretending involved, he has no rules by which he can translate $value_{sg}$ into $value_{mp}$, none by which he can integrate value types 2-12 on a scale commensurate with the market value of wildland products. The more he operates as a citizen, the more the privatized form of the question is remote from what he is really trying to indicate, and the less his capacity to do any pricing. He may also feel that he is being forced to play this game, in the sense that no answer eliminates his opinion, and wonder whether zero bids or infinity demands (or others that the interviewer considers out of range) will be eliminated on grounds of noncooperation. If a respondent states a huge sum (a recreator who personally places high religious value on wilderness experiences, a citizen who wishes to protect the rights of those who do, or an Earth citizen who holistically values ecosystems), will this make it into the cost-benefit equations, or be tossed out as a monkey-wrench answer? The citizen ought not in principle be asked to couple sufficient money with his nonmarket policy preferences; and when he is asked this, he does not in practice reliably know how to answer.

The respondent has no idea how to do any calculations; yet on the basis of his guesstimates, economists do metric calculations, overly refining what are really raw data. All this number crunching creates the illusion of mathematical exactitude covering up what were, to begin with, iffy replies in a cramped hypothetical context. Nor is the use of the respondent's behavior to correct verbal misjudgments of willingness to pay reliable, because behavior is already infected with the inequities in the prevailing distribution of wealth. Meanwhile, it will take considerable intellectual subtlety for the respondent to understand the differences between willingness to pay and willingness to accept payment, between consumer and citizen uses of dollars, between option, existence, and bequest values, between hypothetical and actual markets, to say nothing of reliably attaching dollar amounts to these issues. It is fortunate that most visitors to wildernesses, where these surveys are usually conducted, are college educated!

The wilderness purist thinks the procedure is profane; the ethicist protests that justice is wholly overlooked. How we treat the environment is not always a matter of economics; it is sometimes a matter of conscience. If the psychiatrist Jung is right, some of our emotions toward the land rise out of the collective unconscious; yet we are asked to price them in a few minutes. In psychology, advocates of values clarification argue that we have not identified a person's values until we find options he or she has chosen (1) freely (2) from genuine alternatives (3) after reflection, understanding the outcomes. The person must (4) remain satisfied with the choices, (5) be willing to advocate them publicly, and (6) act upon them (7) repeatedly. Not one of these criteria is satisfied here.

The admission-price-to-nature question could hardly have been asked in any earlier century or in a nonindustrial country, being the product of an economy biased toward production maximizing dollars. The mentality of the methodology

by which we seek a solution is what created the problem, decimating the wilds. "Where will you put your dollars?" is as theory-laden as "Where is your center of gravity?" But unlike theories in physics, here we have a value_{mp}-laden theory that already purports to know what counts as costs and benefits. What we want to know here (or ought to want to know) are the citizens' *convictions* about goods in nature and their appropriate response to them, their public conscience, and we only confuse those we interview when we ask about their *desire* to pay. The question is about principles, not pocketbooks. They are being asked if an ideology is for sale. Desire-to-pay questions elsewhere in life are kept carefully separate from what we believe to be noble or ignoble behavior. The cash question is incompatible with answers of breadth. To insist on pricing is to insist on a category mistake ("the gold standard") where attitudes are inchoate.¹²

Advocates and even critics can throw up their hands. They can say that the technique is well intended, that there is nothing better, and that we cannot avoid running an economy. Some dollar values are better than none at all, for otherwise these intangible values get lost in the midst of pressures for economic use. Especially as the technique has been lately refined, the results significantly aid wilderness preservation. Environmentalists can fight fire with fire and prevent the burning of their wildlands on the altar of progress. Perhaps. But (to change the figure) a philosopher hates to fly in a conceptually flawed airplane, even though for the time being it is pragmatically flying in the right direction. If the model is a muddle but we use it anyway, being unwilling to face its fallacious reductionism, we are disinclined to admit the complexities of the real world and to look for truth in likelier directions.

III. WILD DECISION RULES

We do not want to play the game by the old rules, but to rewrite the rules. The point of my narration of levels and types of value (section one) was to display a richer value spectrum than we have reason to believe can be caught by economic valuation (section two). Can we say anything positively (section three) to order decisions? These principles will not constitute a procedural set. Like a compass, they will orient general directions of travel. Specific paths will have to be figured out locally. The rules will only begin to map some presently wild terrain. But they will be more dependable for discovering and protecting wildland values than economic reductions, which as we just found normally lead us astray.

(1) *Use an axiological model.* A diagrammatic schema (figure 1) should guide policy decisions on remnant U.S. wildlands in the contiguous United States. It is applied elsewhere (abroad, Alaska, outside environmental ethics) at your own risk. Above the line is a humanistic sequence, below it is a naturalistic sequence.

¹² M. Sagoff, "At the Shrine of Our Lady of Fatima, or Why Political Questions Are Not All Economic/" *Arizona Law Review* 23, no. 4 (1981): 1283-98.

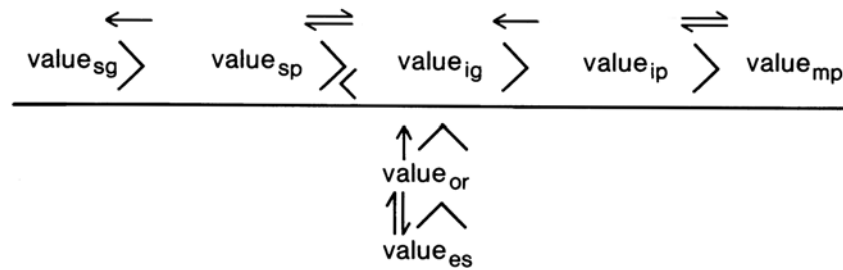


Fig. 1. An ordering of levels of value.

Social goods ordinarily override ($>$) social preferences, although the latter routinely produce (\leftarrow) such goods. In turn, this combination overrides individual goods, though these feed and determine social preferences, which reciprocally also promote (\Rightarrow) individual goods. A caveat, the small wedge checking the larger one, ($><$) specifies that some individual goods, few but crucial, veto some social preferences. Murder is not justified to obtain wilderness, even supposing society preferred this. Individual goods trump those individual preferences which commonly produce them. Individual preferences are what produce (\rightarrow) market prices, and the existence of a market produces in turn (\leftarrow) the satisfaction of individual preferences so that there is a two-way arrow (\Leftrightarrow).

On remaining wildlands, all this valuing overrides market value. The social drama is superimposed on the underlying ecosystem, and the diagram suggests the shrunken wild domain. Organismic value, as a populational form of life (e.g., endangered species, not individuals) ordinarily trumps what (usually minor) social or personal goods compete with it, though organisms ordinarily contribute social values. Pileated woodpeckers are good in themselves and also enrich human experience. Ecosystemic value is more basic than the life-form level, though biosystems are naturally selected to interfit (\updownarrow) the two. Both contribute to serial human goods.

The diagram yields *prima facie* rules. For exceptions, the burden of proof is on the dissenter. On remnant wildlands the odds are that the sacrifice of wild values will not both contribute to long-term human goods and be justified. The wilder and rarer the land, the lower the probability that any consumptive economic use will override other values. Virgin forests will stay intact. The demand for wilderness is increasing quite as rapidly as the demand for timber; although the latter can be satisfied on private lands, the former cannot.

I am advocating a kind of *maxi-min* principle following the ratio of continental domestication to wildness so that a minimum level (2 percent, 4 percent) of wildland values (intrinsic and human instrumental) is maximized (at 98-2, 96-4 odds), opposing a *maxi-max* principle (maximum consumption increasing from 96

percent to 98 percent to 100 percent our available acreage to raise our already high standards of living). That two to four percent surfeit is a "consumers' surplus" we do not need. It is a few more pounds on already fat people, who need the rigorous leanness that disciplined exposure to wilderness can give. Considering probable economic productivity, rather than acreage, there is no reason to think that on average U.S. citizens would be even one percent better off if all wildlands were sacrificed. From this viewpoint the odds are 99-1 that the sacrifice of wildness makes sense in order to achieve economic gain at the cost of values 2-12 lost.

The areas richest in resources have long since been domesticated and sacrificing the remaining wildlands is scraping the bottom of the barrel, a matter of diminishing marginal returns (notwithstanding newly developed technologies), although from other points of view the destruction of noneconomic value would be enormous. Public lands, often left over from the public domain in the West or reacquired after marginal use in the East, tend not to be economically productive in agriculture, timber, or minerals.

(2) *Maximize noncompeting value types.* The twelve types of natural value are incommensurable, but are also largely noncompeting in all cases but the first. Although they cannot be commensurated, they do not have to be. There is no translation unit by which $A + B - C = D$. Genetic diversity (indicated by species counts, low extinction rates) cannot meaningfully be added to, or subtracted from, recreational benefits (visitor days). But we can easily add together and simultaneously enjoy multiple noncompeting incommensurables. Historical, character-building, or therapeutic uses of wildlands will seldom interfere with scientific and religious uses, and nowhere are science and religion more congenial than here. The cultural value carried by eagles requires the preservation of a flourishing wild population. Aesthetic uses (measured on preference scales) do not upset the life support value (indexed by energy flow?) in an ecosystem. So we are not forced to prefer only one value. The commensurability of values is, thus far, a pseudoproblem, because these nonconsumptive values reinforce and need not be traded off against each other.¹³ They do not use up wilderness in the ordinary resource sense at all, making it into something different from what it spontaneously was.

¹³ Some counterexamples: Sioux and Cheyenne Indians lost a legal bid to halt recreational development at Bear Butte State Park in the Black Hills, a conflict of religion with recreational value; other kinds of recreation would have been nonrival. In a Maine referendum on moose hunting, the aesthetic, recreational, cultural symbolization (the state animal) values of environmentalists, as well as their respect for intrinsic organismic value, clashed with the differing recreational, aesthetic, character-building, and historical values of the hunters. In Florida, fishermen sought, unsuccessfully, to have the park service relax restrictions on fishing in the Everglades, restrictions protecting the endangered crocodile. The Defenders of Wildlife protested regulations which allow the twilight shooting of game birds, on grounds that low visibility makes it difficult to distinguish common from endangered species. These involve clashes of forms of recreational value with scientific, genetic diversity, organismic, ecosystemic, and alternate forms of recreational value. But such conflicts are minimal beside economic conflicts on wildlands. Though they are not handled by the rules proposed here, willingness-to-pay surveys are even more irrelevant.

Only economic uses tend to consume wildlands. The question faced here is not whether the past economic reduction of the continent was justified, but whether it is enough. How much more of the goods ($values_{ip, sg}$) we already amply have (fiber, timber, energy) can we obtain by consuming the surviving wildlands, and do we want these as economic benefits ($value_{mp}$) by trading away the nonconsumptive set of values? Although this seems to pit market value against some or all of values 2-12, for a wider public it only pits a little more extracted from the 2 percent wild (the 4 percent half wild) of what we have extracted already from the 98 percent (96 percent) in impressive amounts. Yet this "more" could as easily and efficiently be extracted from nonwild lands, which are far and away already the richest ones economically. If we ask who are the chief beneficiaries (a few operators, perhaps more workers) and who are the trickle-down beneficiaries (the public), we may find that this gains a few concentrated, short-term $values_{ip, ig}$ (profits, jobs perhaps unobtainable elsewhere) traded against $values_{sg}$ and diluted but extremely widespread, long-term $value_{ip}$ (recreational benefits, religious experiences). Do we have enough consumption? If more is needed, need it come by sacrificing wildlands?

On remaining wildlands, economic use is typically consumptive, and that gives preferential treatment to one class of users and uses (value type 1) at the cost of depriving other users of their alternate uses (value types 2-12). The nearest that policy can come to nonpreferential treatment is by nonconsumptive use. Everyone can use wildlands, but no one ought to be allowed to use them up. Sometimes disparagingly called a "lockup" use, that use treats all users alike, even though (indeed, just because) the would-be economic user is prohibited from "takeover" use. "Lockup" only prevents "takeover." It is more likely to result in gradually unlocking an equal distribution of benefits of the other types over time. It simultaneously protects organismic and ecosystemic value, leaving wildlands in a spontaneous natural state.

If basic needs were at stake, or if the continent were not already 98 percent developed and developable, this might be unjustly prohibitive. But it is not unjust on the last 2 percent, where only more of already abundantly possessed goods is at stake. While any economic use is somewhat consumptive, since it sacrifices primordial wildness to some degree, some economic uses are more consumptive than others. A clear-cut takes the forest out of other uses for a century, and the second-growth forest is never the equal of the virgin forest. A cut by selection leaves half the original wildness and may only halfway destroy values 2-12.

Beyond this, however, values of the sort here defended tend not to aggregate additively, even when noncompeting. They integrate into a gestalt in which a calculus is irrelevant. A single value change may throw the whole pattern into a different light. Colored floodlights on Old Faithful, illuminating it for night viewing, would add tourist revenue, and yet break the picture of wildness for most park visitors. A small-scale, out-of-sight logging operation returns economic

benefits; while the noise of the chainsaw carried around the valley may subtract only a little from the solitude of some wilderness travelers, it destroys it entirely for others. Various-thresholds of perception and value experience are crossed, which are not incorporated in aggregating procedures.

(3) *Keep remaining public midlands off the market.* The military, police, courts, schools, museums, churches, scientific societies, historical parks—all cost money and have budgets, but are not businesses expected to produce income in any cost-efficient sense, not even when they capture (by fees, admission charges, or contributions) part of the value of their services. Though we some times decide how much they are worth in dollars, their purposes are to produce nonmonetary values. Wilderness costs something to preserve, though only the minutest fraction of what these other social activities cost. Costs are largely opportunity costs forgone, so far as these cannot be achieved on the 98 percent of the continent on the market.

Even on semiwild lands, it is a category mistake to compare market efficiency in a Weyerhaeuser timber tract with a national forest. Where national forests are quasi-market operations, and little more, they should be sold or leased to private entrepreneurs, who will operate them better. On truly "national" forests we protect other values, and here market-style questions are awkward because what we want on wildlands is what the market never sells—a hiking trail, a trout stream, a scenic view, a wilderness experience. No one invests in land to lease it for bird watching or butterfly collecting. That is economic nonsense. The purpose of public wildlands is to provide benefits that we cannot expect on the market.

The point of a value analysis should not be to translate all or as much as possible of values 2-12 or levels 1-7 into an economic common denominator, but to display the wide spectrum of types and levels and give decision makers and citizens a strengthened persuasion where these really do (or do not), in aggregate or gestalt, beat economic considerations on the fractional remaining wildlands. We want a policy to protect these value dimensions not because they are covert economic values, but because they are not economic values at all.

(4) *Do not use remaining wildlands nonrenewably or consumptively to satisfy the basic needs of a minority in society.* The way to feed the hungry is by a redistribution of produce from lands in private hands, not by further exploitation of the fractional public wildlands. Very few will be put permanently to work by wildland exploitation, and these can surely as well be employed elsewhere in the enormous American economy. In a free economy, left otherwise unchanged, it is impossible to assure that the benefits from sacrificing wildlands will go to the poor; indeed, they probably will not. What the disadvantaged (or the middle or upper class) think about trading wildland values to help the disadvantaged becomes irrelevant when considered apart from whether in the prevailing economy this transfer can reliably be expected to take place.

Nor will the individual economic gains of the poor ($value_{ig, mp}$) overcome the social losses ($value_{sg}$) in value types 2-12. Poverty problems should be solved where they arise: in the mainstream economic sector, not on wildlands. To pit the trivial pleasures of an elite (a few fit, wealthy backpackers) against the needs of the many (starving in the ghettos) is confused. While such a choice may not be spurious in underdeveloped nations, it is in the United States, to which this analysis is applied. Even elsewhere, unjust social structures will often prevent goods obtained by sacrificing wildlands from benefiting the poor in any long-term way. It is everywhere futile to sacrifice wildlands to benefit the disadvantaged unless the social structures are just enough to make it probable that this transfer will take place. Failing that, the issue is a smokescreen which merely protects vested interests; it sacrifices almost every kind of value type and level only to delay needed social reforms, keeping in place a social disvalue. The basic needs of all can be met, and would already be, if the system were just. Social injustice, condoned, does not justify destroying natural values, as yet unappreciated.

(5) *Increase options.* By this we increase our possibilities to actualize preferences ($value_{ip}$) and so increase freedom and the quality of life. Most Americans are oversupplied with market artifacts and undersupplied with sites for experiencing pristine nature. They live in an urban or rural environment 99 percent of their time, in a wild environment 1 percent or less. We should, therefore, manage wildlands to meet needs that are unmet and unmeetable elsewhere (desires for a temporary exit from society or to see bighorn sheep). This is more true when these needs are intense, even in a minority, and if society's meeting these needs involves doing little or nothing. Also, there is truth in the adage that one should manage for the specialized user (the fly fisherman, the backpacker) rather than the general user (the picnicker, car camper), since it is likely that the interests of the former will be keener, resulting in higher quality experiences for which there are no substitutes. Economic uses that consume wildlands destroy our liberties here. Although society as a whole should increase all sorts of options, in remnant wildland decisions we increase options in wildness alike for ourselves and future generations. The pluralist model of "multiple use" here means such multiple uses as are noncompeting and nonconsumptive. Competitive and consumptive use is provided for elsewhere in the market sector. All this optimizes social diversity.

(6) *Make explicit the latent value judgments in quantitative models.* The numbers look hard—11,176 visitor days, \$4,175,000 timber sales, willingness to pay \$2.32 per person, discount rate 6.7 percent, preference 7.3 (scale of 10) in age group 25-35, with 12+ years of education. Although some will say that quantification makes values explicit, remember that the numbers are no harder than the theories out of which they come, as limited as the concepts which generate them. Unless the theories and concepts are explored and remain visible in the discussion,

the numbers can deceive. All numbers in science are theory-laden, in environmental and social science often laden with soft theories. When used to persuade, they arise from value-laden theories. They contain large empirical margins of error and value judgments that need to be made manifest. To take visitor days as a value indicator concentrates on the value_{ip} level, value type 3, and leaves unanalyzed all other levels and types. To use any discount rate prefers the present over future generations.

Quantitative techniques, when ineptly or mechanically used, can obscure important value relations, and even when used at their best can never substitute for judgment, intuition, scope of understanding, and verbal assessment. Only the latter skills can suggest, at the start, what values are worth quantifying and how to try to quantify them, and in the end, only the latter can interpret the numbers that emerge. Dollar signs give the impression that a host of problems have been overcome interrelating value_{sg} to value_{mp}. The "number values," nevertheless, are meaningless except in the context of an interpreted narrative of values. Numbers may disguise, rather than expose, value judgments. Indeed, the numbers are sometimes little more than tropes, used for the sake of giving life or emphasis to an idea. They are used in a different sense from the way numbers are usually used, not to count empirical things exactly at all, but only symbolically to stand for values when they are felt to be real but the amount present, though important, is unverifiable. We should distrust any numbers for which there is only one indicator, since there is no cross-checking and the cramped value judgments are less easy to expose.

In the end, wildland decisions are not a data-driven process; rather the data is caged by a value-driven theory. The data seldom changes anyone's mind, but is gathered and selected to justify positions already held, and ignored or reinterpreted if it is in conflict with favored positions. We should decide first about the latent ideology, only secondarily about the number analysis.

(7) *Protect minority interests, especially where this is nonconsumptive and requires doing nothing.* Consumptive minority interests, especially if they require expensive action (building a road to keep a local mill going) should not override nonconsumptive majority interests. On the other hand, nonconsumptive minority interests (mountaineering, bird watching) which can be satisfied by doing almost nothing are cheap and easy to protect and are noncompeting between values 2-12. The protection of such minority interests is a long-standing majoritarian American value. Nothing is actually taken away from the majority in protecting these interests, although opportunity costs may be forgone. These may be significant to a few, but are not likely to be great to the community as a whole.

Opportunity costs forgone (value_{mp}) make sense as real social costs (value_{sg}) only when these opportunities are available only on the site in question. From the perspective of value_{sg}, the timber lost on a wilderness site is no irretrievable disvalue if by better management techniques an equal amount might have been

grown elsewhere, although managers are too inefficient or uninterested to attempt this.¹⁴ Similarly, in assessing the costs of the Cranberry Wilderness in West Virginia at \$30.77 per visitor day, it makes little sense to count as by far the largest factor \$223,609 per year in opportunity costs of coal left underground and unmined, since there is a three-hundred-year supply of coal elsewhere in the Appalachian coal strata, and no reason to think the Cranberry coal should be mined soon or needs to be in order to meet national needs.¹⁵ Nor should one forget, when development takes place and these opportunity costs become dollar benefits instead, that a spectrum of other opportunity costs (values 2-12) appears, opportunities lost perhaps forever.

Any delay, moreover, brings opportunity to see whether even the majority do not gain in values 2-12 more than they lose in opportunity costs. We gain benefits for the minority and the benefits of waiting for the majority. This rule protects against a danger in what otherwise seems so democratic—settling things by referendum. One purpose of government is to see that the fully considered will of the majority is done, where there is no injustice; another is to see that this is not imposed on the minority unjustly. A strategy for insuring this might be, for instance, to prefer nonconsumptive minority interests over consumptive simple majority interests and, furthermore, to require a two-thirds majority, on grounds that consumptive use of relict wildlands requires more caution and a quite unequivocal demonstration that this is in fact the considered majority view—that it is a use worth imposing at irreversible sacrifice on the minority and with irreversible loss of option to the majority.

Policy here should favor nonconsumptive minority interests over consumptive minority interests, since those who want to "lock up" the land delay but do not irrevocably destroy the option of developing it, while developers who "use up" the land irrevocably erode the original set of wild values carried by it.

(8) *Do not underestimate diffused values.* Although lots of persons may be hurt by a decision, they are not hurt very much (a diminished vacation vista), while a few (the mill operators who clearcut) have a lot to gain. We can expect the latter to lobby full force; the former, however, will be disorganized, slow to realize what is at stake, and ill-represented in the public participation process. Yet, the aggregate loss of value—now to the majority—can be much larger than the gain to the minority. The scenery is marred for a century. Even when the amenity values are accurately represented, they are intangible.

¹⁴ Julie F. Gorte and W. Wendell Fletcher, analysts for the Office of Technology Assessment, find that simple management practices (such as thinning) on only 30-40% of the U.S. commercial forestland base could double the current harvest levels, and at the current levels Americans already consume more wood than people in any other nation. "Technology, Timber and the Future," *Renewable Resources Journal* 2, nos. 2 & 3 (Autumn 1983 & Winter 1984): 16-19.

¹⁵ W. Guldin, "Predicting Costs of Eastern National Forest Wilderness," *Journal of Leisure Research* 13 (1981): 112-28.

Sometimes the agenda can determine the result. The hard values, considered first, are thoroughly assessed; the soft values, held in abeyance to be considered last, are only loosely (and wearily) thrown in, after the hard values are already massively in place. If the agenda is the other way round, with as much attention given to specifying the soft values, and only afterward considering whether economic benefits override these, the results could be different. The path by which the choice is made can bias the choice.

All this tends to stunt the attention given to soft values, that is, to underrepresent the widespread, low-level intangibles and overestimate the concentrated, intense tangibles. Even the use of willingness to pay, well-intended though it is, routinely underappraises the soft values, for reasons we have examined. Moreover, one needs to identify the changes in value distribution over different populations, always an ethically relevant consideration even beyond aggregates, to avoid unjustly benefiting the few while burdening the many.

Some contend that a preservationist policy imposes concentrated costs (the few, local timber companies who lose a lot) and diffuse benefits (the public, who gain slight recreational benefits). Such policy is rarely implemented not only because it is difficult to maintain legislatively, but even more because it is ethically unsatisfactory. The better gestalt is to turn the picture around and say that a development policy, at least on relict wildlands, permits concentrated benefits (the timber sellers and buyers) and diffuse costs (intangibles over a larger public). The latter is the more logical and ethical gestalt, because the public, which is the present owner and has its benefits of wildness taken away, is the loser. The timber operators, who do not now own the timber but who buy it for profit, are the gainers.

Furthermore, if the timber companies do not pay the full costs, or if they destroy what money cannot buy, then they (and their customers) are subsidized at the public loss, a situation which is even more ethically unsatisfactory. The ideal in a democracy is for the majority to have their well-considered way, provided there is no injustice to the minority, and provided that there is a full counting of the production and distribution costs and benefits. The concept of opportunity costs forgone should not be applied to minority would-be exploiters of the land, who are not now its owners, but to the present owners, the public. If this public uses wildlands as one kind of resource and it cannot simultaneously use them as another kind of resource, it must consider its opportunity costs forgone, especially if such opportunities cannot be had elsewhere. But opportunity costs forgone need not apply to consumptive opportunists on public lands. That is why we should not pit concentrated costs against diffuse benefits, but turn the issue around and pit concentrated benefits against diffuse costs.

(9) *Recognize that wildland decisions must be one place where the model (myth?) of the perpetually expanding economy is broken.* Four hundred and fifty years ago Europeans began to enter what they naively called an empty continent. Abetted by the industrial revolution in the last two hundred years and the explosion

of science and technology in the last hundred, the American economy has been on a growth trip unprecedented in the history of the world. A national tradition conflicts with the preservation of wildland values. Many people cry, "More!" Wildland managers, aside from the natural values they positively protect, negatively have to say, "Enough!" It will always be possible to increase the GNP a bit by sacrificing wildlands. But now is the time, here is the place, to draw the line at the boundaries of the wildland remnants and say: this far, but no farther with the expanding economy.

Expand it, if you must, on nonwild lands. It is futile to sacrifice the relict wildlands and to confront the collapsing growth myth only after they are gone. To confront it now saves so much in values 2-12. This policy also helps us anticipate the steady-state economy and not tumble into it by default and catastrophe. We have no reason to think that the last fraction exploited will leave us any nearer to satisfied consumer desires in a system designed ever to escalate those desires. Americans are already rich and need to learn when enough is enough. In this sense, wildland decisions are not peripheral "recreational" matters but frontline challenges to a governing paradigm. Wildland managers are not simply supplying values additionally to those generated in the domestic economy; they are confronting the slowdown, and, at wildland boundaries, the breakdown of a traditional economy in favor of noneconomic values. Wildland decisions are rewriting history, terminating and reevaluating the transcontinental growth trip. At the wilderness boundary, we should post a sign: "Enter the wilderness. Abandon the GNP rat race here. Learn to be wilderness rich."

In this context one frequently hears proposals that developers and preservationists ought to meet each other halfway. Compromise is frequently a necessity and often moral in policy decisions, but there is no logic by which fairness is always meeting each other halfway or by which conflicting values are usually optimized by compromise. There is even less reason to believe this in wildland disputes, where 98 percent of the continent is developed, 2 percent remains wild, and developers propose to preservationists that they should meet halfway over the remaining 2 percent.

(10) *Expect wildland decisions to awaken previously latent and newly emerging values.* Environmental values are among those things until recently taken for granted, naively appreciated, or unappreciated. Not until developers threatened the mountain on the skyline did we realize what it meant to us. Not until they proposed to drain the marsh could we say that we would rather have it left alone, and even now it is difficult to articulate why. We never miss the water until the well runs dry. We learn what is at stake only when we learn that it is at stake. We awaken to goods when their opposites threaten, or awaken to inconsistencies in our own value sets when we cannot have our cake and eat it too. In these matters we can hardly expect a congressional mandate ever to be as groundbreaking as it ought to be, though we can reasonably expect it to express social preferences over

economic interests. One cannot get anything through Congress that is very complex or controversial. The earliest growth in value awareness comes somewhere back in the grassroots, but decision models need to help it along. Deciders should find the trend, not the mean; they should lead, not just follow. They should set principles, not just sum preferences.

I close with a factual claim and a plea. A trend approximating this axiological model (above the solid line) and these rules can be found in congressional legislation over the last twenty years (the National Environmental Policy Act; the Endangered Species Act, the various Wilderness Acts, the Wild and Scenic Rivers Act), usually expressed vaguely as a desire to protect "environmental," "ecological," or "amenity" values from economic usurpation. The Federal Land Policy and Management Act of 1976 "declares that it is the policy of the United States that" there be "a combination of balanced and diverse resource uses . . . without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return."¹⁶

What is novel here is adding the understory of natural value, which, while not explicit in the legislation, is permitted by and consistent with it, and more ethically advanced (nonanthropocentric) than can yet be expected of congressional legislation. What we still need is a kind of emancipation proclamation for the wildness that remains, which can be issued with the full assurance that the benefits to the emancipators will outweigh their costs, with these to be added to the benefits to the emancipated (as was true with the Emancipation Proclamation of 1863). This is a call for humans to respect the plenitude of being, once so vast and now so quickly vanishing, which surrounds us in the wild world.

Can humans genuinely gain by exploiting the fractional wilds that remain? What does it profit to gain the whole world, only to lose it—to gain it economically, only to lose it scientifically, aesthetically, recreationally, religiously, as a wonderland of natural history, as a realm of integral wildness that transcends and supports us—and perhaps even to lose some of our soul in the trade-off?

¹⁶ *Federal Land Policy and Management Act of 1976* (Public Law 94-579), Sees. 102, 103. (90 STAT. 2743) There is similar language in the *Multiple Use Sustained Yield Act of 1960* (Public Law 86-517), Sec. 4(a). (74 STAT. 215)