

Ethical Aspects of Risk Management

Hélène Hermansson

STOCKHOLM 2006

This licentiate thesis consists of the following introduction and:

Hermansson H. (2005) – “Consistent Risk Management. Three Models Outlined”, *Journal of Risk Research* 8 (7–8), 557-568 (October–December 2005).

Hermansson H. (2006) – “The Ethics of NIMBY-Conflicts”, submitted manuscript.

Hermansson H. and Hansson S. O. (2006) – “A Three Party Model Tool for Ethical Risk Analysis”, submitted manuscript.

*Hélène Hermansson, Division of Philosophy, Department of Philosophy and the History of Technology
Royal Institute of Technology (KTH), 100 44 Stockholm, Sweden.*

© Hélène Hermansson 2006

ISSN 1650-8831

ISBN 91-7178-346-6

Abstract

Hermansson H., 2006. Ethical Aspects of Risk Management. *Theses in Philosophy from the Royal Institute of Technology* 14. 87 + viii pp. Stockholm. ISBN 91-7178-346-6.

The subject of this thesis is ethical aspects of risk management. It is argued that a model for risk management needs to be developed that acknowledges several ethical aspects and most crucial among these, the individual's right not to be unfairly exposed to risks.

Article I takes as its starting point the demand frequently expressed in the risk literature for a consistent risk management. Such consistency is often assumed to be in accordance with some kind of cost-benefit analysis. It is maintained that such a model, here called the Standard Model, does not respect the rights of the individual. Two alternative models are outlined in order to better deal with this ethical weakness, the Model of Inviolable Rights and the Model of Procedural Justice. The arguments in the alternative models evolve around the separateness of individuals, rights and fair risk taking. It is claimed that the latter model, which focuses on a fair procedure, seems most fruitful to develop.

Article II is a discussion of the NIMBY (Not In My Backyard) conflict, which is well known from situations of siting potentially risky facilities. Of special concern is to investigate what the ethical premises are behind the negative characterization of the NIMBY concept. It is argued that, contrary to the assumption that the total benefit should outweigh the individual's cost, individuals in siting scenarios have rights not to be unfairly exposed to risks.

Article III, which is co-authored with Professor Sven Ove Hansson, presents a three party model as a tool for ethical risk analysis. It is argued that ethical dimensions need to be acknowledged in the analysis of risks and that this is best done through a discussion of three parties that are involved in risk decisions – the risk-exposed, the beneficiary, and the decision-maker. Seven crucial ethical questions are recognized and discussed regarding the relation between these parties. By using examples from the railway sector it is shown how the questions can be used to identify salient ethical features of risk management problems.

Key words: Risk, risk management, consistency, ethics, rights, cost-benefit, interpersonal weighing, decision-procedure, informed consent, NIMBY.

Acknowledgements

I am deeply grateful to my supervisor Professor Sven Ove Hansson who has provided me with support, ideas and comments on my manuscripts. Without him this thesis would not have been written. My thanks go also to my assistant supervisors Dr. John Cantwell and Dr. Till Grüne and to all my colleagues at the Division of Philosophy for suggestions and interesting discussions on early versions of my papers. Erik Lindberg and Mattias Strömgren who have followed this project since the beginning of it, and who have read and commented on my papers, deserves a special thank. The Swedish Rescue Services Agency (Räddningsverket) and the Swedish Rail Sector (Banverket) have financed the project. The support is gratefully acknowledged.

Stockholm

May 2006

Hélène Hermansson

Contents

1. Introduction

2. Preview of Articles I-III

3. The Standard Model reconsidered

4. Developing the Model of Procedural Justice

Article I:

“Consistent Risk Management: Three Models Outlined”

Journal of Risk Research **8** (7–8), 557-568 (October–December 2005).

Article II:

“The Ethics of NIMBY conflicts”

Submitted manuscript.

Article III:

“A Three Party Model Tool for Ethical Risk Analysis”

Submitted manuscript.

1. Introduction

Potential risks lurk behind practically every decision regarding the way in which I lead my life; where I live, what I eat and drink, when and whether I work, sleep, and exercise. I choose some risks voluntarily, but many are imposed on me as a consequence of other people's behaviour or decisions. Several risks arise from our changing living conditions; new technological artefacts can end up in the wrong hands or break down resulting in disasters. Or, the technology can carry risks that we are unaware of today but will learn about in a distant future.

This thesis is about risk decisions on a societal level. One crucial aspect of these decisions is that they often affect individuals who were not included in the decision procedure. A decision about the acceptability or unacceptability of a societal risk includes considerations of various kinds such as technological, economical, political, and ethical. The focus of this thesis is on the ethical aspects of such decisions. It is about risk management from an ethical point of view.

The management of risks is an enormous social policy apparatus. Huge efforts are invested in trying to settle which risks we should try to reduce and which risks we should accept. The fact that risks differ in several respects contributes to the complexity of risk decisions. Some risks are caused by events or phenomena that have negative effects only and are undesired *per se*, such as natural disasters. Others are side effects of activities that are desirable because of the benefits they also carry, like e.g. the building of new and effective transport systems. Moreover, some risks

will affect a geographically narrow group of persons, while others will affect a widely spread unidentified group.

Risk management is frequently claimed to suffer from great problems. Investigations analysing several countries' risk expenditures have shown large variations in the cost per statistical life saved in different social sectors. These variations have often been claimed to support the picture that risk management now faces a crisis. The differences are said to be the result of arbitrary decisions. Critics claim that if societal resources were used in a more effective and rational way, these differences could be levelled out and more lives be saved for the same amount of money. Therefore, demands for a consistent risk management have repeatedly been called for in the risk literature (See e.g. Morone and Woodhouse, 1986; Morrall, 1986; Viscousi, 1996; Breyer, 1999; Sjöberg 1999; Sunstein, 2002).

The starting point for the research presented in this thesis is that a new and wider perspective on how to understand consistency in risk management needs to be developed, and more specifically that the current "prize-tag-thinking" (i.e. that consistency in risk management is exclusively about costs for different kinds of risk reductions) is insufficient. The aim is to accomplish a foundation for a more, realistically and normatively, well-founded theory for a consistent risk management. This thesis and its continuation should contribute to a wider understanding of risk management. More specifically, risk management should be individual-oriented in such a way that every individual's right not to be unfairly exposed to risks is acknowledged. The thesis should provide a basis that can be used in the practical

risk management partly to remove unjustified differences in managing different risks, and partly to eliminate unproductive and unfounded demands for uniformity.

In my thesis, I have advocated a normative theory guided by rights to govern issues of risk management. However, needless to say, this thesis is not an attempt to generally settle accounts between deontological and consequential ethical theories. My claim is rather that within this specific area, i.e. risk management, an ethics ascribing great importance to rights is preferable. It is not necessary for the purpose of this thesis to specify whether these rights have consequentialists or deontological foundations, and I will leave this open. A model that emphasizes individuals' rights is necessary within this area, since there is an imbalance of power regarding who makes the decision and who is exposed to the risk. Individuals have to be protected from being exposed to a risk simply because it benefits others to a larger degree. This holds for everyone. The need to protect the individual against social policies directed at maximizing net profit becomes even more urgent since research have shown that it is primarily the already disadvantaged groups of people, poor and minorities, who are affected by the negative outcomes of risk management. (See e.g. Edelstein, 1988; Bryant and Mohai, 1992; Rabe, 1994; Slovic, 1999; Ringquist, 2000; Minehart and Neeman, 2002; Shrader-Frechette, 2002).

2. Preview of Articles I-III

Article I. The first article of this thesis is titled "Consistent Risk Management: Three Models Outlined". In this article it is argued that a model for consistent risk

management mostly is assumed to be in accordance with what I call the Standard Model. Although this model has some advantages it is lacking in ethical respects. Most important of these is that it does not respect the rights of the individual not to be unfairly exposed to risks. Instead of this model, two alternative models are discussed. It is argued that consistency in risk management can be obtained by another approach to risks, as for instance, by the non-violation of the rights of individuals. However, this model, which I call the Model of Inviolable Rights, is also problematic, since it seems to prohibit every risk generating activity in society.

With the second alternative, the Model of Procedural Justice, consistency in risk management refers to the decision procedure and not the outcome. This model has the advantage that it will allow certain risk generating activities, but it remains to be decided what a fair procedure is. My conclusion is that while all three models are exposed to various problems, the third one holds the most promise. The aim of this article is to examine which ethical features that are involved in decisions of risk management, and to point out a model that seems fruitful to develop with regard to these.

Article II. The second paper, “The Ethics of NIMBY Conflicts”, deals with the NIMBY (Not In My Back Yard) conflict from an ethical point of view. NIMBY is the averse attitude that local residents show against a risk generating facility that they have been chosen to host. Characteristic of NIMBY situations is that there is some risk generating activity that will benefit society at large. While the benefits will be spread over a large, unidentified population, the risk will fall on a small identified group of people – those living in the near vicinity of the facility. In the risk literature

the attitude is mostly negatively characterized as being an egoistic and irrational stance: the NIMBY is accused of being positive to a facility but wanting someone else to host it – to be exposed to all the risks.

The problem often referred to is that if everyone has this attitude, siting cannot be provided. The consequence is that society ends up in a worse situation than if siting could succeed. By comparing three different scenarios that all represent some conflict between individual and collective good I argue that the NIMBY critique rests on questionable assumptions about the rightness of weighing total net benefit against total cost. In a different risk situation the same reasoning is not accepted and could even be perceived as repulsive. The conclusion is that that a collectivistic weighing-principle will sometimes have to yield so that the rights of individuals can be acknowledged. This has implications for the so-called NIMBY reaction that may not be as irrational and unethical as has often been claimed.

Article III. In this article, “A Three Party Model Tool for Ethical Risk Analysis”, we try to present a tool for ethical risk analysis. We believe that when carrying out an analysis of risks, the ethical questions need to be clarified. This is best done through identifying the different parties in a risk situation and the relations that hold among these. The key stakeholders are categorized as the risk-exposed, the beneficiary and the decision-maker. We also list seven questions that in our view combine into a useful tool for uncovering the salient moral features involved in different risk scenarios. Our conclusion is that risk analysis needs to acknowledge several different ethical aspects in order to provide an acceptable description of the risk.

3. The Standard Model reconsidered

Since the problem of risk management already from the outset was stated as one of (ir)rational allocation of society's scarce resources, possible solutions often emphasize the monetary costs and benefits of risks. In the first article of this thesis, I have called such a cost-benefit approach the Standard Model. In this model costs and benefits of a risk generating activity are summarized and weighed. The risk is accepted if the benefit exceeds the cost. Below I want to discuss a couple of possible objections against my description of this model.

First, it might be objected that in reality, risk decisions are mostly not made in such a way as the Standard Model describes. Hence, the model might not be used in this pure form. My claim is however, that the consequences of the model are important to discuss, since it is often referred to, implicitly or explicitly, as an ideal worth aiming at in the context of risk management.

Another objection to the Standard Model may be that it constitutes a too narrow cost-benefit model, and that it is problematic to conflate all cost-benefit approaches into this narrow model. Critics will possibly argue that a true cost-benefit model would include all kinds of costs by using a "Full Cost Accounting" (Schmidtz, 2001:150). In such an accounting individuals' rights are included and not disregarded. Thus, if the rights of an individual were to be violated from the acceptance of some risky facility, that violation had to be included as a disvalue in the analysis.

The reason why I have not discussed the alternative of such an extended cost-benefit model is that I nonetheless believe that it bases individuals' rights on a too unstable a foundation; if some other value from the facility is greater than the disvalue from violating the right – then the individual's right is no longer protected. Furthermore, there are difficulties with translating individuals' rights into values that fit a cost-benefit analysis. These values will always be arbitrary, and that is maybe the reason why they seem to have been left out from risk decisions so often.

A third objection against the Standard Model might be that such a model should not be used to decide what to do, (in my version of it a risk is acceptable if the benefit exceeds the cost) but rather what *not* to do. As Schmidtz says:

When benefits exceed costs, the conclusion should be that the policy has passed one crucial test and therefore further discussion is warranted. On the other hand, when a proposal fails the test of CBA [cost-benefit analysis], when costs exceed benefits, the implication is more decisive, namely that further discussion is not warranted. (Schmidtz, 2001:152f.)

Even though this could be a more acceptable account of the role of cost-benefit analysis there are problems with it. The idea that failing a cost-benefit analysis is sufficient for turning down a proposal is not a satisfying solution here since, as I see it, the difficulty of weighing rights against other values remains.¹ How should this

¹ Schmidtz's response to the objection that some things are priceless and as such cannot be included in a cost-benefit analysis is also problematic. He argues that sometimes priceless things come into conflict and leave us with no other choice than to rank them, i.e. choosing between

weighing be done? What is the disvalue of violating an individual's rights? Will it vary depending on who it is and where she or he happens to live? And how much disvalue should a rights-violating act raise in order to be deemed too costly? These questions are crucial since they point to serious ethical problems with cost-benefit models – problems to which I do not see a normatively satisfying solution.

So, does this mean that we are never allowed to expose someone to a risk? No. What I am saying is that a decision to expose someone to a risk should not solely be based on calculations of total benefit and total cost since these categories do not respect the rights of the individual not to be unfairly exposed to risks. Naturally, there are situations when a risk is very small, and the benefit for society large, and when we should go ahead exposing this individual to this risk.

them. In these situations, he says, “we are in effect putting a price on that which is priceless” (Schmidtz, 2001:160). He exemplifies with a dilemma from the novel *Sophie's Choice* (Styron, 1979), where a woman in a concentration camp is forced by the commander of the camp to choose between two horrible alternatives. Either she picks one of her two children to be executed by the commander or the commander will execute both her children. If she picks one the commander will spare the other child. Schmidtz says: “both her children are without price. [...] Nevertheless, she does in the end pick one for execution, thereby saving the other one's life. [...] both children were beyond price, but when forced to put a price on them, she could” (Ibid:161). That it is possible to force people to make horrible and tragic choices should not be an argument for the possibility of fixing a price on everything. Nothing supports the claim that the mother was carrying out a cost-benefit analysis, rather than that she acted instinctively.

Although we can imagine risks of this kind it seems difficult to set criteria in advance for discerning them. Negligible risks are sometimes referred to as *de minimis*. The problem with the concept of *de minimis* risk is that a satisfactory explication of it is lacking and, because of the vagueness of the concept there is no absolute method to distinguish negligible from non-negligible risks (Peterson, 2002). Thus, I would conclude that it is reasonable to suppose that there are risks that are in some way negligible, but which these are cannot be decided out of the specific context. One crucial feature of this context is to investigate to what extent those exposed to the risk agree (freely and fully informed) to treat the risk as negligible.

The context of a risk decision includes more than probability and negative outcome of the risk. More specifically, we need to know who is exposed to the risk and how the decision was made. One of the ethically problematic issues in decisions of risk management is that some groups of people are for various reasons especially liable to be made the subject of dangers. A person who has been unemployed for a longer period of time may be forced to accept a risky job, a poor community may accept to host a hazardous waste facility in exchange for new job opportunities, and people who for some reason cannot mobilize resistance may end up living in a risk dump.

Because of shortcomings in the Standard Model I argue that there is a need for a new and wider approach on how to manage risks consistently. A crucial question in such a model deals with the issue of fairness – there has to be a justification of why we can expose this person to a risk, not simply decide that a risk (as such) is acceptable.

4. Developing the Model of Procedural Justice

In the first article of this thesis it is argued that the Model of Procedural Justice seems fruitful to develop. The advantage of this model is that while it respects the rights of the individual it does not set an absolute prohibition regarding which risks to accept and which to abate – that will be decided by a fair decision procedure. The premise is that by involving the risk exposed in the decision procedure, their rights not to be unfairly exposed to risks are acknowledged and respected. Naturally it depends on how they are included, and what the process looks like. Hence, there have to be certain criteria that the procedure needs to fulfil in order to ensure this. So, what are these criteria? Or, more specifically, what is a fair procedure within the context of risk management? This is a problem that I will try to solve during the continuation of my project. Below, I will discuss some of the questions that are of special interest for this purpose.

There are mainly two different theoretical directions that I believe useful to explore when developing the Model of Procedural Justice. The first has its focus on a hypothetical contract situation, the second focuses on a concrete dialogue.

As is argued in *Article I*, if a fair procedure within the risk context demands that every individual has to consent to a risky activity, we end up in the same difficulty as in the Model of Inviolable Rights. Not many risk generating activities would be allowed if every individual had veto power. If instead it is claimed that majority vote should be decisive, we face the problem that the protection of every individual's rights is not guaranteed. Moreover, the alternative of a model focusing on

hypothetical consent is only briefly mentioned. One problem with it is pointed out; there is no consensus on what risks people in general are willing to take, and hence it would be difficult to choose a principle that would be agreeable to all.

That it seems to be difficult to come to an agreement concerning which principles to choose may, however, not be a sufficient argument for abandoning the possibility of hypothetical consent. Critics may claim that since there is at least a possibility that we can come to an agreement about those principles we should try. This might be true and hence this alternative should maybe be reconsidered.

Rawls's theory of 'justice as fairness', a classic modern contract theory, will serve as a starting point for my discussion of a model invoking hypothetical consent. The question that seems interesting to ask is: if we did not know anything about ourselves and the position we hold in society – e.g. our employment, educational, and civil status, ethnic affiliation or sex – how would we like for social risks to be managed? Of special interest is to investigate whether Rawls's principles could be used in some way to guide decisions of social risk management.²

² These principles are those that rational agents would choose behind a 'veil of ignorance' in order to regulate a society's basic structure. The veil characterizes the hypothetical original position in Rawls's theory. It guarantees impartiality since nobody knows who he or she will be in the society. According to Rawls, since information is restricted in this way everyone will try to make the worst outcome as good as possible, i.e. they will maximize the minimum. Furthermore, Rawls suggests that they therefore will choose the following two principles: "(1) Each person has the same infeasible claim to a fully adequate scheme of equal basic liberties, which scheme is compatible with the same scheme of liberties for all; and (2) social and economic inequalities are to satisfy two conditions: first, they are to be attached to offices and positions open to all under conditions of fair

According to Rawls's difference principle social goods are to be distributed equally unless an unequal distribution serves the least advantaged. Now, is this principle applicable to guide decisions of risk management? One possible advantage of this principle could be that it, already at the level of risk assessment, would include questions such as: who is exposed to the risk? And, who benefits from it?

Some may object to applying this principle to the area of risks, since in Rawls's theory it is social goods that are to be distributed, and, risks are not social goods (see e.g. English, 1991). My point is, however, that since we mostly accept risky activities or facilities in order to get some benefit, then maybe risk-generating activities can be thought of as some kind of social good. Sometimes the good from the risky facility can be of a direct kind, e.g. if one constructs a new railway for high-speed trains between city A and B the benefit for the residents of city A and B is of a direct kind. In other situations the benefit is more indirect, e.g. if a hazardous waste facility is sited in district A there is an indirect good for all those who do not have to take the risk from living near the dump.

Hence, behind a 'veil of ignorance' we would maybe agree to a principle such that social risk-generating activities are to be distributed equally among the members of society unless an unequal distribution is favourable to the least advantaged.

equality of opportunity; and second, they are to be to the greatest benefit of the least-advantaged members of society (the difference principle). The principles are lexically ordered, the first has priority over the second". (Rawls, 2001:42f.)

This principle should prevent practices in which some vulnerable persons are exploited in the interest of the better off. However, there are problems with such a general principle, e.g. it might be difficult to apply since the risky activities and facilities are of such varying kind. Clearly, some risk-generating activities have seemingly uncomplicated benefits e.g. the new risk generating factory that provides new job opportunities. Others have costs that are concentrated while the benefits are more dispersed, e.g. when siting hazardous waste. Moreover, two risk generating activities can have the same benefit while differing in terms of costs. Because of the diversity of risk generating activities it seems that it could be extremely difficult to distribute risky activities or facilities according to this principle.

Another difficulty with applying Rawls's principles can arise from the fact that his theory concerns a different level than the one risk management is about. Rawls's theory concerns the basic structure for a just society and tries to answer the question what a just society is and what fair terms of cooperation are. Perhaps risk management corresponds better to some level of local justice? This might be a problem for applying a Rawlsian 'theory of justice' to such a specific area as risk management. However, this contractarian account is not the only possibility for developing a model for consistent risk management.

The other theory that I am interested in investigating is discourse ethics, and more specifically, the ethical theory that Benhabib has proposed (Benhabib, 1992). The basic principle of discourse ethics stipulates that "[o]nly those norms can claim

to be valid that meet (or could meet) with the approval of all affected in their capacity as participants in a practical discourse” (Habermas [1983] (1990), p. 93).³

Benhabib maintains that behind Rawls’s ‘veil of ignorance’, there is only definitional identity. The moral standpoint is exclusively from the ‘generalized other’ which is the standpoint where “each individual is a moral person endowed with the same moral rights as ourselves; this moral person is also a reasoning and acting being, capable of a sense of justice, of formulating a vision of the good, and of engaging in activity to pursue the latter” (Benhabib, 1992:10). This definitional identity makes the other as distinct from the self disappear. Instead, she argues, a moral theory must acknowledge the ‘concrete other’ as well, which is a standpoint that “enjoins us to view every moral person as a unique individual, with a certain life history, disposition and endowment, as well as needs and limitations” (Ibid).

Benhabib’s discourse theory is a reformulation of Habermas’s communicative ethics, in the light of recent critique against “Enlightenment universalism”, i.e. universalistic moral and political theories “extending from Immanuel Kant to John Rawls and Jürgen Habermas” (Ibid:3), coming from communitarians, postmodernists and feminists. Her critique of Habermas’s account of discourse theory concerns its “rationalistic biases and exclusive justice orientation” (Ibid:146). Benhabib’s theory differs from Habermas’s mainly by her shifting the idea of the goal of communication from the *result*, as in rational agreement or consensus, to the

³ In Benhabib (2004) this principle is expressed as: “only those norms and normative institutional arrangements are valid which can be agreed to by all concerned under special argumentation situations called discourses” (Benhabib, 2004:13).

process itself, “the idea of an ongoing moral conversation” (Ibid:38). Furthermore, Benhabib criticizes Habermas’s sharp distinction between matters of justice and matters of the good life, and the idea that only the former belongs to the realm of ethics. This idea has led to the exclusion of questions and experiences belonging to the private sphere from the moral and political domain – a sphere that women mostly have been confined to:

An entire domain of human activity, namely, nurture, reproduction, love and care, which become the woman’s lot in the course of the development of modern, bourgeois society, is excluded from moral and political considerations, and relegated to the realm of “nature”. (Ibid:155)

In the context of risk management, the “white male effect” is interesting to discuss here. This is the tendency that white males perceive risks as much smaller and less problematic than women, and also than nonwhite men. The effect was indicated in a national survey performed in United States where 1512 persons were asked to rank the public health risk from different hazards (Flynn et al, 1994). The effect was caused by a subgroup of white men (about 30 percent) who perceived risks as extremely low. These men were claimed to have a hierarchical and individualistic world-view and was “characterized by trust in institutions and authorities and a disinclination toward giving decision-making power to citizens in areas of risk management” (Ibid:1106). The “white male effect” shows that risks are perceived differently depending on the person that is exposed. That white males feel more secure regarding societal risks may be a consequence of the fact that it is

mostly white males who make the risk decisions, control the development of the new risky technologies and benefit from them. That women and nonwhite men feel less secure may be a consequence of them being left out of these decisions to a greater extent.

Applying a theory of discourse ethics and a theory of dialogue to the area of social risk management has the benefit of involving the persons actually affected by the risky activity in the decision-making. Thus this model would also provide protection to vulnerable persons from being unfairly exposed to risks. It might also handle risk decisions better since it will allow for an account that is more sensitive to context, which maybe will correspond better to the diversity of risk decisions.

Problems that have to be solved are e.g. how to decide whether a certain procedure yields just decisions. If decisions are taken in a dialogue between concrete persons, how does one prevent that individuals reason only from the outset of their own particular situation, only looking after their own interests? Furthermore, different persons have different qualifications and possibilities for taking an active part in social policy decisions. Some are disadvantaged in this respect, e.g. mentally disabled, children, and elderly. Moreover, many risk problems are of the kind that they will affect future generations. The point is that these vulnerable groups have to be included in the decision procedure somehow. These are issues that have to be investigated further. Even though there are problems to be solved, I believe that Benhabib's discourse ethics is promising to discuss when developing the Model of Procedural Justice because of its emphasis on the procedure, universal moral respect and rights as well as needs.

References

- Benhabib, S., *Situating the Self: Gender, Community and Postmodernism in Contemporary Ethics*. Cambridge: Polity Press, 1992.
- Benhabib, S., *The Rights of Others: Aliens, Residents, and Citizens*. Cambridge: University Press, 2004.
- Breyer, S., *Breaking the Vicious Circle: Toward Effective Risk Regulation*. Cambridge: Harvard University Press, 1999.
- Bryant, B. and Mohai, P., (eds.), *Race and the Incidence of Environmental Hazards*. Boulder: Westview Press, 1992.
- Edelstein, M.R., *Contaminated Communities: The Social and Psychological Impacts of Residential Toxic Exposure*. Boulder: Westview Press, 1988, pp. 170-89.
- English, M., Siting, Justice, and Conceptions of the Good, *Public Affairs Quarterly*, 5(1) (1991), pp. 1-17.
- Flynn, J., Slovic, P., & Mertz, C.K., Gender, Race, and Perception of Environmental Health Risks, *Risk Analysis*, 14(6) (1994), pp. 1101-08.
- Habermas, J., *Moral Consciousness and Communicative Action*. Cambridge, Mass.: MIT Press, [1983] 1990.
- Hansson, S.O., A Philosophical Perspective on Risk, *Ambio*, 28 (1999), pp. 539-42.
- Hansson, S.O., Ethical Criteria of Risk Acceptance, *Erkenntnis*, 59 (2003), pp. 291-309.
- Minehart, D. and Neeman, Z., Effective Siting of Waste Treatment Facilities, *Journal of Environmental Economics and Management*, 43 (2002), pp. 303-24.

- Morone, J.G. and Woodhouse, E.J., *Averting Catastrophe: Strategies for Regulating Risky Technologies*, Los Angeles: Univ. of California Press, 1986.
- Morrall, J.F., A Review of the Record, *Regulation*, 10 (1986), pp. 25-34.
- Peterson, M., What Is a *de Minimis* Risk?, *Risk Management: An International Journal*, 4(2) (2002), pp. 47-55.
- Rabe, B.G., *Beyond Nimby: Hazardous Waste Siting in Canada and the United States*. Washington, D.C: The Brookings Institution, 1994.
- Rawls, J., *Justice as Fairness: A Restatement*. Cambridge, Mass.: London: Belknap, 2001.
- Ringquist, E.J., Environmental Justice: Normative Concerns and Empirical Evidence, in N.J. Vig and M.E. Kraft (eds.), *Environmental Policy: New Directions for the Twenty-First Century*. Washington, D.C.: CQ Press, pp. 232-56, 2000.
- Schmidtz, D., A Place for Cost-Benefit Analysis, in E. Sosa and E. Villanueva (eds.) *Social, political and legal philosophy*, Philosophical Issues, 11 (2001) pp. 148-71. Boston: Blackwell Publishers.
- Shrader-Frechette, K., *Environmental Justice: Creating Equality, Reclaiming Democracy*. Oxford: University Press, 2002.
- Sjöberg, L., Life-Values and the Tyranny of Unique Decisions, in G. Hermerén and N-E. Sahlin (eds.), *The Value of Life*. Stockholm: Kungl. Vitterhets-, historie- och antikvitetsakad.: Almqvist & Wiksell International, pp. 73-84, 1999.
- Slovic, P., Trust, Emotion, Sex, Politics, and Science: Surveying the Risk-Assessment Battlefield, *Risk Analysis*, 19(4) (1999), pp. 689-701.
- Styron, W., *Sophie's Choice*, New York: Random House, 1979.

Sunstein, C.R., *Risk and Reason: Safety, Law and the Environment*, Cambridge: University Press, 2002.

Viscousi, W.K., The Dangers of Unbounded Commitments to Regulate Risk, in R.W. Hahn (ed.) *Risks, Costs, and Lives Saved: Getting Better Results from Regulation*. New York: Oxford University Press, pp. 135-66, 1996.

