

THE WAGES OF RISK: A REVIEW OF
*DEALING WITH RISK: WHY THE PUBLIC AND
THE EXPERTS DISAGREE ON
ENVIRONMENTAL ISSUES*

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DEALING WITH RISK: WHY THE PUBLIC AND THE EXPERTS DISAGREE ON ENVIRONMENTAL ISSUES by Howard Margolis. Chicago: The University of Chicago Press. 1996. 227 pp.

The human brain did not evolve to process the risks of living in modern society. That much is clear from Howard Margolis's *Dealing with Risk: Why the Public and the Experts Disagree on Environmental Issues*.¹ The risk of contracting diseases from consuming saccharine or breathing asbestos befuddles us. Margolis asserts that we see environmental hazards as either quite dangerous, requiring exceptional levels of precautions, or as basically harmless and fungible with the costs of avoiding them.² There appears to be no mental middle ground, and the circumstances that induce one of these two perspectives, while predictable, involve factors that are unrelated to the actual magnitude of the risk. Although economics teaches that we should undertake careful cost-benefit analyses to determine which risks to undertake and which to avoid, we seem — at least at an individual level — incapable of doing so.

Given this problem, how should social choices be made in a democracy? In most cases, society solves the problem of personal cognitive limitations by deferring to experts. In several significant settings, however, the perceptions of ordinary citizens depart markedly from those of experts. People fear some environmental hazards that experts say are not dangerous and do not fear others that experts say are dangerous. Margolis's explanation for this phenomenon is difficult to restate succinctly,³ but it differs markedly from the usual explanations. He generally agrees with the experts but he distrusts both expert and lay assessments of envi-

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¹ HOWARD MARGOLIS, *DEALING WITH RISK: WHY THE PUBLIC AND THE EXPERTS DISAGREE ON ENVIRONMENTAL ISSUES* (1996).

² *Id.* at 75-79.

³ It is described fully, *infra* in section I.B.1.

ronment hazards. Because Margolis favors expertise, he targets his reforms towards improving expert decision-making. His analysis of the public's perception, however, does support significant reforms that others have endorsed.⁴ Thus, Margolis's book advocates two separate policy prescriptions: one that is implied by his analysis of the decision-making of lay persons, and one that he expresses directly to expert decision-making.

As to improving the public's assessment of environmental hazards, Margolis reviews several examples of situations in which ordinary citizens adjust their perception of the dangers posed by an environmental hazard after encountering the costs of avoiding it. In these cases, when the same people experience both the costs and benefits of eliminating the hazard, disagreement with the experts vanishes. Those situations contrast to ones in which the costs of avoiding a hazard are "invisible" or otherwise off of the public's cognitive radar screen. When this is the case, the public often disagrees with the experts and over-reacts to the hazard. Likewise, the public may under-react if the dangers of an environmental hazard are invisible. These observations suggest that we should enact structural reforms of the experience of risk to ensure that ordinary citizens fully appreciate both the risks and benefits of any action that involves environmental hazards.

This solution, however, carries significant costs that Margolis overlooks. The proposals that Margolis describes do not actually force individuals to bear both the costs and benefits of incurring an environmental hazard. Rather, they force a *community* to bear both costs and benefits. Because people within a community will experience costs and benefits to different degrees, Margolis's theory predicts that *individuals* will reach different conclusions about whether a hazard is harmful or not. Some members of a community may want a plant shut down; some may want it left open. Furthermore, Margolis's theory predicts that assessments of environmental hazards tend to be quite polarized, strongly held, and difficult to dislodge. Consequently, forcing a community to choose may tear it apart, setting neighbors against neighbors, friends against friends, and husbands against wives.

Margolis saves his direct policy prescription for the experts. His proposal re-states a consistent and recurring theme of administrative law — that of agency myopia. Margolis worries that the bi-polar nature of risk-assessment, found even among experts, leads administrative agencies to attempt to regulate away all risk once their experts deem that the

⁴ Clayton P. Gillette & James E. Krier, *Risk, Courts, and Agencies*, 138 U. PA. L. REV. 1027, 1105-09 (1990); Richard H. Pildes & Cass R. Sunstein, *Reinventing the Regulatory State*, 62 U. CHI. L. REV. 1, 90-96 (1995); William D. Ruckelshaus, *Risk in a Free Society*, 14 ENVTL. L. REP. 10,190 (1984).

risk is present.⁵ When the Environmental Protection Agency ("EPA") identifies a cancer risk, it tries to eliminate it utterly; when the Food and Drug Administration finds a carcinogen entering the food supply, it tries to banish it thoroughly, regardless of social costs. When one has a hammer, the world seems filled with nails that need pounding. Margolis's cure for this myopia is modest, but intriguing. He would require agencies to ensure that their regulatory decisions do not cost more lives than they save or, as he puts it, to be sure that their decisions "do no harm."

Margolis's reform would not be the first to address agency myopia. The National Environmental Policy Act of 1969 ("NEPA")⁶ represents a similar attempt to force federal agencies to evaluate the consequences of their activities carefully. NEPA requires that agencies detail the environmental costs of their projects before undertaking them.⁷ This process is supposed to ensure that agencies do not inadvertently undertake environmentally destructive projects. Unfortunately, although NEPA has slowed agency decision-making,⁸ thereby halting some projects that are time-sensitive, it has had no obvious effect on other destructive projects. Depending upon how the government implements it, Margolis's "do no harm" proposal may have similar consequences.

Margolis has made a significant contribution to the literature, but the implications of his theory and his proposals carry significant costs that he does not address. After first discussing his theory in detail and contrasting it with other competing theories in Part I, this essay discusses these costs in Part II. In the final analysis, even if Margolis has correctly traced the psychological causes of disagreement between experts and the public, the proper response to this disagreement remains unclear.

I. MARGOLIS'S THESIS

The observation that experts and lay persons sometimes disagree about the dangerousness of certain activities is not new. Nearly two decades of research has documented such disagreements in many areas,⁹ and several theories that explain this phenomenon have emerged. Margo-

⁵ MARGOLIS, *supra* note 1, at 147-48.

⁶ 42 U.S.C. §§ 4331-4370(d) (1994).

⁷ 42 U.S.C. § 4332(2)(C) (1994).

⁸ See, e.g., ROBERT V. PERCIVAL ET AL., ENVIRONMENTAL REGULATION: LAW, SCIENCE, AND POLICY 1178-81 (2d ed. 1996) (reviewing the literature on NEPA and concluding that it has had mixed effects on agency decision-making).

⁹ Gillette & Krier, *supra* note 4, at 1071-73; Paul Slovic et al., *Facts Versus Fears: Understanding Perceived Risk, in Judgment Under Uncertainty: Heuristics and Biases* 463 (Daniel Kahneman et al. eds., 1982); Cass R. Sunstein, *Congress, Constitutional Moments, and the Cost-Benefit State*, 48 STAN. L. REV. 247, 264-65 (1996). The observation that lay persons sometimes fear things that pose no real danger can be traced back several centuries. PETER L. BERNSTEIN, AGAINST THE GODS: THE REMARKABLE STORY OF RISK 71, 104-05 (1996).

lis neatly collapses these theories into three categories: (1) ideological differences between experts and lay persons; (2) widespread distrust of experts by the public; and (3) different views of rationality.¹⁰ Margolis refers to these theories as the "usual suspects." He finds inadequacies in each and proposes his own in their stead.

A. THE "USUAL SUSPECTS"

1. *Ideological Differences*

Ideology certainly seems to influence everyone's evaluations of the dangers of environmental hazards. People who worry about global warming also tend to worry about ground water contamination and the destruction of tropical rainforests. An ideological view that the environment is in danger may underlie all of these beliefs. If experts tend to belong to a different ideological camp than the general public, then the differences between the two groups in their assessments of environmental hazards may simply be the consequence of these different ideological perspectives.

Margolis dispenses quickly with this theory.¹¹ He observes that an ideological account fails to explain two observed phenomenon about the differences between experts and the general public. First, sometimes the public is more afraid of environmental risk than the experts, and sometimes it is less afraid. If one ideological perspective were in fact over-represented among experts, then when the experts and the general public disagree, they should always disagree in the same way. Second, an ideological theory does not explain why committed ideologues can sometimes mobilize public support for environmental protection and other times cannot.¹²

2. *Distrust*

The second theory, distrust, is perhaps best illustrated by the divergence between experts and the general public on nuclear power.¹³ A public that distrusts its institutions should fear concentrated, powerful organizations and hence find nuclear power more worrisome than fossil fuels; fossil fuels are associated with smaller entities such as gasoline stations, while nuclear power plants require more significant organizational support. Furthermore, a sufficient level of public distrust probably exists. How many news reports of bureaucratic sloppiness, ineptitude, or outright corruption would it take to foment enough distrust of the Nu-

¹⁰ MARGOLIS, *supra* note 1, at 21.

¹¹ *Id.* at 23-28.

¹² *Id.* at 27-28.

¹³ Slovic et al., *supra* note 9, at 485-96.

clear Regulatory Commission ("NRC") so that the public would refuse to believe the agency's assurances? Surely, whatever the number is, the American media passed it years ago. The lack of faith in institutions and the democratic process might well explain the gap between experts and the general public.¹⁴

Margolis puts more stock in this theory than the ideological theory, but rightly points out that it explains too much.¹⁵ If the NRC is corrupt, so too must be the Federal Aviation Administration, and yet millions willingly board airplanes each year. Surely other institutional actors such as meat inspectors or even our doctors should be equally suspect. But in fact, we often trust large institutions and their expertise.¹⁶ As an illustration, Margolis uses the example of low-level radioactive materials in medical procedures.¹⁷ Patients willingly allow their doctors to expose them to low doses of radioactive materials as part of a diagnostic medical test, yet it is nearly impossible to find a community that is willing to tolerate the presence of a medical waste disposal facility.¹⁸ In both cases, experts assure lay persons that the materials are safe (in one case safely used and in the other safely disposed of), yet the public trusts the experts in the case of the medical diagnosis and distrusts them in the case of the disposal facility. A generic theory that experts are not trusted fails to account for such cases.

3. *Rival Rationalities*

The third theory, rival rationalities, posits that experts and the general public disagree fundamentally on what factors should be considered in cost-benefit analyses. Experts rely on criteria for evaluating the risks of environmental hazards that differ from those that the general public rely on. Consider the following hypothetical as an example:

Imagine an island community of one million people that must choose between three sources of electricity: a nuclear reactor, a biomass converter (which burns agricultural waste), and a coal-fired power plant. Assume further that (1) the nuclear reactor's *only* risk is a one-in-one-million chance of a meltdown which would kill everyone on the island, (2) the *only* risk from the biomass converter is its emission of small amounts of dioxin, which presents a one-in-one-million chance of causing cancer, and (3) the *only* risk from the coal-fired plant is

¹⁴ Paul Slovic, *Perceived Risk, Trust, and Democracy*, 13 *RISK ANALYSIS* 675 (1993).

¹⁵ MARGOLIS, *supra* note 1, at 28-32.

¹⁶ *Id.* at 31-32.

¹⁷ *Id.* at 133.

¹⁸ *Id.*

its emission of sulphur dioxide, which presents a one-in-ten-thousand chance of causing death among the island's sub-population of 10,000 asthmatics.¹⁹

Because the expected number of deaths from each option is identical, the risk assessment of an expert might conclude that the island's inhabitants should be indifferent between the three options. However, the inhabitants almost certainly would have a preference. At least two other factors would influence their decision — concern with equity and fear of catastrophic losses. As to the first factor, the community might well want to ensure that each member of the community shares the risks equally. It would seem unfair to foist all of the costs of the energy program onto a minority of the residents, thereby making option three unpalatable. Likewise, even though option two is fair at the outset, it visits the costs of the energy program upon a single individual each year. This may, at the end of the year, seem unfair as well. The first option, however, risks the destruction of the entire community. Although the first option may be the most fair, it has the potential to extinguish the entire community along with its culture, values, and beliefs.

These concerns obviously conflict somewhat and lead to an indeterminate result. However, mere "body-counters"²⁰ will miss the nuances of the decision. Fairness matters, as does an assurance that the community's culture will not be wiped out entirely. Thus, the experts and the general public may make different decisions about environmental hazards because the public does more than calculate an expected body count. The public views hazards as multi-dimensional, while experts view them as uni-dimensional. In fact, Margolis identifies one version of this theory that lists *nineteen* different factors that the experts ignore, but that the general public considers important.²¹ Margolis refers to this theory as "rival rationalities." The experts and the general public disagree on what terms to use in a rational calculus.

Margolis treats this theory as the best previously available description of the divergence between experts and the public, although he ultimately dismisses it as inadequate. He finds it particularly troubling that

¹⁹ Donald T. Hornstein, *Reclaiming Environmental Law: A Normative Critique of Comparative Risk Analysis*, 92 COLUM. L. REV. 562, 597 (1992).

²⁰ Gillette & Krier, *supra* note 4, at 1075. Margolis agrees that experts "block off" other considerations. MARGOLIS, *supra* note 1, at 35.

²¹ These factors are: catastrophic potential, familiarity, understanding, uncertainty, controllability (personal), voluntariness of exposure, effects on children, effects manifestation (delayed or immediate), effects on future generations, victim identity, dread, trust in institutions, media attention, accident history, equity, benefits, reversibility, personal stake, and origin. MARGOLIS, *supra* note 1, at 28 (citing Vincent Covello, *Risk Comparisons and Risk Communications*, in COMMUNICATING RISK TO THE PUBLIC 79, 112 (Roger E. Kasperson & Pieter Jan M. Stallen eds., 1991)). Sunstein presents a similar list. Sunstein, *supra* note 9, at 267.

the factors that the public allegedly considers in evaluating risk do not include the actual magnitude of the danger.²² He devotes significant attention to discrediting each of the factors and finds that most are vaguely defined (as in the case of “dread”) or simply incorrect (as in the case of “voluntariness”). In the end, he concludes that the list of factors “is not so much a list of extra dimensions that worry lay people as a list of things that might be used to rationalize lay concern in the absence of evidence of danger in the usual sense.”²³ Margolis is thus concerned that the theory of rival rationalities depends on correlations between these factors and the divergence between lay and expert opinion. He believes that the causation runs in the opposite direction — the divergence is primary, and the factors that previous researchers have identified are just how people explain why they fear things that experts say are not dangerous.²⁴

B. MARGOLIS’S THEORY AND WHY IT MATTERS

1. *Margolis’s Theory*

Having rounded up and dismissed the “usual suspects,” Margolis thus sets the stage for his own theory that explains the divergence between the beliefs of experts and lay persons. Curiously enough, Margolis does not start with a classic case of expert and lay disagreement, such as nuclear power or hazardous waste. Instead, he begins with a version of the “Monte Hall” problem and adds a sprinkling of Gestalt Psychology. Although there is sharp disagreement on whether stylized problems like the Monte Hall problem have any application to real-world problems,²⁵ Margolis makes a strong case that the phenomena uncovered by such quirky problems underlie the divergence in beliefs between the expert and the public.

Margolis’s version of the Monte Hall problem²⁶ looks like this:

²² MARGOLIS, *supra* note 1, at 34.

²³ *Id.* at 42.

²⁴ Margolis is not entirely convincing on this point. Although it is true that some of the research relies on the self-reports of the subjects, which are subject to this criticism, many are not. The usual procedure repeats the methodology described in Slovic et al., *supra* note 9. In this study, the researchers elicited individuals’ subjective estimates of the likelihood of various causes of death. The subjects are not asked to describe why they disagree with experts.

²⁵ Gerd Gigerenzer, *How to Make Cognitive Illusions Disappear: Beyond “Heuristics and Biases”*, 2 EUR. REV. SOC. PSYCHOL. 83 (1991). Cf. Daniel Kahneman & Amos Tversky, *On the Reality of Cognitive Illusions: A Reply to Gigerenzer’s Critique*, 103 PSYCHOL. REV. 582 (1996).

²⁶ The “Let’s Make a Deal” version looks different, but poses the same issue. Imagine you are on a game show and are asked to select the prize that is behind one of three doors. You know that behind two of the doors is a goat and behind one is a Cadillac. You select one door, whereupon the host of the game show reveals that a goat is behind one of the doors that you did not select. The host then proceeds to ask you whether you want to change your initial door selection. Should you switch? You have a 2/3 chance of winning if you do, yet most

Three poker chips are in a cup. One is marked with a BLUE dot on each side, and another with a RED dot on each side. The third chip has a BLUE dot on one side and a RED dot on the other. So there is one blue/blue chip, one red/red chip, and one blue/red chip.

Without looking, you take out one chip, and lay it on the table.

. . . .

1. Suppose the up side turns out to be BLUE? What is the chance that the down side will also be BLUE?²⁷

Although the correct answer is $2/3$, most people say $1/2$.²⁸ Although a “lay person” seeing the problem for the first time will likely be quite certain that the answer is $1/2$, an “expert” who has studied the issue will be just as certain that it is $2/3$. If this decision were important, the lay person could simply defer to the expert. A lay person would be uncomfortable doing so, however, and absent some challenge to his or her belief, the lay person has no reason to question his or her initial intuition about the answer.²⁹ Furthermore, if the lay person studies the problem long enough and listens to the multiple different explanations of why it is $2/3$, the lay person will eventually come to agree that the answer is, in fact, $2/3$. Once that process happens, that lay person has now become an expert and will never again believe that the correct answer is $1/2$.

Margolis expands upon the problem by drawing from Gestalt Psychology. He observes that there are numerous illusions in which people can perceive one of two images, but not both at the same time (e.g., vases/faces, or the one Margolis himself uses, the rabbit/duck).³⁰ One cannot look at the vases/faces illusion and see both a vase and a face — people see the one or the other. So too with risk, argues Margolis. Peo-

people insist that the chance is $1/2$. See generally, Daniel Friedman, *The Three Door Anomaly: Construction and Deconstruction* (Jan. 1996) (Working Paper #344, University of Santa Cruz).

²⁷ MARGOLIS, *supra* note 1, at 53.

²⁸ Margolis has a lengthy explanation for why the probability is $2/3$, but the abbreviated version is as follows:

Think of it this way. Suppose you close your eyes and draw a chip and it is now on the table covered by your hand. . . . [I]f the up side is blue, the chance is $1/2$ the down side is also blue. . . . [T]he same holds also if the up side is not blue, but red. So even before you know what color is on top, you would know the probability the top color will be matched by the bottom color is $1/2$. But . . . [before any chip is drawn] you would simultaneously believe the probability [that the top color is matched by the bottom color] is . . . $2/3$. So . . . are you not contradicting yourself?

MARGOLIS, *supra* note 1, at 54 n.2.

²⁹ *Id.* at 63.

³⁰ *Id.* at 73-75.

ple see PCBs either as hazardous or not hazardous; there is no middle ground. Once again, one could defer to the experts to decide the matter, but doing so would be an uncomfortable choice. Likewise, nuclear power is seen either as perfectly safe or terribly risky. Even though the reality is that nuclear power has some risks and benefits, people see it only in this dichotomy. People also have little reason to doubt their perception that nuclear power is risky.

These observations lead Margolis to develop his "risk matrix."³¹ According to his theory, people view both risk and opportunity costs in dichotomous terms.³² That is to say, people see a hazard as either risky or not risky, and the costs of avoiding the hazard are either evident or not evident to the decision-maker.

		Opportunity Costs	
		Yes	No
Danger	Yes	1. Fungibility	2. "Better Safe Than Sorry"
	No	3. "Waste Not Want Not"	4. Indifference

Box number one, in the upper left, describes situations in which people see a hazard as dangerous, but also see significant opportunity costs inherent in avoiding the hazard. Under such circumstances the decision-maker views the situation as a tough call. By contrast, box number two describes situations in which the decision is more clear because people view the hazard as dangerous and may not see the costs of avoiding it. Even if the decision-maker does see the costs, he or she does not regard them as serious or significant. The aphorism, "better safe than sorry," depicts this situation, and the decision-maker would endure the expense of avoiding the hazard. Box number three describes the mirror image of box number two. In this situation, people view the hazard as not serious, and see significant opportunity costs that they will not sacrifice to avoid the hazard — "waste not, want not." Finally, there are those circumstances in which people believe that a hazard is not dangerous and the opportunity costs are low, and hence the decision-maker is indifferent to taking the precaution or avoiding it.

Margolis argues that normally people want to be in box number one.³³ People have some tolerance for hazards that leads them to incur risk until the danger becomes fungible with further trade-offs. There may, however, be situations in which an individual does not see a trade-

³¹ *Id.* at 76.

³² *Id.* at 81-85.

³³ Margolis does not really address box number four, as it is not significant for his theory.

off or fungibility and hence is unwittingly trapped in boxes number two or number three. In box number two, the individual sees no benefit from incurring further risk. As Margolis notes, this fact may be either because there is no benefit or because the person does not see any benefit. Likewise, people who do not see the danger in a situation that is actually dangerous are trapped in box number three.

Just as it is possible to learn the logic of the Monte Hall problem, Margolis argues, it is possible to develop experience or expertise that moves people from one box to another.³⁴ Studying the problem of coal-fired and nuclear power plants can lead to the conclusion that the social costs of the coal-fired power plants are greater than the social costs of nuclear power plants. From these observations arise Margolis's explanation for the dichotomy between experts and the general public. The public sees no reason to incur the risks of nuclear power ("better safe than sorry") because they fail to appreciate the hazards of conventional energy sources. As a result, nuclear power stands out as an especially dangerous source of electricity. By contrast, experts see benefits from nuclear power because it reduces the need for the equally dangerous coal-fired plants. In other situations, the public sees no reason to undertake some set of precautions — "waste not, want not" — because they fail to internalize a danger that experts know can easily be avoided.

2. *Why It Matters*

Margolis's theory is complex — more so than the "usual suspects." But settling upon the right explanation for the divergence between experts and public opinion is not merely an academic exercise. Explaining why this phenomenon occurs has direct policy implications. If the first "usual suspect," ideological differences, underlies most disagreements between experts and the public, then the divergence is not a true source of any serious difficulties. A democratic society hashes out ideological differences through the political process: The ideology that attracts the most votes wins. If ideology explains differences between the public and experts, then the phenomenon may be interesting, but it poses no institutional challenges or difficulties. Our society will resolve it in the same way that we resolve other ideological disputes.

The same cannot be said for the second suspect, distrust. This theory implies that experts' judgments that activities are harmful are correct, but that they cannot convey this understanding to the public. Under this view, a skeptical public ignores its experts. This is not merely a matter of different preferences or tastes, for disregarding experts due to a lack of trust will cost lives. If distrust is the issue, then the solution is to foster

³⁴ MARGOLIS, *supra* note 1, at 71.

trust. Because trust is easily shattered and hard to build, the clear policy implication of this theory is that an expert body such as an administrative agency can build trust only by scrupulously avoiding any appearance of scandal and impropriety. In contemporary America, with its politically-charged climate and deep suspicion of the federal government, this solution may be impossible. Under the distrust theory, the unwillingness to follow experts is but one of the many costly by-products of the suspicion and general distrust of government that is widely held by much of the general public.

Under the "rival rationalities" theory, the public makes more sophisticated choices than the experts. Hence, the public should be considered correct. Under this theory, the experts are useful advisors, but they do not incorporate all of the elements of decision-making that lay persons use in their analysis of risk. The lay person's perspective includes reference to values that our society cherishes, such as equality, that expertise somehow eclipses. Experts should therefore play a role in informing lay persons about the consequences of society's decisions, but they should not make choices about which hazards should be avoided.

The implications of Margolis's theory are discussed below. The different implications of the four explanations for the disagreements between experts and the public can be summarized as follows:

Theory	Policy Prescription
1. Ideology	Do nothing; let political process take its course
2. Distrust	Experts are right; agencies should work to foster trust
3. Rival Rationalities	Lay persons are right; experts should only provide basic information
4. Margolis's Theory	Can improve both expert and lay decision-making by restructuring decision-making tasks

C. MARGOLIS'S POLICY PRESCRIPTIONS

Margolis is cautious about policy. His purpose is not really to generate policy prescriptions so much as to explain why experts and the public disagree. Indeed, as to lay decision-making, he makes no direct recommendation. Unlike the "usual suspects," Margolis does not directly side with either the experts or the general public. One does suspect that he favors the experts, however. Consider his observation that throughout human history there are no instances in which the general public disagreed with the experts and later knowledge then emerged that

proved the public correct.³⁵ Nevertheless, Margolis avoids the straightforward assertion that might follow from such an observation: that the disagreement between experts and the public is a natural product of the psychology of judgment and choice and that while its fears are understandable, the public should swallow them and trust society's experts. Margolis does not criticize lay judgment directly, but he does provide anecdotes which suggest that he believes that lay judgment can be manipulated in ways that would make it more sensible. He saves his one true policy prescription, however, for the experts.

1. *Improving The Public's Judgment*

Margolis retells some significant anecdotes as evidence for his theory. These anecdotes describe radical changes in the public's perception of an environmental hazard that have occurred when communities have experienced the costs of avoiding such a risk firsthand. This phenomenon suggests that lay persons stuck in boxes number two or number three of Margolis's risk matrix can properly move themselves into box number one by enduring both the risks and benefits of exposure to environmental hazards. Margolis uses these anecdotes as support for a descriptive theory, but they clearly have a prescriptive norm.

Consider the example of asbestos removal in the New York City public schools.³⁶ Margolis argues that, at first, parents of children were squarely in box number three. They believed asbestos was a serious hazard, and although the parents were vaguely aware of at least some of the costs of removal, these costs were really "off" of their cognitive radar screens. The parents did not, in a sense, fully appreciate the enormity of these expenses — that is, at least not until the schools had to be closed for several weeks to begin the removal process. Parents then had to find child care during the school year and suddenly found themselves rethinking the dangers of asbestos. As the real costs of the program moved "on screen," parents began to oppose the asbestos removal and moved into box number one — fungibility. It was not merely the case that the parents were unwilling to pay their share of the price of asbestos removal, as an economist might argue.³⁷ Rather, their perception of the magnitude of the danger itself changed.

Likewise, Margolis describes the reactions of residents of Carlsbad, New Mexico, to the potential use of nearby caves for long-term storage of spent nuclear fuel.³⁸ Although one might have expected Carlsbad's

³⁵ *Id.* at 30.

³⁶ *Id.* at 124-31.

³⁷ It is difficult to believe that the parents would subject their children to a situation they believe is hazardous in order to avoid the cost of finding day care.

³⁸ MARGOLIS, *supra* note 1, at 132.

residents to oppose this plan, they have actively solicited placing the facility nearby. Margolis states that the residents believe that the site would be safe in the long term and would yield economic benefits to the community. Residents of Carlsbad see the waste site as a fungible commodity worth the risks, which they believe are low. By contrast, a hundred miles away, residents of Sante Fe strongly oppose the project. Because they would experience little or no economic benefit, they are in box number two and see no reason to question their beliefs that the risks of siting this facility in their state are too great. As Margolis observes, this pattern of opposition to environmentally sensitive projects is common. A geographic graph of resistance to such projects resembles a volcano. It is low at the center, then as one moves farther away, it rises abruptly, then declines slowly. This phenomenon does not occur merely because people living in different locations put different terms in their cost-benefit equations. The residents of Carlsbad truly believe the facility will be safe, while those in Sante Fe do not.

Margolis uses these case studies to demonstrate that costs can move both into and out of our cognitive processes for assessing risk. Cost-benefit analysis with continuous variables does not come naturally to people. It requires either some training to become an expert or some direct "on screen" exposure to both the costs and benefits of a hazard. In effect, the experience of being forced to confront the costs of an activity mimics expertise. In the asbestos problem, parents did not merely face a different cost-benefit calculus than they thought they would (although they did as well); their beliefs about the risks of exposure to asbestos actually changed. The same parents who had initially complained bitterly about their children's exposure to asbestos in the school now complained bitterly about over-zealous safety precautions. In the case of asbestos in the schools, experience stood in for expertise and had a similar effect.

The policy prescription is clear. Social decisions should be structured so that individuals experience both the costs and benefits of exposure to environmental hazards. This re-structuring would ensure that people do not over-react to risk and that they treat the problem the same way that experts would. In the asbestos removal case, for example, New York City might have been able to find alternative sites to send school children during the day when schools were closed for asbestos removal. However, doing so would have ensured that the costs of the program remained out of the parents' cognitive processes for evaluating environmental hazards. Shifting some of the costs of the removal program to the parents forced them to re-evaluate the danger of asbestos. They then agreed with many of the experts who had previously expressed the opinion that asbestos removal was unnecessary and wasteful.

As a close corollary, this story suggests that decisions should be made at a local level. In the case of the storage of spent nuclear fuel, it would perhaps be a mistake to let the state of New Mexico as a whole determine whether a disposal facility will be built near Carlsbad. The rest of the state seems stuck in a "better safe than sorry" mode, but because the citizens of Carlsbad gain benefits from the construction, they have determined that the disposal facility is really not so dangerous.³⁹ Just as the experience of the costs in the asbestos case leads to the re-evaluation of the risks of asbestos by the parents, the experience of the economic gains by the citizens of Carlsbad produces a different evaluation of the risks of the disposal facility. Citizens of Santa Fe, who do not experience benefits, consider the facility more hazardous.

The clear implication of this theory is that people disregard expertise and make unwise assessments of risks when the costs or benefits are off-screen. Thus, decisions about risk should be made by a public that experiences both risks and benefits from an environmental hazard. Although Margolis does not endorse this policy, his evidence and arguments lend clear support to those who do.

2. *Improving Expert Decision-Making*

Margolis saves his policy prescriptions for expert decision-making. Margolis worries that experts bring a myopia to risk assessment. As a prime example, he describes the incredibly conservative methods for determining whether a substance causes cancer.⁴⁰ To make this determination, researchers typically administer extremely high doses of a substance to the most sensitive strains of the most sensitive animals. Such conservatism is widespread.⁴¹ Margolis thus converts his theory into a call for a requirement that regulatory agencies "do no harm."⁴² He does not mean that an agency must undertake a full blown cost-benefit analysis for every regulatory decision. Rather, he asserts that regulatory agencies should assure themselves that their decisions do not cost more lives than they save.⁴³ This assessment is designed to avoid the myopia that can come from the persistent failure of individual decision-makers — expert or lay — to incorporate all the consequences of their choices into their risk analysis.

Margolis observes that his proposal resembles the efforts by the 104th Congress to reform administrative law,⁴⁴ although he also notes

³⁹ *Id.* at 132.

⁴⁰ *Id.* at 155-58.

⁴¹ *Id.* at 158-60.

⁴² *Id.* at 165.

⁴³ *Id.*

⁴⁴ *Id.* at 167.

that there are important distinctions as well. Congress had proposed requiring cost-benefit analysis for all regulations in at least one reform bill, H.R. 994.⁴⁵ Because this cost-benefit analysis would be judicially reviewable, the requirement would have virtually assured that there would be less regulation.⁴⁶ Unlike H.R. 994, however, Margolis's reforms are not designed to promote an agenda of de-regulation. Margolis believes that his "do no harm" review should apply both to a decision to regulate and one not to regulate.⁴⁷ Hence, Margolis's proposal is "regulation neutral," whereas H.R. 994 would have required a cost-benefit analysis only for a decision to continue an existing regulation or enact a new one. Decisions *not* to regulate or to repeal an existing regulation would have been exempt from this mandate.

Much more than it resembles the 104th Congress's administrative law reforms, Margolis's proposal resembles NEPA. Signed into law in 1970,⁴⁸ NEPA responded to a growing concern that administrative agencies had become myopic, focusing on accomplishing their own aims without regard to the consequences of their actions, particularly the environmental consequences. Agencies like the Army Corps of Engineers worked to ensure that they could construct dams, lobbying Congress for funds and authority to construct them, almost without concern that such projects may have been unnecessary. Likewise, the Atomic Energy Commission (now the Nuclear Regulatory Commission) argued explicitly that it should not have to take environmental considerations into account when making decisions about granting licenses for nuclear power plants.⁴⁹ NEPA was Congress's attempt to address this myopia. NEPA requires agencies to conduct a full analysis of the environmental consequences of all major federal actions.⁵⁰ Although NEPA lacks any substantive requirement that agencies refrain from undertaking programs that unnecessarily destroy the environment,⁵¹ it has "strict" procedural requirements.⁵² NEPA's requirement that agencies assess the environmental consequences of their actions breaks them out of the myopia that might otherwise grip their decision-making. Even if an agency fails to learn anything from its description of the consequences of its actions, the

⁴⁵ The Regulatory Sunset and Review Act of 1995, H.R. 994, 104th Cong., 1st Sess. (1995).

⁴⁶ It also included a sunset provision for any existing regulation that could not survive a cost-benefit analysis.

⁴⁷ MARGOLIS, *supra* note 1, at 187.

⁴⁸ National Environmental Policy Act of 1969, Pub. L. No. 91-109, 83 Stat. 852 (1970).

⁴⁹ *New Hampshire v. Atomic Energy Comm'n*, 406 F.2d 170 (1st Cir. 1969).

⁵⁰ 42 U.S.C. § 4332(2)(C) (1994).

⁵¹ *Strycker's Bay Neighborhood Council v. Karlene*, 444 U.S. 223 (1980); *Vermont Yankee v. Natural Resources Defense Council, Inc.*, 435 U.S. 519 (1978).

⁵² *Calvert Cliffs' Coordinating Comm. v. Atomic Energy Comm'n*, 449 F.2d 1109, 1111 (D.C. Cir. 1971).

public process of drafting an impact statement may galvanize public opposition to a particularly noxious project.

Twenty-seven years later, the problem of agency governance has clearly changed. No longer is the public worried about agencies mindlessly consuming environmental resources. One of the chief concerns today is the insistence of agencies to regulate regardless of the social costs of their regulations. Such concerns are expressed well by Justice Breyer in *Breaking the Vicious Cycle*⁵³ and by Phillip Howard in *The Death of Common Sense*.⁵⁴ Both authors describe concerns that are similar to those that inspired NEPA. Just as the United States once worried that the Army Corps of Engineers myopically built dams, we now worry that the Environmental Protection Agency myopically attempts to rid all drinking water of any hazardous material whatsoever, even if small amounts of such materials are not dangerous. As Justice Breyer observed, "the last 10%" of any environmental cleanup effort is often far more expensive than it is worth⁵⁵; yet agencies consistently force industry to eliminate the last 10% of the risks. Many of the anecdotes in Howard's popular book express a similar concern.

Margolis attributes this myopia among experts to the same thought process that influences the general public. Despite their education, experts still come to see the world in binary terms. Once they see something as dangerous, it must be eliminated; if it is not dangerous, it may safely be ignored. This thinking apparently pervades both expert and lay decision-making. Experts may be better attuned to the parameters that should be evaluated in determining what constitutes an intolerable risk, but their decision-making is as prone to extremes as the public's.

II. A CRITIQUE OF THE POLICY IMPLICATIONS

Overall, Margolis's book makes a neat package. Early on, he states that his book is best thought of as a "psychological and sociological gloss" on ideas like those of Justice Breyer,⁵⁶ and it is a valuable gloss indeed. Justice Breyer worries about regulatory myopia and Margolis provides a psychological theory that explains the source of this myopia. In Margolis's theory, myopia is not just the symptom of over-reaching by agencies or a consequence of public choice problems. Rather, agency myopia is the product of the humanity of an agency's decision-makers. The human brain has its limits, and the cognitive demands of efficient

⁵³ STEPHEN BREYER, *BREAKING THE VICIOUS CYCLE: TOWARD EFFECTIVE RISK REGULATION* (1993).

⁵⁴ PHILLIP K. HOWARD, *THE DEATH OF COMMON SENSE: HOW THE LAW IS SUFFOCATING AMERICA* (1994).

⁵⁵ BREYER, *supra* note 53, at 11.

⁵⁶ MARGOLIS, *supra* note 1, at 4.

bureaucratic regulation of environmental hazards may exceed those limits. The principal implications of Margolis's theory, however, need some refining, and perhaps go astray. Indeed, both prescriptions, that those who experience both the risks and benefits of environmental hazards should make decisions and that experts should be constrained by a "do no harm" analysis, have costs that are off of Margolis's radar screen.

A. THE COSTS OF APPLYING MARGOLIS'S THEORY TO THE GENERAL PUBLIC

To be perfectly fair, Margolis has not proposed re-structuring environmental decision-making. He agrees that this would be a "natural aim for reform proposals," but asserts that the obstacles to doing so make it generally unavailable.⁵⁷ But others would disagree.⁵⁸ Such a proposal, however, would be a mistake (which perhaps explains why this cautious book does not endorse it).

To see why, consider the similarities between Margolis's observations and the now forty-year-old psychological theory of cognitive dissonance.⁵⁹ Developed initially by Leon Festinger, the theory holds that people do not tolerate logically inconsistent beliefs. According to Festinger, logical inconsistencies between one's beliefs create an aversive state. This aversion to inconsistency in turn motivates us to change our beliefs to avoid the inconsistency.

A classic experiment illustrates the similarities between dissonance theory and Margolis's work.⁶⁰ Subjects were asked to engage in two tedious, meaningless tasks.⁶¹ After completing the tasks, on their way out of the study, the experimenter asked the subject to explain to the next

⁵⁷ *Id.* at 150-52.

⁵⁸ *See supra* note 4.

⁵⁹ *See generally*, LEON FESTINGER, *A THEORY OF COGNITIVE DISSONANCE* (1957). Cognitive dissonance has had its ups and downs since it was first described. *See, e.g.*, Leonard Berkowitz & Patricia G. Devine, *Research Traditions, Analysis, and Synthesis in Social Psychological Theories: The Case of Dissonance Theory*, 15 *PERSONALITY & SOC. PSYCHOL. BULL.* 493 (1989); Anthony G. Greenwald & David L. Ronis, *Twenty Years of Cognitive Dissonance: Case Study of the Evolution of a Theory*, 85 *PSYCHOL. REV.* 53 (1978). Dissonance research flourished throughout the 1960's and died suddenly at the hands of Darryl Bem's 1972 re-interpretation of the dissonance literature. *See generally*, Daryl J. Bem, *Self-Perception Theory*, 6 *ADVANCES IN EXPERIMENTAL SOC. PSYCHOL.* 1 (1972). It has since been revived in work by researchers like Claude Steele. *See generally*, Claude M. Steele, *The Psychology of Self-Affirmation: Sustaining the Integrity of the Self*, 21 *ADVANCES IN EXPERIMENTAL SOC. PSYCHOL.* 261 (1988).

⁶⁰ Leon Festinger & J. M. Carlsmith, *Cognitive Consequences of Forced Compliance*, 58 *J. ABNORMAL & SOC. PSYCHOL.* 203 (1959).

⁶¹ Subjects packed a set of differently shaped spools into a special drawer, slid the bottom out from the drawer so that the spools fell out, replaced the drawer, and then started over. Subjects repeated this meaningless chore for one half-hour. Following the "spool-packing" task, subjects spent another half-hour repeatedly turning 48 pegs on a pegboard one-quarter turn. *Id.* at 204.

subject (really a confederate of the experimenter) how to do the tasks and to tell that subject that the tasks were actually interesting.⁶² All subjects complied with the request, but some were paid \$20 for obliging and others were paid only \$1. The researchers then asked the subjects whether they thought the tasks were actually interesting. Subjects who were paid \$20 asserted that they did not enjoy the task and found it dull. However, the subjects paid only \$1 said that they found the task interesting. To understand why, realize that the subject had just reported to a stranger that the task was interesting. Subjects who were paid \$20 had a handy justification for their behavior — they were paid handsomely for making the misrepresentation. However, people do not lie for only \$1, so those subjects altered their underlying beliefs about the task. The psychological pressure on the subjects who were paid only \$1 can be stated as a syllogism:

1. I am an honest person;
2. I reported to a stranger that the task was interesting;
therefore,
3. Either \$1 is sufficient justification to misrepresent myself or the task must have been interesting.

By contrast, the subjects paid \$20 had a different thought process

1. I am an honest person;
2. I reported to a stranger that the task was interesting;
therefore,
3. Either \$20 is sufficient justification to misrepresent myself or the task must have been interesting.

Unlike \$1, \$20 probably was sufficient justification for the misrepresentation (the study was conducted with undergraduates in 1960). The subjects did not have to alter their beliefs about the task; their assertions to the stranger were exchanged for the \$20.

The study's results occurred for many of the same reasons that people are often stuck in Margolis's box number two. The subjects in the study who were paid only \$1 did not, in fact, lie in order to obtain the \$1; they lied because the experimenter asked them to do so. The subtle power of such a request, however, was somewhat invisible to the subject. Indeed, the genius of the study is that it would not have worked if the subjects were paid nothing. The \$1 was a smoke screen that hid the real reason that subjects complied with the experimenter's somewhat unusual request. The subjects did not perceive the real reason that they complied with the request, however, and it appeared to them as if they might have

⁶² The cover story for asking the subject to make this misrepresentation was that the experiment involved manipulation of expectations.

sold their integrity for \$1. This thought being unacceptable, these subjects changed their beliefs about the task. Similarly, before they had first-hand experience with the costs of asbestos removal, the parents in New York City were unable to truly incorporate the costs of removal into their thought process. Some aspects of social life are simply invisible.

Magolis's description of why people fear exposure to dioxin, a carcinogenic by-product of industry, and not aflatoxin, a naturally-occurring carcinogen found in peanut butter, reveals the similarities between his work and dissonance theory:

But if we look to fungibility, the reason for the contrast [between concern about dioxin and lack of concern about aflatoxin] is not hard to see. Children like peanut butter a lot, and adults recall liking peanut butter a lot and sometimes still do. So giving up peanut butter is something that readily prompts fungibility. A person wants to know whether the risk is serious enough to warrant giving up something as nice as peanut butter, and so she is quite willing to listen to arguments about how significant the risk might be weighed against the health merits of peanuts. But there is no such easy route to fungibility for dioxin. It is just an unwanted by-product. The costs of extreme precautions run to some billions of dollars, but spread sufficiently thinly across the economy that few people can see any effect due to the precautions proposed.⁶³

The cognitive dissonance version of Margolis's theory shows why imposing costs and benefits of environmental hazards can be a destructive policy. Individuals *within* a community will experience the costs and benefits of exposure to the hazard differently and may reach different conclusions about the merits of incurring an environmental risk. In fact, in a community that is exposed to an environmental hazard, it is common to find substantial disagreement about whether the hazard is really dangerous.⁶⁴ In particular, there is a big gap between people who work for the company that is the alleged cause of the environmental harm and

⁶³ MARGOLIS, *supra* note 1, at 137.

⁶⁴ There are great individual differences among people's general willingness to believe that exposure to environmental hazards can cause significant health problems. Faye N. Schmidt & Robert Gifford, *A Dispositional Approach to Hazard Perception: Preliminary Development of the Environmental Appraisal Inventory*, 9 J. ENVTL. PSYCHOL. 57 (1989). In particular, people with low socio-economic status tend to believe that industry is over-regulated and that environmental hazards pose less risk more than do people with high socio-economic status. Rebecca S. Francis, *Attitudes Toward Industrial Pollution, Strategies for Protecting the Environment, and Environmental-Economic Trade-Offs*, 12 J. APPLIED SOC. PSYCHOL. 310, 324-25 (1983).

those who do not.⁶⁵ This gap occurs even in extreme cases like the exposure at Love Canal, where numerous residents did not believe that they were being poisoned by the leaking contents of hundreds of drums of hazardous waste.⁶⁶ Lois Gibbs, one of the leaders of the group of activist residents of Love Canal, worried about which homes she could send her children to on Halloween; she feared that some of the neighbors who disagreed with her would harm them.⁶⁷ Cognitive dissonance explains this situation easily. Consider the syllogism of the employee of a company that is the source of the environmental hazard:

1. I would not work for a company that poisons my children;
2. I work for company X;
therefore,
3. Company X is not poisoning my children.⁶⁸

Dissonance ensures that beliefs about environmental hazards will follow the characteristics Margolis has stated. They will be strongly held, difficult to dislodge, and yet will be remarkably sensitive to changes in the costs and benefits that accompany them. Indeed, Margolis's description of the parents and asbestos removal can be stated in a similar syllogism.

A difficult set of social problems can accompany the divergent cognitions that dissonance produces. They can tear a community or even a family apart. Such disruptions counsel against any re-structuring of environmental decision on the notion that those who endure the risks and benefits of environmental hazards are somehow better at making decisions. Experience would not make better choices, just more difficult ones.

B. THE COSTS OF "DO NO HARM"

Less dramatic but equally problematic is Margolis's "do no harm" review of regulatory decisions. The problems that this proposal raises depend upon the further specifications that Margolis would add. Margo-

⁶⁵ Evelyn J. Bromet et al., *Long-Term Mental Health Consequences of the Accident at Three Mile Island*, 19 INT'L J. MENTAL HEALTH 48, 56-57 (1990); Mary Amanda Dew et al., *Application of a Temporal Resistance Model to Community Residents' Long-Term Beliefs about the Three Mile Island Nuclear Accident*, 17 J. APPLIED SOC. PSYCHOL. 1071, 1077-79 (1987).

⁶⁶ LOIS MARIE GIBBS & MURRAY LEVINE, *LOVE CANAL: MY STORY* 20-26 (1982).

⁶⁷ *Id.* at 80-81.

⁶⁸ In the original work on cognitive dissonance, Festinger presented a similar description of cigarette smoking. He used it as an example of how dissonance operates: "A person may know that smoking is bad for him and yet continue to smoke [This] person continues to smoke, knowing that it is bad for his health, may also feel . . . [that] the chances of his health suffering are not as serious as some would make out." FESTINGER, *supra* note 59, at 2. Margolis uses the example of beliefs about the dangers of skiing in a similar way. MARGOLIS, *supra* note 1, at 149.

lis's substantive review could be implemented through one of three procedures. First, "do no harm" could consist of an additional procedural review that all regulatory agencies must follow, modeled after NEPA. Second, it could be implemented through centralized review in the executive branch, similar to Executive Order 12,866. Finally, Margolis's proposal might be directed at altering statutes which explicitly contradict his principle, such as the Delaney Clause of the Federal Food, Drug, and Cosmetics Act.⁶⁹ The first and second proposals create significant unwanted side effects.

To the extent that this proposal mimics NEPA, it should be expected that it would carry all of NEPA's problems as well. Most significant among these is NEPA's contribution to agency "ossification."⁷⁰ In the past few decades, Congress and the courts have built up a significant array of hurdles for regulation.⁷¹ Even so-called "informal" rule-making is now so cumbersome that agencies tend to avoid it entirely when they can.⁷² Adding yet another step to the regulatory process may or may not produce better decisions, but is likely to produce fewer ones.

Margolis's proposal may create even more ossification than NEPA, depending upon whether Margolis means it to have the substantive teeth that NEPA lacks. If an agency had to ensure that its activities save more lives than they cost, and if this requirement were subject to substantive judicial review, then surely Margolis has invented agency "petrification." As with most of the administrative procedures with which a regulatory agency must comply, Margolis's "do no harm" review would be conducted in an exceptionally hostile environment. Parties that are threatened with new regulations already use the *procedural* aspects of administrative law to delay the regulatory process significantly. *Substantive* review would provide an even more potent delay tactic. Indeed, it may be that Margolis refrained from recommending full cost-benefit analysis because of such concerns. Even his weaker, "lives saved/lives lost" review, however, represents a quantum increase in the level of judicial review of agency actions.

If the proposal follows the model of the executive orders creating centralized review of agency action by the Office of Management and Budget ("OMB"), it would carry all of the problems of the existing cen-

⁶⁹ The Delaney Clause, 21 U.S.C. § 348(c)(3) (1994), has recently been modified substantially by the Food Quality Protection Act, Pub. L. No. 104-170, 110 Stat. 1513 (1996).

⁷⁰ Thomas O. McGarity, *Some Thoughts on "Deossifying" the Rulemaking Process*, 41 DUKE L.J. 1385, 1405 (1992).

⁷¹ *Id.* at 1396-1436

⁷² Robert A. Anthony, *Interpretive Rules, Policy Statements, Guidance Manuals, and the Like — Should Federal Agencies Use Them To Bind the Public?*, 41 DUKE L.J. 1311, 1316-19 (1992).

tralized review schemes. Currently, under Executive Order 12,866,⁷³ all executive-branch agencies⁷⁴ must submit all "significant" federal regulations to the OMB for cost-benefit analysis.⁷⁵ This review also adds to the ossification process of administrative action, as OMB review can be time-consuming.⁷⁶ What is more, the OMB has been accused of using its central review power as a back-door method of delaying or even eliminating important regulations.⁷⁷ OMB review tends to be out of the public view, raising the concern that even if Margolis has proposed a sensible system, it may be converted into another mechanism for increasing the influence of the President on rule-making.

Finally, Margolis may simply be advocating the elimination of specific provisions of legislation that contradict his "do no harm" thesis. Margolis specifically identifies the Delaney Clause of the Food, Drug, and Cosmetics Act as a product of myopic risk assessment.⁷⁸ This statute forbids the sale of any food additive that has any risk of cancer whatsoever. Margolis is not alone in criticizing the Delaney Clause,⁷⁹ and it has, in fact, been recently amended.⁸⁰ In the case of the Delaney Clause, Margolis's prescription is clear. It is less clear how he would deal with other statutes that have a less obvious myopic slant. For example, the Clean Air Act requires the EPA to set ambient air quality standards at levels that are "requisite to protect the public health."⁸¹ Does this provision's failure to mention the costs of clean air make it myopic? If it is administered by an EPA that is at least sensitive to cost issues in spite of the statute's omissions, does that sensitivity cure the myopia? Margolis echoes Justice Breyer's endorsement of cost-benefit analysis in environmental regulation,⁸² but it is not entirely clear how his somewhat different perspective on cost-benefit analysis would resolve the issues as they arise in each different context. Without more specificity as to which statutes it would target, this version of Margolis's proposal is difficult to evaluate.

⁷³ Exec. Order No. 12,866, 3 C.F.R. 638 (1994), *reprinted in* 5 U.S.C. § 601 (1996).

⁷⁴ As distinguished from independent agencies.

⁷⁵ Pildes & Sunstein, *supra* note 4, at 6-7.

⁷⁶ McGarity, *supra* note 70, at 1405-07. For a thorough analysis of OMB review, see THOMAS O. MCGARITY, *REINVENTING RATIONALITY: THE ROLE OF REGULATORY ANALYSIS IN THE FEDERAL BUREAUCRACY* 27-91 (1991).

⁷⁷ Erik D. Olson, *The Quiet Shift of Power: Office of Management and Budget Supervision of Environmental Protection Agency Rulemaking Under Executive Order 12,291*, 4 VA. J. NAT. RESOURCES L. 1, 40-64 (1984).

⁷⁸ MARGOLIS, *supra* note 1, at 174-75.

⁷⁹ See, e.g., BREYER, *supra* note 53, at 41; Sunstein, *supra* note 9, at 300.

⁸⁰ Food Quality Protection Act, Pub. L. No. 104-170, 110 Stat. 1513 (1996).

⁸¹ 42 U.S.C. § 7409(b) (1994).

⁸² MARGOLIS, *supra* note 1, at 4-5.

III. CONCLUSIONS

Policy prescriptions are not the strength of *Dealing With Risk*. Rather, the book is best thought of as providing a superior account of the gap between the beliefs of experts and the general public about the dangers posed by environmental hazards. Margolis contends that this gap results from a combination of three factors: (1) the tendency of people to view hazards in a bi-polar fashion; (2) the fact that experts and the public incorporate different costs and benefits into their assessment of risk; and (3) the ability of these costs and benefits to influence peoples' determinations of what is dangerous. Margolis's theory implies that both experts and the public fall prey to a myopia in risk assessment that prevents them from incorporating all of the costs and benefits of social risks into their evaluations of environmental hazards. Thus, in addition to explaining the inadequacies of lay decision-making, the theory also explains the phenomenon of regulatory myopia that scholars like Cass Sunstein and Justice Breyer have documented. As such, Margolis has added an intricate theory to the literature on the psychology of risk assessment. It is a theory that resonates with the older work that predates the modern psychology of judgment and choice, and thus brings the phenomenon of lay and expert disagreement into a broader psychological context. What should be done about this cognitive difficulty, however, remains unclear.