



*Risk and Reason: Safety, Law, and the Environment*, by Cass R. Sunstein. Cambridge, UK: Cambridge University Press, 2002, 342 pp., ISBN 0521791995, £25.00 (Also in paperback: ISBN 0521016258 \$22.99).

As someone dedicated to the notion that society needs quantitative risk assessment (QRA) now

more than ever to help make decisions about health, safety, and the environment, I confess that I dread the arrival of each new book that touts QRA or cost-benefit analysis as a “simple tool to promote sensible regulation.” Although risk analysis has enemies aplenty, from both ends of the ideological spectrum, with “friends” such as John Graham (*Harnessing Science for Environmental Regulation*, 1991), Justice Stephen Breyer (*Breaking the Vicious Circle*, 1994), and now Cass Sunstein, practitioners have their hands full. I believe that at its best, QRA can serve us better than a “precautionary principle” that eschews analysis in favor of crusades against particular hazards that we somehow know are needlessly harmful and can be eliminated at little or no economic or human cost. After all, this orientation has brought us increased asbestos exposure for schoolchildren and remediation workers in the name of prevention, and also justified an ongoing war with as pure a statement of the precautionary principle as we are likely to find (“we have every reason to assume the worst, and we have an urgent duty to prevent the worst from occurring,” said President Bush in October 2002 about weapons of mass destruction in Iraq). More attention to benefits and costs might occasionally dampen the consistent enthusiasm of the environmental movement for prevention, and might even moderate the on-again, off-again role precaution plays in current U.S. economic and foreign policies. But “at its best” is often a distant, and even a receding, target—for in *Risk and Reason*, Sunstein has managed to sketch out a brand of QRA that may actually be less scientific, and more divisive, than no analysis at all.

To set environmental standards, to set priorities among competing claims for environmental protection, or to evaluate the results of private or public actions to protect the environment, we need reliable estimates of the magnitude of the harms we hope to avert as well as of the costs of control. The very notion of eco-efficiency presupposes the ability to quantify risk and cost, lest companies either waste resources chasing “phantom risks” or declare victory while needless harms continue unabated. In a cogent chapter (Ch. 8) on the role of the U.S. judiciary in promoting analysis, Sunstein argues persuasively that

regulatory agencies should at least try to make the case that the benefits of their efforts outweigh the costs, but he appears to recognize that courts are often ill-equipped to substitute their judgments for the agencies’ about precisely how to quantify and to balance. He also offers a useful chapter (Ch. 10) on some creative ways agencies can transcend a traditional regulatory enforcer role, help polluters solve specific problems, and even enlist them in the cause of improving eco-efficiency up and down the supply chain. (I tried hard to innovate in these ways as director of rulemaking and as a regional administrator at the U.S. Occupational Safety and Health Administration, with, at best, benign neglect from political appointees of both parties, so Sunstein may be too sanguine about the practical appeal of these innovations.)

Would that Sunstein had started (or stopped) with this paean to analysis as a means to an end—perhaps to be an open door inviting citizens, experts, those who would benefit from regulation, and those reined in by it to “reason together.” Instead, he joins a chorus of voices promoting analysis as a way to justify conclusions already ordained, adding his own discordant note. Sunstein clearly sees QRA as a sort of national antipsychotic drug, which we need piped into our homes and offices to dispel “mass delusions” about risk. He refers to this as “educating” the public, and therein lies the most disconcerting aspect of *Risk and Reason*: he posits a great divide between ordinary citizens and “experts,” and one that can only be reconciled by the utter submission of the former to the latter. “When ordinary people disagree with experts, it is often because ordinary people are confused,” he asserts (p. 56)—not only confused about the facts, in his view, but not even smart enough to exhibit a rational form of herd behavior! For according to Sunstein, “millions of people come to accept a certain belief [about risk] simply because of what they *think* other people believe” (p. 37, emphasis added).

If I thought Sunstein was trying by this to aggrandize my fellow travelers—scientists trained in the biology of dose-response relationships and the chemistry and physics of substances in the environment, the ones who actually produce risk assessments—I suppose I would feel inwardly flattered, if outwardly sheepish, about

this unsolicited elevation above the unwashed masses. But the reader will have to look long and hard to find citations to the work of practicing risk assessors or scientists who helped pioneer these methods. Instead, when Sunstein observes that “precisely because they are experts, they are more likely to be right than ordinary people . . . brain surgeons make mistakes, but they know more than the rest of us about brain surgery” (p. 77), he has in my view a quaint idea of where to find the “brain surgeons” of environmental risk analysis.

He introduces the book with three epigrams, which I would oversimplify thus: (1) the general public neglects certain large risks worthy of fear, instead exhibiting “paranoia” about trivial risks; (2) we maintain these skewed priorities in order to avoid taking responsibility for the (larger) risks we run voluntarily; and (3) defenders of these skewed priorities are narcissists who do not care if their policies would do more harm than good. The authors of these epigrams have something in common beyond their worldviews: they are all economists. Does expertise in how markets work (and that concession would ignore the growing literature on the poor track record of economists in estimating compliance costs in the regulatory arena) make one a “brain surgeon” qualified to bash those with different views about, say, epidemiology or chemical carcinogenesis?

To illustrate the effects of Sunstein’s continued reliance on one or two particular subspecies of “expert” throughout the rest of his book, I offer a brief analysis of Sunstein’s five short paragraphs (pp. 82–83) pronouncing that the 1989 public outcry over Alar involved masses of “people [who] were much more frightened than they should have been.”<sup>1</sup> Sunstein’s readers learn the following “facts” in this example:

- Alar was a “pesticide” (actually, it regulated the growth of apples so that they would ripen at a desired time).
- “About 1 percent of Alar is composed of UDMH [unsymmetrical dimethylhydrazine], a carcinogen” (actually, this is roughly the proportion found in raw apples—but when they are processed into apple juice, about five times this amount of UDMH is produced).
- The Natural Resources Defense Council (NRDC) performed a risk assessment claiming that “about one out of every 4,200 [preschool children] exposed to Alar will develop cancer by age six” (actually, NRDC estimated that *exposures* prior to age six could cause cancer with this probability sometime during the 70-year lifetimes of these children—a huge distinction, with Sunstein’s revision making NRDC appear unfamiliar with basic assumptions about cancer latency periods).
- The EPA’s current risk assessment is “lower than that of the NRDC by a factor of 600” (actually, the 1/250,000 figure Sunstein cites as EPA’s differs from NRDC’s 1/4,200 figure by only a factor of 60 (250,000 ÷ 4,200). Besides, EPA never calculated the risk at one in 250,000. After Alar’s manufacturer (Uniroyal) finished a state-of-the-art study of the carcinogenicity of UDMH in laboratory animals, EPA (*Federal Register*, Vol. 57, October 8, 1992, pp. 46,436–46,445) recalculated the lifetime excess risk to humans at  $2.6 \times 10^{-5}$ , or 1 in 38,000. And, acting on recommendations from the U.S. National Academy of Sciences, EPA has subsequently stated that it will consider an additional tenfold safety factor to account for the increased susceptibility of children under age 2, and a threefold factor for children aged 2 to 16—which, had they been applied to UDMH, would have made the EPA estimate almost equal to the NRDC estimate that made people “more frightened than they should have been”).
- “A United Nations panel . . . found that Alar does not cause cancer in mice, and it is not dangerous to people” (true enough, except that Sunstein does not mention that this panel invoked a threshold model of carcinogenesis that no U.S. agency would have relied on without more and different scientific evidence: the U.N. panel simply ignored the large number of tumors at the two highest doses in Uniroyal’s UDMH study and declared the third-highest dose to be “safe” because that dose produced tumors, but at a rate not

significantly higher than the background rate).

- A *60 Minutes* broadcast “instigated a public outcry . . . without the most simple checks on its reliability or documentation” (readers might be interested, however, that both a federal district court and a federal appeals court summarily dismissed the lawsuit over this broadcast, finding that the plaintiffs “failed to raise a genuine issue of material fact regarding the falsity of statements made during the broadcast”).
- The demand for apples “plummeted” during 1989 (true enough, but Sunstein neglects to mention that within five years after the withdrawal of Alar the apple industry’s revenues *doubled* versus the level before the controversy started).

Sunstein’s entire source material for these scientific and other conclusions? Four footnotes from a book by political scientist Aaron Wildavsky and one quotation from an editorial in *Science* magazine (although the incorrect division of 250,000 by 4,200 and the mangling of the NRDC risk assessment appear to be Sunstein’s own contributions). One reason the general public annoys Sunstein by disagreeing with the “experts,” therefore, is that he has a very narrow view of where one might look for a gold standard against which to judge the merits of competing conclusions. Perhaps Sunstein himself has come to certain beliefs about Alar and other risks “simply because of what [he thinks] other people believe,” and comforts himself that the people he agrees with must be “experts.”

Similarly, Sunstein makes some insightful points about the public’s tendency to assume that the risks are higher for items whose benefits they perceive as small, but he fails to notice the mountains of evidence that his preferred brand of experts tend to impute high economic costs to regulations that they perceive as having low risk-reduction benefits. He accepts as “unquestionably correct” the conclusion of Tengs and colleagues (1995) that government badly misallocates risk-reduction resources, for example, without acknowledging Heinzerling’s (2002) finding that in 79 of the 90 environmental interventions Tengs and colleagues accused of most

severely wasting the public’s money, the agency involved never required that a dime be spent to control those hazards, probably because analysis showed such expenditures to be of questionable cost-effectiveness.

Finally, Sunstein fails to acknowledge the degree to which experts can agree with the public on broad issues, and can also disagree among themselves on the details. He cites approvingly studies by Slovic and colleagues suggesting that laypeople perform “intuitive toxicology” to shore up their beliefs, but fails to mention that in the most recent of their studies (1995), toxicologists and the general public both placed 9 of the same 10 risks at the top of 38 risks surveyed, and agreed on 6 of the 10 risks among the lowest 10 ranked. Yet when toxicologists alone were given information on the carcinogenic effects of “Chemical B” (data on bromoethane, with its identity concealed) in male and female mice and rats, only 6% of them matched the conclusions of the experts at the U.S. National Toxicology Program that there was “clear evidence” of carcinogenicity in one test group (female mice), “equivocal evidence” in two others, and “some evidence” in the fourth. “What are ordinary people thinking?” (p. 36) when they disagree with the plurality of toxicologists, Sunstein asks, without wondering what these toxicologists must have been thinking to disagree so much with each other. One simple answer is that perhaps both toxicologists and the general public, more so than others whose training leads them elsewhere, appreciate the uncertainties in the raw numbers and the room for honest divergence of opinion even when the uncertainties are small. These uncertainties become even more influential when multiple risks must be combined and compared—as in most life-cycle assessments and most efforts to identify and promote more eco-efficient pathways—so Sunstein’s reliance on a style of expertise that regards uncertainty as an annoyance we can downplay or “average away” is particularly ill-suited to broader policy applications.

I actually do understand Sunstein’s frustration with the center of gravity of public opinion in some of these areas. Having worked on health hazards in the general environment and in the nation’s workplaces, I devoutly wish that more laypeople (and more experts) could muster more

concern about parts per thousand in the latter arena than parts per billion of the same substances in the former. But I worry that condescension is at best a poor strategy to begin a dialogue about risk management, and hope that expertise would aspire to more than proclaiming the “right” perspective and badgering people into accepting it. Instead, emphasizing the variations in expertise and orientation among experts could actually advance Sunstein’s stated goal of promoting a “cost-benefit state,” as it would force those who denounce all risk and cost-benefit analysis to focus their sweeping indictments where they belong. But until those of us who believe in a humble, humane brand of risk assessment can convince the public that substandard analyses indict the assessor(s) involved, not the entire field, I suppose we deserve to have our methods hijacked by experts outside our field or supplanted by an intuitive brand of “precaution.”

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### Note

1. This is admittedly not a disinterested choice, as I was an expert witness for CBS News in its successful attempts to have the courts summarily dismiss the product disparagement suit brought against it for its 1989 broadcast about Alar. But Sunstein’s summaries of other hazards (e.g., toxic waste dumps, arsenic, airborne particulate matter) could illustrate the same general point.

### References

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