Making Better Environmental Decisions: An Alternative to Risk Assessment by Mary O'Brien, Cambridge, MA: MIT Press (published with Environmental Research Foundation), 2000, 283 pp.

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Dr. O'Brien, a botanist and environmental activist, has written a brief for changing the basis for environmental decisions that is impressively written and argued but still disappointingly flawed. Implementation of her proposed "alternatives analysis" could well improve such decisions, but less than she expects. Despite her refreshing candor about the limits of environmental management, she ignores many political and logical constraints on alternatives analysis (AA) and unduly demonizes risk assessment (RA).

Her main point is that we should examine two or more alternatives for a given decision, and choose the option that is least damaging. She believes most current environmental decisions focus only on whether a single option poses an acceptable risk or is "safe," findings that she sees as scientifically impossible, immoral, and damaging to democracy.

> It is impossible to undertake most business or government without posing some hazard to workers, the community, wildlife, or the environment. . . .
>
> Within this necessarily compromised context, moral decision making would appear to require giving priority to least-harm alternatives that are most beneficial for the environment and for the public interest. (p. 80)

O'Brien devotes a chapter to reviewing less-than-perfect current examples of AA, ranging from environmental impact statements to Consumer Reports® evaluations of consumer products. A secondary theme of the book is that "risk" or biological outcomes are unduly narrow criteria for environmental decisions; a wider look at the adverse impacts and benefits of alternatives would provide society with a better sense of the tradeoffs entailed in any choice, "[b]ecause the differing benefits of the various alternatives remind us of divergent considerations [and] we will ask a broader range of questions about the alternatives" (p. 135). She ends with barriers to adoption of AA (e.g., fear of "changes in business as usual" and of "a public process"; concern about "having to consider an infinite number of outlandish alternatives"), and proposes solutions.

There is quite a bit to be said for these theses, and O'Brien says most of it, eloquently, passionately, and with selective evidence. I agree with her that much environmental decision-making focuses on how much harm can be endured rather than avoided; opportunities for avoiding many harms are plentiful, if at certain costs; "risk" is only one of many attributes of decision alternatives, and only one of their consequences that people care about. While AA might sound potentially chaotic, I believe she is correct that "risk-based decision making is just as socially messy as decision making based on [AA]. It's just that [AA] helps make visible the non-scientific elements that are always behind risk-influenced decisions regarding who will be allowed to do what to the environment" (p. 243). O'Brien also acknowledges that "permitting of hazardous activities is unavoidable to some degree" (p. 79), and that some hazards, such as those from nuclear wastes and persistent chemicals such as PCBs, cannot be removed (pp. 110, 116). For such inevitably damaging, irreparable situations, O'Brien suggests that society analyze options that allow "for the greatest possible cleanup or restoration," even if the action chosen "will finally be based on economic and social costs, ethics, and political will," and identify "related production, technologies, or behaviors that could cause the same problems in the future" (pp. 210-211).

Although I endorse O'Brien's call for more AA, I am much less sanguine that it will greatly improve environmental decision-making, based on what I see as undue assumptions or illogic in some of her discussions of AA, RA, and environmental policy.

The first half of her book concerns "What Is Wrong with Risk Assessment?" The scope of this term is

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3. The views expressed here are not necessarily those of the New Jersey Department of Environmental Protection.

somewhat ambiguous, making it a bit difficult to evaluate the accuracy of her criticisms. Although she says RA includes any estimate, however informal or non-quantitative, of "the safety of a hazardous activity or substance without considering the benefits and drawbacks of a decent range of options" (p. 39), her discussion focuses mostly on quantitative risk assessment for toxic chemicals (particularly the probabilistic variety, although she does not use this term), with a few ecological examples thrown in. O'Brien says RA is invalid because it omits or analyzes inadequately diverse adverse effects, cumulative effects of multiple exposures, differing exposures and vulnerabilities across people, and "all indirect and interrelated consequences within our complex environment" (pp. 67-72). Safety is impossible to determine, "because all consequences cannot have been considered" (p. 69). (Oddly, O'Brien says that "[m]ost risk assessments are unscientific because they cannot estimate how much of a damaging activity poses no risks or 'insignificant' risks" [p. 59, emphasis added], although she correctly notes elsewhere that defining the "insignificance" of risk is a political, not a scientific, finding.) The uncertain quantification of RA helps "timid regulatory agencies" gain psychological distance from their decisions' meaning (e.g., some people will die) and increase their discretion, while reducing disproof given the method's uncertainty, manipulability and demand for rare expertise (pp. 106-108). Businesses welcome the chance "to fight for years over the exact details of risks of each toxic chemical" while they continue to pollute and profit (p. 242). RA's esoteric nature means agencies work mostly with business and thus "avoid dealing with many other groups who know about alternatives to the proposed activity and about unquantifiable benefits and hazards of the activity and of the alternatives" (p. 107), while "[a]ll sectors of the society can participate and can reinforce the efforts of other sectors" (p. 202) in AA. The AA method also frees analysis from the abstractions of numerical risk estimates:

> Numbers do not and cannot address what is whole, ineffable, priceless, or just. They cannot address hope, discouragement, respect, anger, aesthetics, sense of place, longing, or the waste of unnecessary illness or dying young. The numbers of risk assessment are abstractions of degradation; alternatives assessment incorporates the concreteness of caring." (pp. 233-234)

I have worked with risk assessors for several years, including detailed discussions of the limitations of their craft. Despite the ambiguity in how well particular criticisms apply to the very diverse approaches she has grouped as RA, I largely agree with O'Brien's points about RA. I am a bit more optimistic about the safety margins in their estimates than is O'Brien, although perhaps I'm biased by seeing more competent and honest analyses than the examples she cites. However, my main problem with her arguments about technical, moral and practical flaws is that she limits these to RA, when they apply equally to any effort--including AA--to predict the likely positive and negative outcomes of future events that might or might not occur. Uncertainty is inherent in such prediction, and numerical estimates of uncertainty are one tool (neither the only nor always the best) to help us make decisions in the face of ignorance, not merely ploys to serve self-interest. Although O'Brien says for AA "the existence of uncertainty about any one option [is] a valuable piece of information," she only mentions the undesirability of options whose damages are quite uncertain (pp. 217-218, 220). She offers no discussion about uncertainty that risks might be over- rather than under-estimated, uncertainty of benefits, or uncertainty in the preferability of "alternatives" to "business as usual." Perhaps this gap in her argument is explained--but not, in my view, justified--by her view that "all our efforts to allow ecosystems and organisms to retain or regain integrity are reversible. Only adverse consequences of our activities seem to have the potential for being essentially irreversible, at least short of geologic time" (pp. 194-195). And attempts by business, government, activist and other analysts to achieve desired results are not only also likely with AA, they are almost guaranteed, since compared to RA there are more variables to manipulate and more parties participating. She mentions at great length the ability of business to use arguments over RA details to delay changing their behavior (e.g., pp. 103-104), but does not notice that the benefits of protective actions could be delayed similarly until an AA is completed. Oddly, except for a criticism of NRDC's use of risk assessment to attack Alar (p. 242), O'Brien seems unaware that contending parties can shift their views of risk assessment depending on whether they like the answers (for example, business seems uneasy about quantitative analysis of "disparate adverse impacts" on minorities, as part of "environmental justice" initiatives). Only two of the defects O'Brien lists for RA might not occur, or occur as often, for AA: (1) the declaration that a given action will be "safe," and (2) the public inaccessibility of the debate over alternatives. But I disagree that a safety determination is inherent to RA: reputable risk assessors would argue that risk assessment's greatest strength, and its best use, is to determine relative, not absolute risk, and risk communication researchers have long urged institutions to abandon such usually faulty claims. Furthermore, the nature of policy debates almost guarantees that participants in AA will make the same erroneous claim about their preferred option. As for accessibility, she is probably correct, but this is hardly an unmixed blessing, as I discuss below. In short, AA will be fraught with the same technical flaws and strategic use of data and analytic techniques that O'Brien accuses RA of having or promoting. Curiously, she acknowledges several times in the book that RA--supposedly fatally flawed, technically and morally--is in fact a part of the analysis required for AA (pp. 129, 172, 177-178, 236), as long as multiple rather than single options are

covered. (Her book would be a lot more convincing to otherwise skeptical audiences if she had dropped this false notion that RA can only be used to analyze the risks of one option at a time.) That AA shares RA's drawbacks is not critical, because I believe reviewing more than one option will, on balance, be an improvement; but these drawbacks do reduce AA's benefits.

Overall, O'Brien's implicit thesis is that more information is better, a semi-delusion nearly universal among analysts and policy actors ("if they only had the facts citizens would agree with our position" is a mantra I've heard from all sides). For example, she says that "[AA], like cost-benefit analysis, 'clarifies choices among alternatives by evaluating consequences in a systematic manner' (Ashford and Caldart 1991).... What constitutes 'systematic evaluation' of these consequences, of course, is a judgment call" (p. 143). As a researcher, in self-interest and ideologically, I must agree to a point that more information is better. Strategically, she also is probably correct, since the dimensions she seeks to add to analysis will most likely favor activist over institutional positions. For example, discussing recombinant bovine growth hormone for increasing milk production, she mentions among other factors to consider "farmers' personal relationship to and enjoyment of farming, ...pesticide use, ...use of public money, ... long-term condition of agricultural soils, and...water quality" (p. 135). But the "more is better" thesis has been attacked by decision theorists, political scientists, and others for decades, since people neither can nor will use all available information beyond a certain limit, nor use it in a "rational" manner (e.g., Lindblom 1959, Nisbett and Ross 1980, Kahneman and Tversky 1984). RA's results, as limited as O'Brien thinks the method to be, have been criticized by decision-makers as being difficult to use (CRARM, 1997:85-92); AA will be more challenging. She also argues that "[AA] forces the decision maker to assume responsibility for choosing among various explicit political and value tradeoffs" (p. 145). I agree that this is technically easier with AA than RA, but both policymakers and ordinary citizens will resist making any but the most banal tradeoffs explicit. Too many tradeoffs are "taboo," and yet at some point (exactly which point is controversial) society needs to make them, without paying much attention to the nasty details (Fiske and Tetlock 1997).

O'Brien also seems somewhat naive about the obviousness of choices under the rubric of AA. Choices to stop practices that are really obviously bad do not require the detailed analysis of RA or AA (as argued about quantitative RA for many situations in developing or "in transition"countries, by authors otherwise supportive of the method--Bell and Wilson 2000). But most choices are not so obvious: that is why some kind of analysis is helpful. Stopping chemical production or use is not the straightforward solution in all cases that O'Brien seems to believe it to be, as shown by the vexing debate over how to reduce disinfection byproduct risks in drinking water without unleashing microbial epidemics. Asbestos removal and steam cleaning of beaches after an oil spill are only two of the many examples of cures that have often been worse than the disease. Many environmental problems are not dominated by the "industry or government action" (see my first quotation from her book, above) she stresses as cause; other organizations and individuals also play roles (as in non-point source pollution, for example) that do not allow simple solutions. She seems to assume that a multiple-option, multi-dimensional alternatives analysis will result in decisions that she would fully support. Given the diversity of values, I suspect that even if "the public" made all decisions and its members fully considered all salient benefits and drawbacks of alternatives, they might often make choices that would appall both O'Brien and myself. O'Brien believes that "[w]hen we decided to place a human on the moon, we did it. Likewise, we can set equally clear goals to restore the environment, [etc.]. Once goals are set and policies are developed that provide incentives to meet the goals, creative people will develop and implement alternatives" (p. 167). Creativity can certainly wreak wonders, but this view shared across otherwise antagonistic ideologies (urged by Simon [1981] in his claim that we not worry about resource depletion, for example) is a misconception. Rational analysis, whether RA or AA, will not offset relative political powers, remove constraints of nature (human or otherwise), or overcome the narrow values and assumptions of particular analytic traditions. Getting to the moon was an absurdly simple task compared to most societal challenges, and is an invalid analogy for environmental management (Nelson 1977). O'Brien sees such "problematic behaviors" as overpopulation, over-consumption, poverty, legal protection of corporate "persons," and "production of inessential products" as important to address; she argues that their exclusion from policy analyses suggests "an exercise in communal denial of fundamental environmental problems" (p. 118). I don't disagree that these factors are problematic, but they are by no means obvious causes even to environmentalists, as shown by the Ehrlich-Commoner debates on population versus technology versus consumption.

The biggest problem raised by O'Brien's thesis is one still unresolved by the environmental and policy communities at large: what are proper decision-making roles for organizations and individuals in a republican democracy? The "safety" decisions that O'Brien attributes to risk assessors and their organizational superiors are largely determined by legislation and the conflict designed into the American political system, just as the single-option analysis often is. Demand for a simple "yes-no" decision partly reflects pressure from interest groups, as she

argues, but also reflects public wishes. Many citizens simply want to know whether something is safe, and assume that any amount of a chemical will cause harm (e.g., Kraus et al. 1992; Johnson and Slovic 1998); claims that a given action is "least damaging" of the available alternatives will not be acceptable to these citizens. As a long-time proponent of a greater public voice in environmental decision-making, I am sympathetic to O'Brien's concern that government and business officials decide that certain risks are acceptable on behalf of "victims" who disagree and do not believe they have delegated that decision to institutions (p. 79). She makes some good arguments for more citizen involvement in this book, and does even better in an exchange of views on the Citizen Nature Project in two Oregon cities, of which she is a volunteer coordinator (O'Brien 2000). However, the apparently easy choice in favor of democracy and self-determination is not that simple. For example, O'Brien claims that

> We will always need many citizens who refuse to remain passive when some bureaucrat tells them that their local contaminated wetland is clean because national technical standards devised by some distant cadre say it is clean. (p. 87)

She notes elsewhere that "[t]hose who reap the monetary benefits are not necessarily those who pay the monetary costs" (p. 142), but does not recognize the subsidy imposed without consent on taxpayers and consumers elsewhere implied by local activists' success in getting extra wetlands cleanup. Implementing their own judgments of acceptable risk means that non-locals might have to forego reducing their own high-priority risks. Shifting burdens in this way is not by itself illegitimate, but should entail at least implicit citizen consent through votes for legislators who enact such policies. From whence does this consent arise in the wetlands case? Without it, locals should tax themselves for the extra desired cleanup, but this rarely happens. This problem of consent and representation has challenged political science and practice for decades; rhetorical assertions about democracy do not help. Certainly agencies should limit themselves to claiming that an impact is "acceptable" for public policy; I agree with O'Brien that agencies should not claim that the individuals who suffer that impact should believe that it is acceptable to them. But that step will not resolve the deeper conundrum of who deserves to choose the alternative that becomes public policy.

Dr. O'Brien acknowledges that:

> It is true that assessing alternatives is not enough. One of the underlying principles of this book, however, is that one of the most essential and powerful steps to change is understanding that there are alternatives.... Alternatives assessment allows citizens, politicians, agency bureaucrats, and some business people to see the potential in the concept that no risk is acceptable if there are better alternatives. (p. 213)

I agree with this potential, even if I disagree with her on its magnitude or the obviousness of what counts as "better." I look forward to seeing the fruits of this campaign to widen our consideration of alternatives for maintaining and improving environmental quality.

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Cultural Encounters with the Environment: Enduring and Evolving Geographic Themes. By Murphy, Alexander B. and Douglas L. Johnson, eds. Lanham, MD: Rowman & Littlefield Publishers (2001), 337 pp.

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Four decades ago, Philip Wagner and Marvin Mikesell compiled Readings in Cultural Geography, arguably the founding text in modern cultural geography. In it, they outlined the primary subsets of the discipline, and defined as well the role geographers play in exploring relationships between cultures and their environments. ãFor [...] cultural geographers, any sign of human action in a landscape implies a culture, recalls a history, and demands an ecological interpretation·the history of any people evokes its setting in a landscape, its ecological problems, and its cultural concomitants; and the recognition of a culture calls for the discovery of traces it has left on the earthä (p. 23). Mikesell himself explored many of these themes in his own work; his research interests ranged from exploring ecological relations in North Africa to presenting ideas on how we should conceptualize nationhood. His scholarship in the field, and in cultural ecology in particular, is the inspiration behind Cultural Encounters with the Environment.

Alexander Murphy and Douglas Johnson have brought together fifteen of Mikesellâs colleagues and former students in this festschrift to the University of Chicago geographer. The result is a well-written, well-ordered addition to the recent array of literature in cultural geography. The contributors in this volume fuse the major themes emphasized in the 1962 compilation, such as cultural ecology, settlement and diffusion, and cultural adaptation, with discursive interpretation, place perception, and other contemporary approaches and perspectives. At the same time, they engage in what Chris Philo (2000) refers to as Îrematerializingâ, or rather, putting the Îfieldâ back into the field work of cultural geography.

Murphy and Johnson divide the volume into three sections: Îconstructing cultural spacesâ, Îremaking the environmentâ, and Îclaiming spacesâ, a schematic that demonstrates the degree to which traditional themes have been reinterpreted. No one essay is easily classified within this breakdown, however, as each addresses the changing nature of how space and place are organized within cultural systems and in relation to the immediate environment. The subject matter is diverse, yet complementary, in both focus and approach. Chad Emmettâs paper on the division of religious spaces in Israel and Palestine illustrates how fragile is the peace attained among competing actors in contested spaces of worship. Segregation of worship spaces in some situations provides for a ãform of scattered sovereigntyä (p. 279). Such sovereignty is begrudgingly ceded in the West Bank, the focus of Shaul Cohenâs essay on the Îabsence of placeâ among Palestinians. The scattered zones of varying authority in which Palestinians live, coupled with shifting social constructions of place through literature and nationalist sentiment, mean that place is a construct which is as much Îcircumscribed or dictatedâ (p. 299) from above as from within. These constructions and meanings are derived from Israeli authorities and international conventions, rather than from a singular, internally driven, Palestinian self-image.

Charles Good, James Wescoat, and Karl and Elizabeth Butzer, also present case studies on understanding cultural practices and adaptations of non-Western societies. Goodâs historical examination of western vs. non-western understandings of the traditional practice of female circumcision demonstrates the need to combine cultural with medical geographies, and for deconstructing the discourse surrounding those cultural practices seen as