Beyond the Rhetoric of Premeditated Murder: Toward a Rational and Compassionate Environmentalist Perspective about the Ethics of Risk Assessment

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ABSTRACT

The philosophical basis for opposition and support of risk assessment by environmentalists is considered. Opponents' perspective is dominated by "empathy" for individual victims, theoretical and identifiable, who suffer morbidity or mortality due to environmental pollution. Proponents' perceive optimization of aggregate public health as the ethical imperative. Taken to their extreme, these positions lead to angry rhetoric in their mutual efforts to discredit the opposing view, without considering whether it is possible to integrate the legitimated impulses that lie behind the two perspectives. This essay presents one such synthesis that both accepts the inevitability of risk assessment (and in many cases its importance) as a decision analytic tool but also integrates many of the noble convictions that lie behind the critique when victims are clearly identifiable. As ecological risk assessment becomes an increasingly developed tool for decision-making about managing ecosystem health, many of the same arguments are certain to be wielded. A balanced philosophical approach to this new discipline has the potential to expedite a more rational and ultimately protective public policy while conveying an important societal message about compassion and respect for the sanctity of life.

INTRODUCTION

In the verbal battle among environmentalists over the legitimacy of environmental health risk assessment as a regulatory tool, it is the ethical dimensions that have generated the most inflammatory rhetoric. Ironically, many of the same slogans are employed to support and attack this increasingly common decision analytic approach for characterizing and quantifying environmental health impacts, as a basis for formulating public policy.

On the one hand, risk analysis opponents claim that

> (r)isk assessment is tantamount to statistical murder. . . . Any moral demarcation at all between pesticide 'negligible risk' executions and the Nazi gas chambers of Auschwitz-Birkenau is extremely thin and must be vacillating uncontrollably. In both situations, a perceived greater public good and lack of effective public opposition justify the sacrifice of innocent human lives (Merrell & Van Strum 1990, p. 21).

Conversely, proponents of the practice argue that the absence of risk assessment constitutes "statistical murder". . . . "A reallocation of resources to more cost-effective programs, according to our analysis, could save an additional 60,000 lives per year at no increased cost to taxpayers or industry" (Graham 1995, p. 62).

In a recent study assessing the attitudes of 33 national and local U.S. environmental organizations toward risk assessment, the overall issue of risk assessment's morality was one of the few aspects of the topic about which there appears to be substantial disagreement (Tal 1997a). In general, environmentalists tend to be unified in their distrust and dissatisfaction with environmental assessment as it is used today. At the tactical level, for example, 91% of environmental groups agreed that risk assessment was disempowering and a full 100% resented the tendency of risk assessment

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and risk reduction to replace hazard elimination as a primary regulatory goal. But environmentalists are clearly divided about whether the risk assessment process is ethically acceptable. Only 63% of the groups found risk assessment to be unacceptable ethically, with most of the national organizations uncomfortable with attaching any moral stigma to the practice.

This article considers the primary ethical objections to the use of risk assessment as enunciated by environmental advocates and considers why many environmentalists have a more accommodating position. The article identifies two positions with fundamentally different orientations: one is dominated by "compassion" for individual victims, theoretical and identifiable, who suffer morbidity or mortality due to environmental pollution. The other view is dominated by concern for the aggregate public health, which it seeks to optimize. Ultimately, a position that accepts the inevitability of risk assessment (and in many cases its importance) is proposed that integrates many of the noble convictions that lie behind the rejectionist view with the belief that risk assessment can lead to more rational and ultimately more protective public policies.

THE REJECTIONIST VIEW

The most common argument assailing the morality of risk assessment characterizes the practice as a cynical if not evil ploy to sanction the toxic contamination of hapless individuals without their consent. According to this view, it is the anonymity of the victims that sanitizes what is essentially homicide. Generally speaking, this argument can be identified with an entire school of environmental thought that is motivated by its identification with the population that is harmed by industrial pollution. To drive home the reality of the "statistical" victim, advocates frequently employ a "Russian roulette" metaphor.

Alabama state attorney general Jimmy Evans applied this position to the debate over dioxin standards:

> The risk assessment technologies . . . say people will die as a result of dioxin emissions. Then they say that it is perfectly acceptable. . . . That is really outrageous and bizarre. It reflects an elitism, a plantation mentality. I think it amounts to a confession. It is very simple to me. It is a moral issue. They have said people will die, and we are supposed to accept that. As attorney general of this state, I can't (Kipp 1991).

The position generally takes a fairly one-dimensional view of polluting activities. Identifiable risks caused by polluting activity at any level of severity are simply morally wrong. No benefits associated with the industrial or other human activity that produced the risk (e.g. driving or farming) can justify the insult. Mary O'Brien, a public interest biologist and one of the most ardent and articulate American opponents of risk assessment's current use, characterizes the practice in the following way:

> Imagine one child hitting another repeatedly. An adult comes upon the scene and tries to calculate how much the one child can hit the other without causing too much harm. For instance, how much can the one child hit the other without leaving bruises, or damaging the other child's kidneys? While the adult tries to calculate the answers to these questions the hitting continues. If an adult really did stand by and calculate the risks of the one child harming the other child, that would be called risk assessment (O'Brien 1996).

According to the rejectionist view, even the very word "risk" is part of the problem, as it constitutes too "neutral" a term. Consumer advocate Ralph Nader argues,

> (w)e need to minimize the word risk and use the word violence, because what we are talking about is the prevention and containment of violence, for example chemical violence and genetic violence. We must always keep the empirical demonstration of violent effects in front of us so that we never forget what is at stake . . . (Nader 1993).

Under this scenario, the exposed population is the only party with rights. Polluting industry is depicted as a rapacious persecutor whose primary purpose in employing risk assessment is to confuse the real issue and generate the necessary documentation to support a license to continue perpetrating environmental homicide.

In this sense, the Russian roulette argument evokes the traditional empathy of social movements with the weak and disenfranchised, defining them in the present context according to the acuteness of exposures. Not surprisingly, the argument seems to resonate strongly among grassroots groups and their advocates. Grassroots activists consistently tried to frame the risk assessment

issue in ethical terms, in contrast to larger groups, whose comments tended to focus on the scientific imprecision and bias of the practice. For example, the Washington, D.C.–based Citizens Clearinghouse for Hazardous Waste, a nerve center for dozens of anti-toxics local groups, assails "the corporate right to pollute as greater than the individual right not to be polluted."

There are, of course, additional arguments and nuances furthered by the anti-risk assessment position corresponding to different forms of the practice. For example, comparative risk assessment, which enjoys surprising support from many environmental organizations (Tal 1997a), is disqualified dismissively because it legitimizes "environmental triage" (Mott 1991) in allowing hazards that do not top the list to be trivialized rather than stigmatized.

There is a strong element of self-righteousness in the grassroots position and intolerance toward other "so-called environmentalists" who have "sold out" and agreed to accept or even learned to use risk analytical tools. For the many environmental activists whose ideological commitment to environmental protection and preservation is not supported by technical literacy in the environmental and biological sciences, it seems easier to attack the legitimacy of risk assessment itself than to confront the assumptions and implications of an analysis that claims to quantify the magnitude of environmental hazards. Branding an environmental agency's risk assessor or an industry analyst as a "murderer" because she has established an acceptable, residual risk level absolves rejectionists of any need to get their hands dirty and determine whether or not the health impacts of a particular emission pose a true problem.

THE HEALTH OPTIMIZERS

Although less passionate in their tone than their counterparts in industry or regulatory agencies, proponents of risk assessment in environmental organizations take a dim view of the rejectionist attempts to seize the moral high ground. Whereas these environmentalists' tacit or explicit acceptance of the legitimacy risk assessment is based primarily on pragmatism, they are not without their own implicit ethical convictions and claims.

At the heart of their position is some notion of scarcity of societal resources. With all of the best intentions, environmentalists simply cannot do everything that is on their agenda. Under such conditions, the inevitable result of rejecting any form of decision analytic assessment of environmental health has to be inefficient allocation of resources. Popular or alarmist issues will capture societal attention and funding at the expense of other, frequently more important public health issues. Society will not get the best bang for its environmental buck, and risk reduction opportunities will be lost.

As Ellen Silvergeld, toxicologist and eminent scientist in the environmental nongovernmental organization world, writes:

> Other environmentalists have supported the appropriate issue of risk assessment because of its potential to increase the speed and resource conservation of government response in preventing disease. These environmentalists have generally supported a strict interpretation of risk assessment guidelines at the level of hazard identification and have restricted modifications in the methods of dose–response calculation. These proponents have argued for continuing the qualitative assumption that animal carcinogens, under any circumstance of dosing, including maximally tolerated dose, are probably human carcinogens (Silvergeld 1993, p. 101).

Many examples that support this position can be garnered, perhaps most notably in the "Unfinished Business" report drafted by the U.S. Environmental Protection Agency (EPA) in 1987 (U.S. EPA 1987). In an agency-wide exercise, 31 separate environmental problems were ranked using the comparative risk methodologies of the time. The results suggested that key carcinogenic risks such as workers' exposures to pesticides and indoor ambient radon concentrations were largely unfounded environmental problems, whereas other relatively trivial risks such as orphan hazardous waste sites received disproportionate support. The health optimizers posit that it is simply morally unacceptable to waste money on trivial risks, regardless of the public's responsiveness and awareness of them, at the expense of larger more pernicious ones.

Some pro-risk assessment environmentalists criticize a degree of disingenuousness found among the more extreme expressions of the rejectionist position. Public policy is filled with constrained optimization cases in which society has to make tough choices between competing public health interventions in an attempt to make the best use of available resources (Tal 1997b). It is unclear why environmental managers trying to optimize with the help of risk analysis are guilty of statistical murder, while traffic engineers who select

which dangerous corner will receive this year's allocation of new traffic lights are not. The inevitable accident fatality in the intersection that does not receive the traffic light is not murdered but falls victim to a modern, technology-intensive society that is not able or is unwilling to reduce the many risks its members implicitly accept. Indeed, "triage" is not a dirty word. Countless lives have been saved when cold but clear thinking made the rational choice when faced with the impossible challenge of many lives in danger and not enough time or resources to assist each one.

THE NATURE OF THE DISAGREEMENT BETWEEN ENVIRONMENTAL VIEWS

To get to the heart of the division within the environmental movement on the issue of ethics and risk assessment, it is instructive to identify what the present debate is not about. There is certainly not a disagreement over the ultimate value of human life and health. Despite the brazen tendency to engage in moral "one-upmanship" among some risk assessment rejectionists, a clear reverence for the sanctity of human life constitutes a core value for both positions.

Although ostensibly similar, neither is the debate analogous to the well-known controversy within risk assessment circles regarding the legitimacy of the "maximally exposed individual" (MEI) as a basis for environmental standards and decision-making. This distinction warrants a more detailed presentation.

In areas such as air toxics, there is a fundamental disagreement as to the correct basis of a risk-based standard. On the one hand, the traditional "public health school" would regulate according to the health risk imposed on an entire population (Goldstein 1989). They oppose a view that might be called an "environmental justice" approach that would set standards to protect the most exposed individuals as trying to solve public health problems with clinical standards (Kaufman 1990). Basically, the argument is utilitarian. Bernie Goldstein, a senior scholar in environmental health, offers an example:

> Imagine the situation where a single individual resides at the fence line of a pollutant source, and the lifetime risk of an adverse event (for instance death caused by cancer) to that individual is 1 in 1,000. In a second situation, 100,000 individuals live roughly equidistant from the source but a sufficient distance so that the lifetime risk of death to each individual is reduced to 1 in 100,000. According to the regulators in our imaginary scenario, a risk to the MEI of more than 1 in 10,000 would trigger the requirements for pollution control measures. If regulated on the MEI principle, these regulators would ignore taking action in scenario B, in which the individual's risk is less than the threshold of 1 in 10,000. The total risk to the MEI remains 1 in 1,000 (Goldstein 1989, note 7).

In addition, the most sensitive individuals are not necessarily protected if exposure is the salient criterion. Defenders of the MEI regulatory approach claim that

> (t)o argue . . . in favor of focusing primarily on population risk, we would have to believe that the individual residents of a town of 100 people each of whom is exposed to a 1 in 1,000 chance of contracting cancer are of less concern than a town of one million people, each of whom is exposed to a cancer risk of 1 in 1 million. Were I a resident of the smaller town, I would be justifiably unhappy at being subject to a high individual risk caused by the local industry simply because the town I happened to live in was small. . . . Individual risks are meaningful; no one should be subject to risks beyond a certain severity. The risk pie should be divided fairly (Kaufman 1990, note 8).

Or as David Doniger argued, while an attorney at the Natural Resources Defense Council, the U.S. government would never send a man to the moon with risks that rose above a certain level (say, 1 in 100,000) and that no individual should involuntarily be subject to risks above such a rate.

Ultimately, regulators have resolved the dilemma by integrating MEI and public health approaches into a single standard. But the debate is fundamentally different than the ethical debate over risk assessment, in which the rejectionist view might be analogous to the MEI position and supporters of risk assessment identified with the population point of view. Indeed, proponents of risk assessment might support an MEI position, whereas anti-risk assessment advocates, when forced to choose, might very well prefer to protect larger populations. Both MEI and public health advocates share a common acceptance of limited resources for environmental regulation; the debate is over allocation criteria. This is not something that characterizes risk assessment proponents per se.

And herein lies the fundamental difference in perspective. The defining question that distinguishes the risk assessment debate is "Should there be economic constraints on environmental policies?" The purist form of the rejectionist view holds that society is willing (or should be willing) to pay any price to eliminate environmental hazards. Under this view, people today would or should forego the comfort and wealth generated by technologies from air conditioners to cancer therapies to further the harmony between humans and their environment.

Perhaps a fairer representation would be that environmentalists who oppose risk assessment reject the notion of environmental policy as a zero-sum game in which there is a set amount of resources available for environmental protection, a set that must be divided up in the most efficient manner. Political pressures, moral suasion, and effective advocacy can alter the size of the environmental pie or societal commitment. At the local level, this is certainly not without justification. In the scramble over parochial interests, the squeaky wheel will get the grease or the city council's attention. Local environmental groups that focus on a single issue, tactically, would not be doing their job if they adopted a constrained resource paradigm.

National environmental groups, however, face a different portfolio of issues. They too must set priorities. Indeed, some groups like the American Environmental Defense Fund have even undertaken quasi-risk assessment exercises to set their own organizational priorities, with the relevant question not being the absolute magnitude of risk that they should address but the actual potential for risk reduction (Tal 1997b). For local grassroots groups, the target environmental issue is, at least at the outset, "self-evident" and the reason they got involved in the first place. The finitude of specific environmental contexts, along with institutional inability to compose or even understand highly technical risk assessment documents, may be the key to understanding the gap in attitudes between large national and small grassroots environmental groups.

AN INTEGRATED ENVIRONMENTALIST VIEW

The above distinction in operational assumptions offers a pragmatic basis for resolving the existing disagreement over risk assessment's ethical validity. In other words, if in a specific instance, zero risk and elimination of a hazard are distinct options without any apparent opportunity costs, then clearly there is a compelling reason to do so. Indeed, this has been the case in any number of specific pollution prevention campaigns or banning of chemicals like PCBs, DDT, and lead in gasoline (Commoner 1988, 1993).

Although government ministries and departments have a variety of institutional missions, they all share the common overarching task of helping to educate the public. Governments and the environmental regulatory agencies that work on their behalf have been criticized for inadequate recognition of this role as a societal educator, particularly regarding the vagaries and complexities of environmental risk reduction (Landy *et al.* 1992). In the introduction to their history of the U.S. EPA, Landy *et al.* (1992, p. 7) write:

> Government has the obligation to provide the civic education that strengthens the capacity of citizens for successful self-government. Civic education of this sort is, in part, about the technical merits. It is both possible and appropriate for the public to learn to distinguish policies that are coherent, reconcilable with the facts and whose means are consistent with their ends, from those that are not. . . . Civic education also concerns the ethical orientation that citizens adopt toward policy problems. Inevitably public agencies are civic educators in this way as well. Polices and programs embody concrete lessons about the nature of civic responsibilities . . .

Whereas environmental policies should foster a general public that can address public health issues with a dispassionate analytical honesty that will support regulatory strategies that "help the most people," this is only part of the mission. Environmental programs must also nurture within a society the compassion and commitment to protecting human life that in fact lies at the heart of any passion for resource optimization in the public health sector. In short, besides crafting a winning combination of incentives, enforcement, inspections, and the like, environmental agencies and nongovernmental organizations must constantly be engaged in a teaching initiative to remind and emphasize to the public that life (and ecosystems) are in fact sacred.

For better or for worse, the requisite pedagogical tools for this most crucial task are not found among the quantitative calculations, GIS

mapping, operations management techniques, and modeling software that support state-of-the-art polices. To teach society to care requires high-profile intervention with clearly identifiable beneficiaries.

The dynamic is not unlike Joseph Stalin's oft-cited quotation: "When one Soviet soldier dies it's a tragedy; when one million die it's a statistic." For the public's hearts, minds, and morals to be captured, they must be offered real-life situations, victims with whom they can sympathize, and even heroes to whom they can relate.

Governments all over the world have recognized this phenomenon and act accordingly. There are the cases of heroic and enormously costly efforts to save lost or trapped individuals, such as military interventions to rescue missing hikers or the famous effort in the 1980s to extricate a two-year-old child from a Texas well. There are enormous costs associated with certain organ transplants, money that would produce much more dramatic mortality and morbidity reduction if invested in other interventions. Indeed, there are the many U.S. EPA "Super Fund" toxic cleanups in which the environmental benefit is dwarfed by the educational one. But the medium is as important as the message.

This view has origins in traditional religious thought. For example, the Talmudic prohibition against turning over hostages to save an entire community embodies the same principle (Terumot 1976). Although clearly an entire community has greater value than does a single individual, the moral caliber of a society is defined by its solidarity and unwillingness to sacrifice the few or the weak for the good of the majority. This is an ideal that public policy should encourage. It is a relatively easy public policy goal to teach society to be careful on the highways, to use gas masks efficaciously, or to refrain from littering. Improving the aggregate character and instilling a sense of mercy and solidarity is a much more difficult task. Turning a deaf ear to clearly identifiable victims undermines such a task.

In other words, as soon as the victim has an identity, the environmental problem is no longer simply a public health issue but has a broader ethical scope; decision-makers must remember that along with "efficiency," their policies must also help inculcate a sense of compassion and identification with environmental objectives on a concrete and nontheoretical plain. If public health advocates object that there will be a net loss of life for pandering to such sentimental inclinations, two responses can be given.

First, the maximum risk–reduction position involves a short-term equation. There is a longer term calculus that involves transforming societal values and expanding the public's sensitivity to both human and ecological damage from pollution. It is a less precise calculation, but in the same way that investment in environmental education is justified at the expense of other immediate environmental initiatives, interventions that protect clearly identified victims of environmental exposures may be justified by the fact that they increase long-term public sensitivity to environmental issues.

Second, the policy litmus test of public health optimizers is in fact far too narrow. Improving quantity of life cannot always be justified at the expense of quality of life. Environmental values are not the only ones. In the same way that society invests in symphony orchestras, museums, and orphanages, environmental policies should reflect a broader perspective than that of a disengaged body-counter. If we do not let our hearts drive policy upon occasion, we may soon live in a world in which we care about "the public health" but are somehow insensitive to "people's health." It is hard to imagine that such a society's commitment to protective environmental policies would last long.

CONCLUSION

The practical implication of this position is that there will be occasions when environmental organizations should decry the use of analytical risk assessment. When the damage is clear and the population identifiable, environmental policies are not simply operating as public health policies. As the environmental debate drops down to a lower, more focused, and tangible context, the response should be centered more around immediate empathy and compassion. A debate over drinking water standards or a regulatory agency's priorities should not employ the same decision rules or even the same principles as discussions about the emission levels of a hazardous waste incinerator located in a populated area.

This is on the philosophical plane. On a practical plane, environmentalists should recognize that risk assessments will frequently make them more effective advocates (Tal 1997c). There have been many cases during the past decade in which encouraging or even undertaking risk assessments by citizens' groups was not only appropri-

ate ethically but strategically essential to reduce pollution and save lives. The fact that a majority of environmental organizations (61%) perceive risk assessment as a valuable tool for priority setting (Tal 1997a) suggests that environmentalists are adopting a more pragmatic and less dogmatic position.

It is neither inconsistent nor hypocritical to oppose the use of risk assessment in some situations and support or even initiate it in others. Rather, it reflects a more sophisticated reading of the complexity of the reality in which environmental decisions are made. Environmental policies should have more than a single dimension. That, in fact, is what risk managers have been saying all along. Specific contexts and circumstances should define the dominant dimension and determine the ethical acceptability of any given risk assessment. Recognizing such complexity is a first step toward public policy that both protects public health rationally and builds a society with compassion for the victims of pollution and environmental degradation.

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