

Doing, Allowing, and Precaution

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I. Introduction

This is a paper about the precautionary principle, a principle with a questionable reputation in academic circles. The principle fundamentally emphasizes the idea that precautionary measures should be taken, or at least considered, in instances where human activities raise threats to human or environmental health. Although intuitively appealing, the principle has been widely criticized as vague, irrational, or incoherent.¹ Formulations of the principle are diverse: some versions emphasize the idea that uncertainty should not be *taken as a reason* to ignore risks or to postpone measures to reduce them; other versions stress the need to *take action* to reduce health and environmental risks even when the nature and magnitude of the risks are uncertain or not clearly established.² Considered in isolation from the historical and sociopolitical context in which it arose, the precautionary principle does seem odd: why should we pay special attention to unknown or unestablished risks, especially when there are clear benefits in sight? For instance, why postpone the introduction of genetically modified plants that will generate higher crop yields, or that can deliver vitamins to nutritionally-deprived

¹ See Per Sandin, Martin Peterson, Sven Ove Hansson, Christina Ruden, and Andre Juth, "Five Charges Against the Precautionary Principle," *Journal of Risk Research* 5(4): 287-299 for a review of some of these criticisms.

² Sandin distinguishes these two versions of the principle, labeling them as *argumentative* and *prescriptive* versions, respectively. See Per Sandin, "The Precautionary Principle and the Concept of Precaution," *Environmental Values* 13 no. 4 (2004): 461-475, p. 470.

populations, on the speculation that there might possibly be some unintended side effects? Is the precautionary principle merely the product of environmentalist paranoia?

I believe it is not. This is not to say that the principle itself is clear, unambiguous, or unproblematic. However the principle does attempt to respond to some real problems in the world, and to some real problems with the ‘rational’ and ‘scientific’ methods of risk assessment. Most notably, traditional approaches to risk assessment emphasize a narrow set of risks, such as the risk of cancer or the acute risks associated with ingestion of high concentrations of a particular chemical. Advocates of the precautionary principle call attention to the fact that this form of risk assessment is inadequate, because it fails to take account of chronic human health effects other than cancer, and because it overlooks effects on nonhuman health and the environment more broadly. These provide some *prima facie* reasons to take seriously the precautionary principle, which is often presented as an alternative to standard approaches to assessing and managing environmental risks. It is also worth noting that the principle is not defended only by the radical fringe; it is included in the 1992 Rio Declaration on Environment and Development, for example, and the City of San Francisco has enshrined it in law, as a central pillar of the town and county’s environmental policies. (Let us set aside those objectors who would argue that the UN and the City of San Francisco *are* the radical fringe, and also note that ideas endorsed by the radical fringe are not necessarily false.) In light of these considerations, the precautionary principle deserves some careful philosophical analysis. My hope is that this analysis will lead not only to a better theoretical understanding of the principle, but also to a more coherent, tractable, and defensible formulation of it – or if it turns out to be incoherent, to a replacement of the principle with another more reasonable approach to managing environmental risks.

The particular focus of this paper is on the distinction between doing and allowing. I am interested in understanding whether the precautionary principle rests in any important sense on this distinction, and if so, whether the distinction has a legitimate role in environmental policy.

II. The Doing-Allowing Distinction

The doing-allowing distinction is a familiar one in moral philosophy. The basic idea is that it is worse to *do* harm than to *allow* harm to occur. So, the story goes, it is worse to kill a person than to fail to save them from death, even when one could easily do so. The surgeon who stabs a patient to death in the emergency room commits a graver moral wrong than the surgeon who nonchalantly finishes his cigarette and coffee while the heart attack victim lies dying on the gurney. Both actions are morally wrong; but the stabbing is worse.

The principled basis for the doing-allowing distinction is murky, and one recent commentator suggests that rather than rest a single distinction, the doing-allowing distinction actually rests on a *family* of distinctions:

“This discussion suggests, I think, that ‘the distinction between doing and allowing’ does not refer uniquely. More likely, it refers indefinitely to a tissue of largely overlapping distinctions...In that case, it seems that the sensible approach is to acknowledge this variety of distinctions, and to ask with respect to each, whether it is morally significant.”³

This is a feature that I will explore below. But first I want to present some evidence suggesting that the doing-allowing distinction plays a role in everyday thinking about environmental policy, and that there is a good case to be made that the distinction also informs the precautionary principle.

³ Frances Howard-Snyder, “Doing vs. Allowing Harm,” *Stanford Encyclopedia of Philosophy* [online: <http://plato.stanford.edu/entries/doing-allowing/#9>; last revised May 14, 2002; accessed 4/6/06].

III. The Role of the Doing-Allowing Distinction in Environmental Policy

Many environmental policies seem to rest on an implicit distinction between doing and allowing. For example, most people think⁴ that it is worse to drive a species to extinction than to fail to save a species that is declining through no fault of ours; that it is worse to pollute the air with chemicals that trigger asthma attacks than to fail to remove naturally occurring allergens such as pollen and mold, which can trigger similar problems; and that it is worse to cause algal blooms through industrial pollution than to fail to prevent natural red tides. In addition, the distinction informs certain views of how to treat environmental risks. According to many environmentalists, it is worse to introduce a new environmental risk – say from a pesticide or from genetically modified crops – than to accept the risks associated with the postponement of such technologies.

The doing-allowing distinction shows up quite prominently in discussions of one of the most pressing environmental issues we face: the question of global climate change.⁵ Discussants of climate change typically distinguish between *anthropogenic* and *non-anthropogenic* change, and this distinction influences environmental policy goals. When representatives met in Rio de Janeiro, Brazil in 1992 to establish the Framework Convention on Climate Change, they articulated the following aim:

“The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent *dangerous anthropogenic interference* with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt

⁴ I based this claim on my intuition, current U.S. environmental policies, and informal data from environmental ethics classes I have taught.

⁵ For many years, debate raged over whether climate change was occurring. In the face of mounting evidence for climate change, the debate shifted somewhat, focusing less on the existence of climate change and more on its *source*.

naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.”⁶ (emphasis added)

Why does the word ‘anthropogenic’ show up in this statement? If in fact ‘anthropogenic’ adds content to the goal statement of the convention, it is because we think there is something significant about *human-caused* environmental problems that makes them worse, or at least deserving of greater attention, than problems that naturally arise. Indeed much debate over global climate change and what to do about it has hinged on the question of whether it is human-caused. The Bush Administration, for example, famously insists that although climate change is occurring, it is not clear how much of it is the result of human activity. In response to a reporter’s question, President Bush recently made the following comment:

“[F]irst of all...the globe is warming. The fundamental debate: Is it manmade or natural...”⁷

Why is *this* the fundamental debate? On what basis might one maintain that the fundamental debate over climate change rests on whether we have or have not caused it? Should we take a different moral attitude and different policy approach toward damage to the environment caused by humans as compared to environmental harms not caused by us?

⁶ United Nations, UN Framework Convention on Climate Change, Article 2. Available online at: http://unfccc.int/essential_background/convention/background/items/1349.php [accessed 4/10/06].

⁷ “President Discusses Democracy in Iraq with Freedom House,” March 29, 2006. From The White House website: <http://www.whitehouse.gov/news/releases/2006/03/20060329-6.html>, accessed April 10, 2006. Separating anthropogenic from nonanthropogenic climate change has also been a central concern of scientists. A recent IPCC report highlights the distinction: “There is new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities,” (IPCC, *Climate Change 2001: The Scientific Basis*, “Summary for Policymakers: A Report of Working Group I of the Intergovernmental Panel on Climate Change,” p. 10. Available online at: http://www.grida.no/climate/ipcc_tar/wg1/pdf/WG1_TAR-FRONT.PDF [accessed April 25, 2006].

IV. The Precautionary Principle and Anthropogenic vs. Non-Anthropogenic Risks

The precautionary principle seems to answer this last question in the affirmative. It suggests that we give special attention to the avoidance of human-caused harm to the environment and human health: we ought to be extra-cautious in moving forward with activities that pose potential risks of this sort. Let's take the Wingspread Statement on the Precautionary Principle as an illustration of these ideas. The Wingspread Statement, a widely-cited version of the principle, was formulated at a 1998 conference convened by the non-profit Science and Environmental Health Network, with diverse participants from academia and citizens groups.

The statement reads:

“The release and use of toxic substances, the exploitation of resources, and physical alterations of the environment have had substantial unintended consequences affecting human health and the environment. Some of these concerns are high rates of learning deficiencies, asthma, cancer, birth defects and species extinctions; along with global climate change, stratospheric ozone depletion and worldwide contamination with toxic substances and nuclear materials.

We believe existing environmental regulations and other decisions, particularly those based on risk assessment, have failed to protect adequately human health and the environment - the larger system of which humans are but a part.

We believe there is compelling evidence that damage to humans and the worldwide environment is of such magnitude and seriousness that new principles for conducting human activities are necessary.

While we realize that human activities may involve hazards, people must proceed more carefully than has been the case in recent history. Corporations, government entities, organizations, communities, scientists and other individuals must adopt a precautionary approach to all human endeavors.

Therefore, it is necessary to implement the Precautionary Principle: When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically...”⁸

Let me point out a few features of the Wingspread formulation of the precautionary principle.

First, it emphasizes human-caused risks. Second, it highlights past failures to account for those

⁸ “Wingspread Statement on the Precautionary Principle” available online at the Science and Environmental Health Network website: <http://www.sehn.org/wing.html> [accessed April 20, 2006]. The statement was jointly authored by the thirty-two conference participants; they are listed at this site.

risks. Third, it emphasizes the need for protective action, even in the absence of full information. Lastly, it criticizes traditional risk assessment as deficient, on the basis that it has “failed to protect adequately human health and the environment.”

One question that advocates of the precautionary principle must face is this: on what basis is the principle superior to other responses to risk? One might grant that risks to human health and the environment have been overlooked in the past, that traditional risk assessment is overly narrow and leads to underestimation of key risks, and that protective actions are sometimes needed in the absence of full information. Even acceding these points, however, one might reject the precautionary principle. In particular, one might argue that it is irrational to place extra weight on human-caused risks to health and the environment; instead we should be concerned to minimize overall risk. On this line of reasoning, it is no worse to die of lung-cancer caused by secondhand smoke than it is to die of lung cancer caused by naturally-occurring radon: if you’re sick, you’re sick, and if you’re dead, you’re dead. If the most effective way to reduce cancer and increase life expectancy is to control nonanthropogenic sources of lung cancer rather than anthropogenic ones, we ought to focus on the former. Anthropogenic causes of harms are not necessarily worse than nonanthropogenic ones; what makes one cause worse than another is the magnitude of the harm it generates.

This objection to the precautionary principle comes from the perspective of risk tradeoff analysis (RTA), an approach developed by former Harvard School of Public Health professor John Graham⁹ and Duke environmental law professor Jonathan Baert Wiener. The overarching goal of RTA is to minimize risks, whether human-caused or not. RTA highlights the fact that controlling some risks may leave us exposed to others. Thus a single-minded focus on

⁹ Graham now serves in the Bush Administration as administrator of the Office of Information and Regulatory Affairs, Office of Management and Budget.

anthropogenic risk reduction may make us more vulnerable to nonanthropogenic risk, and focus on the prospective risks of new technologies may leave us vulnerable to risks that these technologies have the potential to reduce. As John Graham put it in a recent speech:

“[T]here are two major perils associated with an extreme approach to precaution. One is that technological innovation will be stifled, and we all recognize that innovation has played a major role in economic progress throughout the world. A second peril, more subtle, is that public health and the environment would be harmed as the energies of regulators and the regulated community would be diverted from known or plausible hazards to speculative and ill-founded ones.”¹⁰

A central worry, therefore, is that the precautionary principle irrationally focuses attention on certain classes of risks, rather than taking a broad and comprehensive view of risk reduction that considers all risks.

This is not the only response to the precautionary principle that advocates of RTA have offered, however. Jonathan Wiener (personal communication) has argued that insofar as the precautionary principle seeks to reduce overall risk, it is in line with RTA, and in fact adds nothing new to it. This is a deflationary response to precaution, suggesting that the precautionary principle is just a muddled way of advocating the very same thing that proponents of risk tradeoff analysis recommend.

V. A Dilemma for the Precautionary Principle

The RTA objections to the precautionary principle can be framed as a dilemma that goes like this:

Dilemma: The precautionary principle is either *irrational* or *empty*.

¹⁰ John D. Graham, “Information Quality and Precaution,” 2/4/2004 speech at the Toxicology Forum, Washington, D.C. Available online at Office of Management and Budget website: http://www.whitehouse.gov/omb/inforeg/speeches/040203_graham.html [accessed April 20, 2006].

First Horn: The precautionary principle is irrational.

One version of the PP demands that we place extra weight on uncertain environmental/human health harms in deciding what to do. But why should we weigh certain kinds of harms and benefits more than others? And why should we place special weight on *uncertain* harms? The rational thing to do would be to weigh all costs and benefits, with appropriate consideration of risks, and to decide on the basis of that all-things-considered calculation. In effect, the PP recommends that we irrationally overvalue environmental and human health risks associated with human activities and irrationally undervalue the potential benefits of new technologies (which may reduce risks) for human welfare.

Second horn: The precautionary principle is empty.

Suppose the defender of the PP denies the irrationality charge, arguing that the PP does not place extra weight on certain kinds of harms and benefits. Then, says the defender of RTA, the PP does not add anything new to existing approaches to decision making. The PP just instructs us to make sure to include risks to the environment and human health in our calculations. But advocates of RTA approach do not deny this: in fact considering all the risks is just what they recommend. So the PP is empty as a guide to decision making that is supposed to supplement or replace existing approaches.

Another way of summarizing this dilemma may help bring the differences between risk tradeoff analysis and the precautionary principle into focus:

Either the PP recommends straight consequentialism regarding risks, or it does not. If the PP recommends straight consequentialism, then it is no different from RTA: both approaches emphasize the minimization of risk. But if the PP does not endorse straight consequentialism, it is irrational. Thus, PP is either empty or irrational.

This encapsulation of the dilemma frames the conflict between PP and RTA 1) as a non-conflict, because the two amount to the same thing, or 2) as a conflict between consequentialist and non-consequentialist approaches to morality. I will argue below that the argument fails, however it provides a useful way of exploring what's at issue in the debate between those who advocate the PP and those who favor RTA.

VI. A Consequentialist Reply to the Dilemma

Suppose we accept the basic premise of the dilemma, that the PP is either a consequentialist approach to risk, or it is not. We can still deny the conclusion by rejecting one or both conditionals. Take the question of emptiness first. Recall that this horn of the dilemma holds that if the PP takes a consequentialist approach to risk, then it is empty in the sense that it adds nothing to, and is no different than, RTA. So the key question is this: If the precautionary principle is consequentialist, is it simply risk tradeoff analysis by another name?

Not necessarily. It is not obvious that "straight consequentialism" specifies a single approach embodied in RTA, and that all straight consequentialist approaches reduce to RTA. A lot more would have to be said to accomplish this reduction. Consequentialism, though straightforward in theory, is very complex in practice. Theoretically, straight consequentialism demands that we consider all (and only) the consequences of a potential action. But what does this mean? How are we to understand 'all the consequences'? Are we to include any consequence, however remote?¹¹ Or only direct consequences? What conditions determine whether something is to count as a consequence? Consequentialists need to take stands on these

¹¹ Graham and Wiener characterize this as the question of "how many ripples in the pool [analysts] should...investigate." See p. 21, J. Graham and J. Wiener, "Confronting Risk Tradeoffs," in John D. Graham and Jonathan Baert Wiener, eds., *Risk versus Risk: Tradeoffs in Protecting Health and the Environment* (Cambridge, MA: Harvard University Press, 1995).

issues, and in doing so, they carve out positions that may diverge from one another in important respects. Consequentialists face challenges both in defining consequences (direct vs. indirect, immediate vs. long-term, etc.) and in measuring consequences. They face problems involving future persons and possible persons¹², and of total consequences versus per capita consequences.¹³

Thus “straight consequentialism” is not as straightforward as it might seem, and any straight consequentialist approach to risk must bound its consideration of consequences. So one way to evade the conclusion of this horn of the dilemma to argue that the precautionary principle and risk tradeoff analysis are both straight consequentialist approaches – at least in the only sense practicable – but that they differently bound the consequences to be considered. The PP calls our attention to consequences and alternatives not included in traditional approaches to risk assessment.¹⁴ Precautionary approaches emphasize longer time horizons and broader effects (not just on the obvious human recipients of harm, but on nonhuman animals and plants, or diffuse effects on the environment – such as water pollution – that through complex causal chains feedback into effects on human health and wellbeing, etc.) than traditional risk assessments take into account. RTA too might be broader than traditional risk assessment, but perhaps in a different way. Advocates of RTA, for example, tend to be concerned with the ways in which

¹² How do we compare the consequences of two scenarios under which different numbers of persons exist?

¹³ Ought we, for example, maximize life expectancy, minimizing the *rate* of premature deaths or maximize the *total number* of person-years or ‘QALYs’ (quality-adjusted life years)? Graham and Wiener suggest that population size is an important factor to consider in weighing risks: for a small population, a one in a million risk of cancer is not a large worry, whereas in a large population of 200 million this risk predicts 200 cases of cancer (*Risk versus Risk*, p.31). Their analysis does not take a clear position on the questions I am considering here; instead it suggests that we ought to be concerned with the transfer of a given-level risk from a small group to a large group. In a constant population, both the per capita consequences and total consequences approaches would agree that such risk transfers are inadvisable. The approaches diverge in cases where different scenarios generate different population sizes and different risk exposures for those populations.

¹⁴ For a discussion of how precaution recommends broader consideration of alternatives than risk assessment, see Mary O’Brien, “Alternatives Assessment: Part of Operationalizing and Institutionalizing the Precautionary Principle,” in C. Raffensperger and J. Tickner, eds. *Protecting Public Health and the Environment: Implementing the Precautionary Principle* (Washington, D.C.: Island Press, 1999).

regulation can fail by shifting risks from one realm to another, or by foregoing benefits when a new technology is blocked.¹⁵ RTA draws attention to the downsides of reducing a target risk,¹⁶ and to the potential positive effects of innovation, making special efforts to incorporate those effects. Proponents of RTA also might take a more optimistic view of the availability of remediation for the indirect harms that concern proponents of the PP. For example, advocates of RTA might be more sanguine about the ability of ecological systems to accommodate human-induced change, or weigh less heavily consequences to the non-human environment, than advocates of the PP.

So there is at least a *prima facie* case that both the PP and the RTA approach could be consequentialist without reducing to the same thing. One reply to the dilemma therefore suggests that the PP is consequentialist, but not empty in relation to RTA, because the PP differently bounds consideration of consequences. I haven't fully articulated this reply here, and doing so would require much more detailed specification of the two positions. However I do think there is a good case to be made that the PP could be broadly consequentialist and nonetheless avoid reducing to RTA.

Yet my central concern in this paper is with the possibility that the PP is *not* straightforwardly consequentialist, which brings us back to the other horn of the dilemma and the charge of irrationality. If the PP *does* have non-consequentialist elements, is it necessarily irrational? On one hand, the suggestion sounds plausible: consequentialism is a well established approach to policy analysis, and it seems almost impossible to deny that environmental policies

¹⁵ See J. Graham and J. Wiener, "Confronting Risk Tradeoffs," pp. 1-41 in John D. Graham and Jonathan Baert Wiener, eds., *Risk versus Risk: Tradeoffs in Protecting Health and the Environment* (Cambridge, MA: Harvard University Press, 1995).

¹⁶ See, for example, George M. Gray and John D. Graham, "Regulating Pesticides," pp. 173-192 in John D. Graham and Jonathan Baert Wiener, eds., *Risk versus Risk: Tradeoffs in Protecting Health and the Environment* (Cambridge, MA: Harvard University Press, 1995).

should aim to produce the best consequences overall, to maximize human welfare and minimize environmental damage. Yet consequentialism is not unassailable. Moral philosophers have long been divided over the merits of the approach. In addition to its practical difficulties, there are many theoretical objections to consequentialism,¹⁷ and there are, for example, deontological alternatives. So even if it turns out that the PP is not fully consequentialist, it may nonetheless represent a rational and justifiable approach to environmental policy. In the next section, I explore the possibility that the PP has a deontological component, and specifically that this deontological component is tied to some version of the distinction between doing and allowing.

VII. A Second Reply: The Distinction Between Anthropogenic and Nonanthropogenic Risk

There is at least one important respect in which risk tradeoff analysis and the precautionary principle differ, and this difference suggests that whereas RTA is fully consequentialist, the PP is not. The difference lies in the two approaches' respective treatment of anthropogenic versus non-anthropogenic risks. The precautionary principle stresses the dangers of *human* activities and *human*-caused environmental harm, while RTA tends to downplay the anthropogenic/non-anthropogenic distinction, instead emphasizing *overall risk* and highlighting countervailing benefits of certain "harmful" human activities, such as the generation of particulate pollution. In a discussion of global environmental protection, for example, Jonathan Wiener argues that particulate pollution may not be an unmitigated environmental "bad," since the sulfur pollution produced by burning coal reflects solar radiation away from the earth,

¹⁷ For discussion of some of these objections, see Samuel Scheffler, ed., *Consequentialism and its Critics* (New York: Oxford, 1988). The deontological justifications for the precautionary principle that I develop below focus on two areas – fairness and moral agency – that utilitarianism allegedly treats poorly.

mitigating the warming effect of greenhouse gases.¹⁸ Similarly, Wiener argues that low-level ozone – the main ingredient in urban smog – may have a beneficial effect in shielding people from cancer-causing UV radiation, despite the damage it causes to the respiratory system, to forests, and to agricultural production.¹⁹ He writes,

“At least some locales will need to face the question whether the protection from UV (and the attendant risks of cancer, immune disorders and other maladies) that is afforded by ground-level ozone could make it worthwhile to tolerate the increased lung, crop, and forest ailments.”²⁰

Wiener’s analysis places little weight on the distinction between anthropogenic and non-anthropogenic risk. This is illustrated by the fact that he treats anthropogenic risks and anthropogenic benefits symmetrically: a ‘harmful’ human activity may be acceptable or desirable if it generates side benefits that outweigh the harm. For example, Wiener’s discussion of global climate change highlights not only the risks of anthropogenic climate change to human health and the environment, but also the potential benefits. Wiener notes, for example, that climate warming may have beneficial effects on agricultural production in certain parts of the world, and that preventing global warming may expose us to risks associated with natural climate cooling.²¹

Summarizing his discussion of climate change, he comments:

“As for the choice between a warmer world and a colder world, RTA suggests that the goal should not be framed in terms of a “stable climate”... We know that the earth’s climate varies perpetually and considerably, even on human time scales... mostly for reasons that humanity appears powerless to control... Perhaps a better formulation would be to manage our own emissions of trace gases toward an “optimal anthropogenic contribution” or an “optimal atmospheric composition.” Then, given the constant dynamism of the climate and the importance of short-term as well as longer-term climate variations to human welfare, a key goal should be increasing the ability of societies to adapt to changing climate.”²²

¹⁸ J. B. Wiener, “Protecting the Global Environment,” pp. 193-225 in in John D. Graham and Jonathan Baert Wiener, eds., *Risk versus Risk: Tradeoffs in Protecting Health and the Environment* (Cambridge, MA: Harvard University Press, 1995), p. 212.

¹⁹ *Ibid.*, p. 197.

²⁰ *Ibid.*, p. 197.

²¹ *Ibid.*, pp. 206-208.

²² *Ibid.*, pp. 222-223.

There are numerous points at which one might object to this view. It is strongly anthropocentric, for example, and highly optimistic about our ability to understand and control our emissions in ways that contribute to “optimal atmospheric composition.” In addition, and in keeping with its anthropocentrism, it gives no consideration to the ability of non-human life to adapt to climate change (though Wiener later acknowledges that this is a liability associated with the recommendation). However I do not wish to dwell on these issues here; instead I want to contrast Wiener’s approach with the precautionary approach, with its particular emphasis on anthropogenic risk.

The precautionary principle, I have suggested, may be understood as having a deontological element, and specifically an element tied to the distinction between doing and allowing. Evidence for this connection comes from various formulations of the principle, which emphasize *proposed human activities* that pose risks and recommend shifting of the burden of proof from the regulator (e.g., the government) to “*the hazard creator*.”²³ Clearly, the burden of proof requirement makes sense only if the hazard creator is an *agent* of some sort: the natural environment cannot be asked to refrain from operating in a certain way until it demonstrates the lack of risk associated with such operations. Thus, formulation of the precautionary principle calls particular attention to the wrongness of *doing harm* to human health or the environment. It is not formulated in such a way as to prohibit the *allowing* of harm. So for example, the precautionary principle does not demand that individuals, corporations, or governments take special precautions to protect people or the environment from naturally-occurring risks. Only if

²³ Emphasis added. See United Kingdom Interdepartmental Liaison Group on Risk Assessment (UK-ILGRA) website, “The Precautionary Principle: Policy and Application,” available online at: <http://www.hse.gov.uk/aboutus/meetings/ilgra/pppa.htm> [last updated 11/22/05, accessed 4/22/06].

an *activity* of one of these parties would increase risk exposure does the PP come into play. So, for example, if a town decided to build a poorly-ventilated school in a high-radon area, thereby exposing schoolchildren to high levels of radon and elevated risks of lung cancer, then the PP would kick in; but the PP doesn't directly demand that municipalities protect people from natural hazards. In instances where DDT application is suggested as a control measure for malaria, the precautionary principle would recommend an assessment of less-toxic alternatives to DDT and – if DDT is used – the employment of precautionary measures to limit risks to human health and the environment. However the precautionary principle doesn't seem to mandate any particular action to control malaria, at least insofar as malaria is not human-caused.²⁴

In some situations, this asymmetry seems to make sense. We can't reasonably expect others to protect us from all the natural risks in the world; a morality that required this would be overly demanding. But in other situations, the asymmetry seems odd: for isn't it just as unconscionable to let children die of malaria without any preventative intervention as it is to harm humans or the environment through the use of DDT?

This brings a number of critical questions into focus: What kind of justification might there be for the asymmetrical treatment of human-caused versus “natural” (non-anthropogenic) risk? Why place extra emphasis on human-caused risks, when people face all sorts of serious threats to their health and well being from natural pathogens and natural disasters? Why not simply take the most effective means to minimize risks overall, whatever their sources?

²⁴ This case (like so many) is a complex one, since the prevalence of malaria itself may be significantly influenced by human activities. Recent research suggests that malarial mosquitoes may thrive in deforested and human-disturbed areas. See, for example, Jonathan A. Patz, Peter Daszak, Gary M. Tabor, A. Alonso Aguirre, Mary Pearl, Jon Epstein, Nathan D. Wolfe, A. Marm Kilpatrick, Johannes Foufopoulos, David Molyneux, David J. Bradley, and Members of the Working Group on Land Use Change, “Unhealthy Landscapes: Policy Recommendations on Land Use Change and Infectious Disease Emergence,” *Environmental Health Perspectives* 112 no. 10 (July 2004): 1092–1098.

One reply offered by proponents of the precautionary principle follows:

“We must deal with the hazards *for which we are responsible* and *over which we have control*. Those creating risk and benefiting from their activities also have *an obligation not to cause harm*. But an important reason for precaution is that we do not yet know, and may never know, the full extent of the harm caused by human activity. Some violent natural events, for example, may be a result of global warming, which in turn is linked to human activity.”²⁵ (emphases added)

On the view expressed here, the precautionary principle emphasizes avoidance of 1) harms we cause (or are considering causing) and 2) harms we can control. The first category of harms is the category stressed by the doing-allowing distinction, which instructs us to be more concerned about what we do than what we allow. The second category of harms, however, is *not* enshrined in the doing-allowing distinction. In fact examples of the distinction often attempt to hold this second variable relatively constant, comparing situations in which a doing and an allowing are similarly straightforward to control. These examples draw on cases where it is quite easy to save someone from death – the saving is fully controllable by the agent – to show that the moral difference-maker is *causation* rather than *ability to control*. In the case of the emergency room doctor above, the doctor who calmly finishes his cigarette while the heart attack victim dies potentially has quite a bit of *control* over whether the patient lives or dies, but he (arguably) does not directly *cause* the death, in contrast to his murderous counterpart who stabs the patient.

It is frequently the case that we can *control* both anthropogenic and non-anthropogenic risks. In fact, in some instances it may be easier to control the latter, and it is arguably the case that there is no robust correlation between a risk’s controllability and its being human-caused. (That is, it is not consistently true that we can control the risks that we cause, or that we cannot

²⁵ Joel Tickner, Carolyn Raffensperger, and Nancy Myers, *The Precautionary Principle in Action: A Handbook* (Science & Environmental Health Network, 1998) available online at www.sehn.org/rtfdocs/handbook-rtf.rtf [accessed April 19, 2006].

control the risks we do not cause.) So although it may make sense to focus our energies on risks we can control (lest we exert effort to no good effect), this itself provides insufficient justification for focusing on anthropogenic risks.

Even if human-caused risks are not more controllable than natural risks, however, there may be important reasons to pay special attention to risks that we cause. I want to call attention to two kinds of reasons: reasons tied to common conceptions of moral responsibility, which are of a deontological hue, and rule-consequentialist reasons based in empirical generalizations of the nature of anthropogenic versus nonanthropogenic risks.

Deontological Reasons for Precaution in Relation to Anthropogenic Risks

Fairness

One reason why we might be especially concerned about human-caused risks is because these risks can be the source of unfairness. Fairness is fundamentally tied to questions of equality, equity, and distribution. It is unfair if Susan's little brother Tom eats the whole cake, for example, leaving her none, because Tom has taken more than his share. Shares of the cake should be apportioned *equitably*. Similarly, in the environmental arena, it is unfair if we disproportionately burden poor and minority communities with pollution and toxic waste. Although fairness may not require absolute equality in share of a particular harm or good, on common conceptions, fairness requires that distributions reflect equal moral consideration for all persons.

The introduction of anthropogenic risks raises questions of fairness because such risks are rarely distributed equally. For example, risks associated with the use of pesticides on agricultural crops fall disproportionately on farmworkers exposed to these chemicals in the fields; the risks associated with lead paint fall disproportionately on the young, who are both

more sensitive to the effects of lead and more likely to ingest lead-laden dust and paint chips. Human activities that introduce health and environmental risks therefore may generate unfairness, *even if these activities reduce overall risk*. Thus issues of fairness are not well accounted for by straight consequentialism, which is the source of the well known critique of utilitarianism on grounds that it fails to account adequately for the distribution of consequences.

So one rationale for the precautionary principle's emphasis on anthropogenic risks rests on concerns about fairness. Even if a particular human activity promises to reduce risk in the aggregate, it may unfairly shift risks from one population to another. What's more, the activities of profit-driven organizations (manufacturers, corporations, etc.) in general will tend to transfer risks from the wealthy to the poor. Corporations make profits by creating products consumed by those who can afford to buy them; thus economic incentives motivate corporations to generate benefits for the wealthy, sometimes at the expense of the poor. The distribution of disease research and drug development, for example, is strongly skewed toward diseases that affect the wealthy, while diseases like malaria, endemic in less-developed countries, receive relatively little attention.²⁶ With respect to the environment, similar incentives exist: recall Lawrence Summers' infamous memo about the economic benefits of sending toxic waste to the Third World.²⁷ Perhaps Summers' approach would be economically efficient. One might even imagine (though I doubt that it is true) that this approach would reduce the overall risks to human health and the environment, and hence be favored by consequentialism. But neither maximization of economic efficiency nor minimization of aggregate risk can ensure that an action or policy is *fair*. So

²⁶ Michael R. Reich, "The Global Drug Gap," *Science* 287 (March 17, 2000): 1979-1981.

²⁷ "Furor on Memo at World Bank," *New York Times*, Feb. 7, 1992. Article available online at: <http://query.nytimes.com/gst/fullpage.html?res=9E0CEEDC1430F934A35751C0A964958260&n=Top%2fReference%2fTimes%20Topics%2fPeople%2fS%2fSummers%2c%20Lawrence%20H%2e> [accessed April 28, 2006]. The memo notoriously notes: "A given amount of health-impairing pollution should be done in the country with the lowest cost, which will be the country with the lowest wages," and "I think the economic logic behind dumping a load of toxic waste in the lowest-wage country is impeccable and we should face up to that."

insofar as the precautionary principle targets the activities of profit-driven corporations or other similarly biased actors, precaution may be justified as an important check on the incentives for unfair risk transfers.

The precautionary principle targets *anthropogenic* risks in particular because these are the kinds of risks that generate unfairness. Natural risks²⁸ may be distributed unevenly, but we typically don't say that this is unfair, except in an attenuated sense. We might say that it is in some sense unfair that one child has diabetes while his sibling does not, but if the diabetes is the result of bad luck in the genetic lottery, then we don't really think of it as *unfair*, just unfortunate. Of course we ought to do what we can to help the child, but no one has *wronged* him; there is no one to blame or hold responsible for his having diabetes while his sibling does not. We accept a certain amount of unevenness in the distribution of good and harms as inevitable, and while we feel obligated to aid those who suffer unduly, we don't generally regard our help as a demand of fairness, at least not in the paradigmatic sense.

A concern with fairness generates obligations over and above those related to consequences alone. Questions of fairness share in the intuition underlying the doing-allowing distinction, that causing harm is worse than allowing it. In the case of the precautionary principle, fairness and the doing-allowing distinction suggest that we are more responsible for redistributions of risk that we cause than uneven distributions of risk that we allow. The precautionary principle therefore calls special attention to human activities with the potential to change the distribution of risks to human health and the environment.

²⁸ For the purposes of this paper, I use 'natural risks' and 'nonanthropogenic risks' synonymously. This is not intended to deny conceptual difficulties in defining and delineating the natural, or contrasting the 'natural' and the 'unnatural'. Although I think it would be interesting to examine more closely the grounds for calling nonanthropogenic risks 'natural,' to do so here would take me much too far afield.

Moral Agency

The fairness rationale for an emphasis on anthropogenic risk thus ties back into the doing-allowing distinction in an important way. However there is a second, more general rationale for the precautionary principle's focus on anthropogenic risk that involves the fundamental conditions of moral agency.

In a recent article, Samuel Scheffler argues that something akin to the doing allowing distinction is critical to the practice of moral responsibility. Although he acknowledges that the distinction comes in diverse forms, all forms require that we differentiate "cases in which our agency is implicated in a primary way and cases in which it is implicated only secondarily, if at all,"²⁹ and they do so on grounds the questions of agency are fundamental in assigning moral responsibility. This view clearly departs from straight consequentialism, since according to straight consequentialism, it doesn't matter who does what, so long as good consequences are maximized.

Scheffler claims that the very basic practice of holding one another responsible requires the doing-allowing distinction, or something akin to it. Let me explain a bit more clearly why this is true. Take the simple example of holding oneself responsible for one's actions. To hold oneself responsible, one must hold oneself to certain normative standards and judge one's actions according to whether these normative standards are met. This involves picking out oneself and one's activities as the objects of judgment, giving special weight to one's own activities as opposed to those of others, or as opposed to events that merely happen without being caused by any moral agent. In the absence of this special weighting, says Scheffler, we could not truly hold ourselves responsible. The special weighting, however, amounts to invoking some version of the doing-allowing distinction, and in turn, rejecting straight consequentialism. Consequentialism

²⁹ Samuel Scheffler, "Doing and Allowing," *Ethics* 114 (January 2004): 215-239, p. 216.

fails to make sense of moral responsibility, because as consequentialists we would have to treat all our actions as merely instrumental in the achievement of some kind of overall good. If the achievement of overall good would be favored by my harming another person, for example, then this is what I ought to do. But this is in tension with my holding *myself* responsible, paying particular attention to *my own actions* as the objects of judgment. As Scheffler explains:

“There is an instability in this...position, for [it forces a person to think] both that the distinction between primary and secondary manifestations of his [or her] agency is normatively significant and that the distinction is not significant.”³⁰

From the perspective of personal responsibility, explains Scheffler, the distinction matters; but from the perspective of the substantive normative requirements of consequentialism, it does not. Scheffler doubts whether this position can be stable, in particular because it seems to undermine very basic and fundamental elements of moral practice: it would, for example, undermine an individual's ability to object to being harmed by another, making the 'right' not to be harmed contingent on questions of overall consequences. It would undermine the function of reactive attitudes like moral indignation, instructing us to treat such attitudes themselves as justified only insofar as they optimize overall consequences. Thus it would only be appropriate for you to resent someone's cruelty if this resentment served to increase the aggregate good; resentment would not be a morally justified response to the experience of cruelty (or even to cruelty that reduced aggregate utility). But holding resentment hostage to its effect on aggregate utility denies the importance of individuals as moral subjects and makes resentment into something alien. One might even argue that if 'resentment' is beholden to consequentialist standards, then it is not really resentment anymore; we have changed the subject.

³⁰ Scheffler, p. 228.

Considerations of fairness and moral agency thus help to explain and justify the precautionary principle's emphasis on human-caused risk. While we can acknowledge the value of reducing risk to human health and the environment generally, we have special reason to take seriously our own contributions to these risks and to hold others particularly responsible for their contributions. The precautionary principle asks the proponents of particular activities to give special consideration to the potential harms these activities might cause, and to make an effort to minimize the risks of these harms. This is not to say that we should be unconcerned about nonanthropogenic risks, although these are not the particular focus of the precautionary principle. The doing-allowing distinction doesn't justify inattention to our allowings; it merely calls special attention to our doings.³¹ We need remain vigilant "to the responsibilities of causal position"³² – which include responsibilities to control nonanthropogenic risks to the environment and human health – while at the same time being especially cognizant of the risks that we generate through our own activities.

Rule-Consequentialist Justifications for Precaution in Relation to Anthropogenic Risk

I have described two deontological justifications for the precautionary principle's weighting of harms that are human caused as compared to those not so caused. These justifications both rest in some sense on the doing-allowing distinction, and the idea that we have greater moral responsibility for courses of events we initiate than those we do not. There are other justifications for distinguishing anthropogenic from nonanthropogenic risks that rest on empirical generalizations about the nature of such risks. We might call these rule-consequentialist justifications, because they hold that a general rule like the precautionary

³¹ Scheffler, p. 238.

³² Scheffler, p. 238.

principle, which emphasizes anthropogenic risk, is utility promoting due to empirical generalizations about anthropogenic risks. Rather than evaluate each risk independently as an act-consequentialist framework would recommend, we can identify special categories of risks that deserve particular attention, because in general, increased attention to these sorts of risks plays an important role in reducing risk overall.

I mentioned and rejected one rule-consequentialist justification above, specifically a justification holding anthropogenic risks are more controllable than nonanthropogenic ones. Although I argued that this generalization is false, it is true that the introduction of *new* anthropogenic risks may be easier to control than the introduction of new nonanthropogenic ones, and the precautionary principle targets new anthropogenic risks associated with the introduction of new activities or products. One argument for this idea goes like this: Whereas we often may be forced to take a reactive stance toward nonanthropogenic risks – many of which we cannot easily predict – anthropogenic risks should be more predictable and hence more controllable, and the precautionary principle calls our attention to this fact. For example, one might think that the FDA approval process for new drugs makes it possible to identify in advance many of the risks associated with such products, and that we can straightforwardly control whether we introduce such risks by either allowing or prohibiting a drug from reaching the market. So although not sufficient to fully justify the precautionary principle, the idea that new anthropogenic risks are more controllable than new nonanthropogenic risks might provide some support for it.

There is a second justification for the precautionary principle that also rests on an empirical generalization, which I call the Anthropogenic Cascades Principle:

Environmental changes that humans cause are worse – that is, they have worse effects, or are more dangerous – than nonanthropogenic (or ‘natural’) environmental changes.

If the ACP is true, then it gives us reason to take special precautions to avoid anthropogenic risk. In the case of climate change, the Anthropogenic Cascades Principle suggests that in the absence of human intervention, the climate would remain relatively stable, and the planet would remain habitable for humans and the diverse species that currently live on Earth. It is human beings’ dangerous meddling that threatens to create disequilibrium by setting off a series of anthropogenic cascades leading to the unraveling of processes that maintain a stable climate. As a general rule or law of nature, the anthropogenic cascades principle is clearly false: sometimes natural environmental changes are catastrophic, and nature is far from stable. For example, evidence suggests that natural climatic shifts may have played an important role in triggering extinctions events during the Earth’s history.³³ Nevertheless it is true that in many cases human “interference” has changed ecological processes at a particularly rapid rate, and that rapid changes tend to disrupt ecosystems more than gradual ones due to the fact that many organisms evolve relatively slowly and can adapt to changes over generations but cannot easily adjust to radical environmental shifts within their lifetimes. So the Anthropogenic Cascades Principle, though far from exceptionless, may be useful as a rule of thumb, and as such, may lend support to the precautionary principle.

VIII. Evaluating Doing, Allowing, and Precaution

I have elaborated two types of justifications for the precautionary principle’s emphasis on anthropogenic risk. The first set of rationales rests on the connection between causation and moral responsibility; the second set of rationales rests on empirical generalizations about the nature, consequences, and controllability of human-caused versus natural risks.

Both types of justification require the ability to distinguish anthropogenic from nonanthropogenic risk. The rationales discussed above suggest that as compared to anthropogenic risks, natural risks: 1) are not the primary targets of moral responsibility, 2) do not generate unfairness, 3) are hard to control, and 4) are relatively benign. However in addition to the problems I have identified with 3 and 4, there is a more systemic difficulty that proponents of

³³ T.J. Crowley and G.R. North, “Abrupt Climate Change and Extinction Events in Earth History,” *Science* 240 no. 4855 (May 20, 1988): 996-1002.

the precautionary principle need to address. Specifically, the distinction between anthropogenic and nonanthropogenic risks is growing increasingly difficult to draw as humans beings' causal influence and causal capability grows.

We see intimations of this fact in a passage already quoted above:

“But an important reason for precaution is that we do not yet know, and may never know, the full extent of the harm caused by human activity. Some violent natural events, for example, may be a result of global warming, which in turn is linked to human activity.”³⁴

This suggestion is a bit paradoxical. On the one hand, it suggests that we ought to be extra-cautious to prevent harm caused by *our* activities. But on the other hand, it seems to weaken the distinction between *harm caused by our activities*, and *harms caused by natural events*, by suggesting that our activities may – through complex causal pathways of which we are unaware – cause harmful “natural events.” But if the precautionary principle invites us to treat natural events as events we (perhaps) caused and hence for which we are responsible, then it begins to collapse the distinction between anthropogenic and nonanthropogenic risks and harms, moving us toward a position in which we view ourselves as equally responsible for all harms. But this is exactly the sort of position that risk-tradeoff analysis recommends, and that proponents of the precautionary principle have in general been inclined to reject.

It seems to me that the precautionary principle requires some sort of distinction between anthropogenic and nonanthropogenic risk, and between natural baselines and their modification by us. The idea that there is some kind of natural equilibril baseline, and that such natural equilibria are good, has been under assault in recent decades. Ecologists have grown critical of traditional views of the ‘balance of nature’ and now emphasize the roles of natural disturbance and dynamism in ecological systems.³⁵ This, in conjunction with evidence that apparent ‘natural baselines’ and ‘background conditions’ have been substantially shaped by human beings in the past,³⁶ calls into question the anthropogenic/nonanthropogenic distinction on which the precautionary principle rests. If the background distribution of environmental goods and harms is not ‘natural’ but rather caused by us, then why should it *not* be scrutinized on grounds of

³⁴ Joel Tickner, Carolyn Raffensperger, and Nancy Myers, *The Precautionary Principle in Action: A Handbook* (Science & Environmental Health Network, 1998) available online at www.sehn.org/rtdocs/handbook-rtf.rtf [accessed April 19, 2006].

³⁵ Daniel Botkin, *Discordant Harmonies: A New Ecology of the Twenty-First Century* (New York: Oxford University Press, 1992).

³⁶ See Botkin, *Discordant Harmonies*.

fairness? And even if this distribution was not historically under human control, does it not become an issue of fairness and the subject of moral responsibility once we have the capacity to control it, and once we begin to exercise such control?

These issues are not unique to the environmental realm. Similar questions arise in relation to advances in biotechnology. We historically took individuals' genetic endowments as given, not a good in whose distribution we had any say. However we have increasing capacity to shape the genetic makeup of individuals, and derivatively, of populations. Once we develop the technological capacity to conduct prenatal gene therapy to prevent Type 1 diabetes, for example, can we really cordon off the distribution of genetically-based disease from considerations of fairness? These sorts of questions have been of central concern to bioethicists such as Allen Buchanan, Dan Wikler, Norm Daniels, and Dan Brock, who argue that greater causal power leads to greater causal responsibility, requiring that we redraw the boundaries of fairness, as we move from "chance" to "choice."³⁷

Some similar redrawing may be needed in relation to environmental risk and environmental harm. I have argued that there are some potentially important reasons for the precautionary principle's distinction between anthropogenic and non-anthropogenic risk. Yet the distinction between what we cause and what we do not cause grows blurrier by the year, as human beings shape to an ever-greater degree flows of nutrients and energy, the composition of the atmosphere, and the distribution of plants and animals on Earth.³⁸ The precautionary principle seems a reasonable approach to adopt, insofar as it calls our attention to important asymmetries between anthropogenic and non-anthropogenic risks. But the principle itself does not always clearly articulate the nature and moral significance of these asymmetries, nor does it grapple directly with the challenges posed by the blurring of the distinction between what we do and what we allow.

Even in the face of "discordant harmonies," my sense is that we have reason to maintain a distinction. For example, insofar as we are able, I believe we ought to distinguish between human-caused extinctions and those not caused by us, and treat the former as morally worse. But in many instances, what we ought to do, and what counts as anthropogenic disturbance is far

³⁷ A. Buchanan, D. Brock, N. Daniels, and D. Wikler, *From Chance to Choice: Genetics and Justice* (New York: Cambridge University Press, 2000).

³⁸ See Peter Vitousek, "Beyond Global Warming: Ecology and Global Change," *Ecology* 75 no. 7 (1994): 1861-1876 for detailed discussion. Vitousek notes, for example, that "the global [nitrogen] cycle has reached a point where more nitrogen is fixed annual by human-driven processes than by natural processes" (p. 1865).

from clear. Is weed removal an anthropogenic disturbance and a doing, subject to high standards of precaution, because it involves human action to control plant community composition? Or is it in some sense merely an allowing, a removal of past human influence that permits the native plants to flourish, and hence deserving of weaker scrutiny? How are we to approach ‘corrective’ or ‘restorative’ actions in cases where ‘baseline’ conditions are the result of past human influence?

These are just a few examples of the difficult questions we face as our causal powers grow. I do not yet have answers to these difficult questions, but they are questions with which advocates of the precautionary principle and others who want to maintain a distinction between anthropogenic and nonanthropogenic risk will have to grapple. There is something disturbing about the prospect of our deciding what constitutes an “optimal climate” and of controlling our emissions accordingly, and something uncomfortable about valuing smog because it reduces the incidence of skin cancer. But there is also something intuitively sensible about the approach of risk tradeoff analysis, which suggests that we attend both to target risks and countervailing risks.

Perhaps some of our discomfort (if indeed we find it a source of discomfort) with RTA arises from the fact that this approach fails to acknowledge the value of the world *as we find it*. Although in principle RTA can consider risks to nonhumans as well as risks to human life and welfare, in practice, the approach seems deeply anthropocentric. It does not presuppose that the ‘natural’ (current or historical) distribution of risks and benefits is acceptable or good. Instead it puts the burden upon us to define and quantify risks, and to calculate the best means to minimize them. RTA seems to demand too much of us: it makes us responsible for every facet of the way the world is. The responsibility is weighty, and daunting. I don’t know that we should accept it: but as our causal influence continues to grow, it becomes a responsibility increasingly difficult to evade, and increasingly difficult for our traditional moral concepts – of agency, responsibility, and the distinction between doing and allowing – to handle.