

A Core Precautionary Principle*

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[T]he Precautionary Principle still has neither a commonly accepted definition nor a set of criteria to guide its implementation. 'There is,' Freestone . . . cogently observes, 'a certain paradox in the widespread and rapid adoption of the Precautionary Principle:' While it is applauded as a 'good thing,' no one is quite sure about what it really means or how it might be implemented. Advocates foresee precaution developing into 'the fundamental principle of environmental protection policy at [all] scales.' . . . Sceptics, however, claim its popularity derives from its vagueness; that it fails to bind anyone to anything or resolve any of the deep dilemmas that characterize modern environmental policy making.¹

IN the recent history of international environmental policy and law, a fundamental new general principle has emerged: the Precautionary Principle. The Precautionary Principle has been particularly influential amongst policy makers concerned about the possibility of major human impacts on the global environment. But it remains ill-defined, and its philosophical reputation is low. In particular, the recent literature tends to distinguish between weak and strong versions of the principle, and to regard the first as vacuous and the second as extreme, myopic and irrational.

This paper tries to do better for the precautionary approach. The first half introduces the problems faced by the precautionary principle by providing a (partial) sketch of the recent debate in environmental policy. In Sections I–III, I explain the initial motivation behind the precautionary approach, and how this has left the approach both underdeveloped and open to extremist interpretations. In Sections IV–VI, I review some recent attempts to fill in the precautionary principle and argue that these are unsatisfying, typically because they leave the principle playing too limited or too partisan a role in deliberation.

In the second half of the paper, I consider an alternative way of developing the precautionary approach. The basic idea is as follows. One motivation for

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¹Jordan and O'Riordan 1999, p. 22.

precaution is the thought that there are core cases where precautionary measures are warranted. Suppose that it could be shown that these cases satisfy a set of reasonable and intuitive criteria. Then one might use these criteria to identify a core form of the precautionary principle by employing them as a set of limiting conditions on its application. We might call such a principle a “Core Precautionary Principle” (CPP). Perhaps such a principle might then serve as an anchor for the precautionary approach more generally.

The basic idea might be developed in a number of different ways. But in Sections VII–XI, I illustrate its promise through an exploration of one candidate set of criteria—John Rawls’s conditions for the application of a Maximin Principle. First, I show how a Rawlsian Core Precautionary Principle (RCPP) escapes the standard objections. Second, I claim that the RCPP allows us to make sense of some of the debate about precaution in controversial areas such as climate change and genetically modified foods. Opponents of precaution in such areas are, I suggest, not so much rejecting this version of the precautionary principle as claiming that it does not apply. Hence, resistance to the precautionary principle on theoretical grounds is an unnecessary distraction. The real issues are elsewhere.

Before I begin, I want to issue an important cautionary note about the scope and limitations of the present piece. The main aim of the paper is simply to sketch out the logical space for an interesting and functional form of the precautionary principle, and so neutralize some common objections to it. There is no attempt to offer a full defense of either core precautionary principles as such, the RCPP in particular, or the precautionary principle understood more broadly. The point of the paper is merely to show that the possibility of such defenses is worthy of further investigation.

There are two reasons for this limitation. The first is practical. The paper hopes to further debate within environmental politics, and so is intended primarily for an interdisciplinary, policy-oriented audience. Hence, it omits some of the more technical philosophical discussion that would be appropriate to a full defense. The second reason is more substantive. Dealing with the common objections will certainly not silence all potential critics of the precautionary principle. On the contrary, the introduction of a CPP raises new complexities. Since these may give rise to further, more serious, worries about the precautionary approach, the present contribution is intended as a beginning, not the end, of a debate about the place of the precautionary principle in environmental policy-making.

I. BACKGROUND

Considered as an explicit environmental principle in its own right, the precautionary principle is usually said to have emerged during the early 1970’s

from the German notion of “Vorsorge.”² The exact characterization of the principle is controversial, and we will have reason to consider it in more detail shortly. But for present purposes, we can get a basic impression of it from one widely-cited statement:

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.³

Principles of this general form are prominent in a number of international treaties and regional policy statements. For example, versions appear in the UN Framework Convention on Climate Change (1992), the Third North Sea Conference (1990) and the Ozone Layer Protocol (1987). Precautionary approaches are also endorsed by major institutions, such as the UN Environment Program (1989), the EU in its environment policy (1994) and the US President’s Council on Sustainable Development (1996).⁴

The widespread endorsement of the precautionary principle is motivated in large part by the idea that orthodox approaches to environmental management—based heavily on risk assessment and cost-benefit analysis (CBA)—are deeply flawed. Critics attack these practices on two fronts. From a practical point of view, they are said to have produced and promoted ineffectual environmental policies.⁵ Critics claim that this is because they set the burden of proof for regulation too high and in the wrong place: they assume that a new product or process is “innocent-until-proven-guilty.” From a theoretical perspective, there are said to be several problems. For one thing, the usual practices presuppose that humans are presently in a position to “fully understand the impacts of their activities on the environment and establish levels of insult at which the environment or humans [can] rebound from harm.”⁶ But this is not true, especially given the extreme complexity of ecological systems.⁷ For another, they

²“Vorsorge” means “foresight” or “taking care;” the “Vorsorgeprinzip” is the “foresight principle.” At the core of early conceptions of this principle in Germany was the belief that society should seek to avoid environmental damage by careful “forward-looking” planning, blocking the flow of potentially harmful activities. The Vorsorgeprinzip has been invoked to justify the implementation of vigorous policies to tackle river contamination, acid rain, global warming and North Sea pollution. See Raffensberger and Tickner 1999b, p. 4.

³Wingspread Statement 1998.

⁴Raffensberger 1999.

⁵For example, the Wingspread Statement (1998) declares that “existing environmental regulations and other decisions, particularly those based on risk assessment, have failed to adequately protect human health and the environment, as well as the larger system of which humans are but a part.”

⁶Raffensberger and Tickner 1999b, p. 2.

⁷Soule points out that despite the fact that Robert Shapiro, the CEO of Monsanto, is “perhaps the most passionate proponent” of genetically-modified food crops, he warns: “when you start talking about large-scale introduction of dramatic traits in combination with each other, you are dealing with systems that are so complicated that no one can effectively model them. You can start with running field trials, just as when you introduce a new drug you run clinical trials to see if people really keel over. But, just as the human body is a subtle and complicated thing, it may be that only one time in a million some side effect happens” (Soule 2000, p. 311).

assume that the issues involved are purely technical and scientific. But defenders of the precautionary principle claim:

The risk assessment process . . . is as much policy and politics as it is science. A typical risk assessment relies on at least 50 different assumptions about exposure, dose-response, and relationships between animals and humans. The modeling of uncertainty also depends on assumptions. Two risk assessments conducted on the same problem can vary widely in results.⁸

So, proponents of the precautionary principle argue that a new approach to environmental regulation is needed with the precautionary principle at its heart.⁹

II. BASIC CHARACTERISTICS

The formulations of the precautionary principle found in international agreements and policy statements are far from uniform. But its proponents claim that they share a common core. For example, Carol Raffensberger and Joel Tickner suggest:

In its simplest formulation, the precautionary principle has a dual trigger: If there is a potential for harm from an activity and if there is uncertainty about the magnitude of impacts or causality, then anticipatory action should be taken to avoid harm.¹⁰

The dual trigger characterization suggests that the precautionary principle has three important components:

- Threat of harm
- Uncertainty of impact and causality
- Precautionary response

But these components raise several important questions of interpretation. Most obviously:

- What counts as a threat of harm? Is any potential harm, no matter how small, sufficient to trigger the precautionary principle?
- How does uncertainty figure into this? Is any level of uncertainty sufficient to trigger the principle, or only a high level? Is there any level of uncertainty which would be so great that the principle would be unreasonable?
- What counts as a precautionary measure? Crossing one's fingers? Warning people of the threat? Taking measures to reduce impact of the effects? Taking

⁸Raffensberger and Tickner 1999b, p. 2.

⁹The Wingspread Statement (1998) asserts that "there is compelling evidence that damage to humans and the worldwide environment is of such a magnitude and seriousness that new principles for conducting human activities are necessary." On my view, the conflict between cost-benefit analysis and the precautionary principle need not be deep, and may be more apparent than real. See Gardiner forthcoming.

¹⁰Raffensberger and Tickner 1999b, p. 1.

measures to prevent the effects? Taking measures to eliminate the cause of the effects?

The answers to these questions are important. Ultimately, the plausibility of the precautionary principle depends on them. To see why, consider the following standard objections to the precautionary principle.

III. EXTREME PRECAUTIONARY PRINCIPLES

A. THE ULTRACONSERVATIVE PRECAUTIONARY PRINCIPLE

The first standard objection is that the precautionary principle is an extreme doctrine. This objection has two sides. The first may be represented as follows. In a recent piece in the *New York Times*, a former member of the Reagan Administration asserted:

Without any scientific grounds, but on the basis of the so-called precautionary principle—that is, if we can't prove absolutely that it is harmless, let's ban it—the [European] Union has prevented genetically modified food from the United States from entering its markets.¹¹

This characterization suggests an ultraconservative precautionary principle:

Ultraconservative Precautionary Principle (UCPP): Ban any activity that one has any reason whatsoever to suspect might pose any harm whatsoever.¹²

Presumably, no one really accepts this principle.¹³ It suggests that if there is any possibility, no matter how small, that an activity might prove harmful, then it should be banned completely—and this without any consideration for its possible benefits. On such grounds we would be justified in banning an extremely successful cure for cancer on the grounds that there was a 0.001% chance that it might cause a minor rash in some patients. This is surely crazy. If the precautionary principle entails that, then everyone would agree that it is a bad principle.

¹¹Prestowitz 2003. Prestowitz describes himself as “a former Reagan administration trade hawk.” However, conservative resistance to the principle is not universal. Raffenberger and Tickner report that in 1998 the Indiana Republican Committee adopted the precautionary principle as the basis for its environmental platform (Raffenberger and Tickner 1999b, p. 9).

¹²The label “ultraconservative” is appropriate, since the triggers are conceived of in the most minimal way possible, whilst the response is conceived of in the most robust way possible.

¹³An anonymous referee points out to me that some proponents of precaution have used rhetoric that may suggest the UCPP. He cites the following claim by a Greenpeace spokesperson on BBC2 *Nature*, cited in North 1995, p. 256: “The precautionary principle is a principle that puts the burden of proof onto the polluter rather than the environment. If a polluter cannot prove that what he is discharging will not damage the environment and will not harm the environment then he simply isn't allowed to discard that sort of waste.”

B. THE ULTRAMINIMAL PRECAUTIONARY PRINCIPLE

The ultraconservative interpretation of the precautionary principle appears to be widespread amongst its enemies. But we should be balanced in accusing the principle of being open to extremism. For it might also be extreme in the opposite direction: it could be a recipe for excessive complacency. Consider the following, ultraminimal precautionary principle:

The Ultraminimal Precautionary Principle (UMPP): We accept the need to act in a precautionary manner in exactly one case: we should cross our fingers (or just worry) in the situation where there is a probability of 99.9% that the world is going to end immediately due to this experiment.

Again, presumably no one actually accepts this principle. It is just as extreme and irrational as the ultraconservative version. Nevertheless, it is instructive to see that, considered in isolation, the dual trigger characterization leaves open both possibilities. For this suggests that advocates and critics of precaution alike ought to agree that the dual trigger characterization is badly in need of refinement, and in such a way as to exclude the ultraconservative and ultraminimal interpretations. Presumably both would want to claim that the UCPP licenses too little, and the UMPP too much, precaution.

This observation suggests three things. First, if no one believes that we should never take any kind of precautionary measures, and no one asserts that we should always exercise extreme precaution either, such positions are simply straw men and therefore an unnecessary distraction. Hence, if we are interested in the precautionary principle playing a role in policy, we must search for some intermediate, moderate form.

Second, in the search for an intermediate form, the real action involves identifying the relevant circumstances under which the precautionary principle is operative, by making clear what *kinds* of threats and uncertainty trigger the precautionary principle and what *kinds* of precaution are thereby triggered.

Third, on these issues there is no reason to assume *in advance* that critics of the UCPP and advocates of precaution disagree. Since all reasonable people will reject UCPP and UMPP, perhaps all accept some kind of intermediate position. And, so far, there is no reason to suppose that these positions differ, or at least are wildly divergent.

These points suggest that the extremist objection to the precautionary principle is badly framed. For one thing, those who object to the principle on these grounds really object to certain strong interpretations of its conditions of application, not to the basic statement of the principle itself. For another, given this, it may turn out that at the level of the dual trigger characterization, the precautionary principle is uncontroversial.

In conclusion, then, my basic position is that there may be some generic sense in which the precautionary principle is appealing, but this sense needs to be made concrete if the principle is to be useful in policy-making. Specifically, what is

needed are characterizations of what constitute relevant threats, of the kinds of uncertainty to which the principle responds and of the kinds of responses it envisages. In addition, I will go on to claim that, in many actual cases of public policy, controversy that is often framed in terms of objections to the precautionary principle is in fact about these issues of interpretation, rather than about the principle itself.

IV. NONSUBSTANTIVE PRECAUTIONARY PRINCIPLES

*The precautionary principle is vague enough to be acknowledged by all governments regardless of how well they protect the environment.*¹⁴

Unfortunately, this initial defense of the precautionary principle against the charge of extremism invites another prominent objection: that the precautionary principle is vacuous. For it is natural to think that if the dual trigger characterization is permissive enough to license both ultraminimalist and ultraconservative views, then it will not be of much use in itself, and can hardly be expected to be a driving force in forging environmental policy.

There are several ways in which one might try to save the precautionary principle from this charge of irrelevance due to vacuity. Here I will consider a number of proposals from the literature before turning to my own.

A. A SIMPLY POLITICAL PRECAUTIONARY PRINCIPLE

Some writers admit that the precautionary principle is vacuous, but claim that it can still play an important political role, as a rallying point for those disaffected with current environmental decision-making practices. For example, Andrew Jordan and Timothy O'Riordan say:

Admittedly, precaution lacks a specific definition. As yet, it cannot prescribe specific actions or solve the kind of moral, ethical, and economic dilemmas that are part and parcel of the modern environmental condition.¹⁵

But they think that this lack of specificity is actually necessary to its purpose:

[T]he application of precaution will remain politically potent so long as it continues to be tantalizingly ill-defined and imperfectly translatable into codes of conduct, while capturing the emotions of misgiving and guilt.¹⁶

The reason is that opposition to current orthodoxies in environmental management requires a concept around which to organize; and the precautionary principle can serve as that concept. Jordan and O'Riordan claim:

¹⁴Jordan and O'Riordan 1999, p. 32.

¹⁵*ibid.*, p. 16.

¹⁶*ibid.*, p. 15.

Like sustainability, [the precautionary principle] is neither a well-defined nor a stable concept. Rather, it has become the repository for a jumble of adventurous beliefs that challenge the status quo of political power, ideology and environmental rights. Neither concept has much coherence other than is captured by the spirit that is challenging the authority of science, the hegemony of cost-benefit analysis, the powerlessness of the victims of environmental abuse, and the unimplemented ethics of intrinsic natural rights and intergenerational equity. It is because the mood of the times needs an organizing idea that the precautionary principle is getting attention.¹⁷

There is something to be said for Jordan and O’Riordan’s analysis;¹⁸ and I am not opposed to the idea that rallying points and organizing concepts play important roles in environmental movements and policy. Still, the idea that this is all there is to the precautionary principle seems unduly deflationary. There are three reasons. First, the rallying-point view restricts the appeal of the principle. It suggests that no one who does not share the particular agenda of (certain parts of) the environmental movement will be motivated by it.¹⁹ This undermines the principle’s political credibility as a general principle of international environmental law and regulation. Second, such a restriction seems unduly pessimistic. The grand ideals of the environmentalists mentioned are not explicit in the basic statements of the precautionary principle, and yet those statements seem plausible to many people, some of whom would not accept the ideals. Third, the pessimism seems somewhat self-defeating. If the precautionary principle itself is vacuous, and cannot be defended in any more robust form, surely this would be bad for its appeal as an organizing concept. Organizing concepts can be useful for bringing people together; but if there is, ultimately, no way for them to make good on their promise, then they quickly fade, and this risks undermining the coalitions they are supposed to anchor.

B. A PURELY PROCEDURAL PRECAUTIONARY PRINCIPLE

Thus, I think that we should reject the idea that the precautionary principle is merely political. Still, there is more to say about Jordan and O’Riordan. For their view is more complex than I have so far suggested, and this generates a second possible defense of a vacuous precautionary principle, as a purely procedural principle.

¹⁷*ibid.*, p. 16.

¹⁸Some proponents of the precautionary principle have ambitions of this type. For example, Raffensberger and Tickner say: “*Silent Spring* was a call to forestall [the] rapid development and deployment of pesticides and to return to an ethic of working with nature, not against it. That is the ultimate goal of precaution” (Raffensberger and Tickner 1999b, p. 11). And another author in the same volume claims: “Implementing precaution is not a discreet task but is intimately enmeshed in the development of an ecological society” (M’Gonigle 1999, p. 142). Both of these are grand ideals, suggesting that the precautionary principle is derived from a wider perspective on environmental ethics and policy.

¹⁹See Bjorn Lomborg’s (2001, 319 ff.) criticism of the Intergovernmental Panel on Climate Change (IPCC).

There are two components to this more complex view. The first is the claim that there is a deep reason for the emptiness of the precautionary principle: namely, that the very notion of precaution is essentially contested. Jordan and O’Riordan claim that risk perception is a deeply cultural phenomenon, involving entrenched values which have evolved differently in different countries.²⁰ And they conclude from this that we should expect agreement on what precaution means neither in specific cases, nor as a general principle.

The second component is the claim that the contested nature of precaution is essential to the political agenda of the precautionary principle as they see it. For they suggest that the fact of contestedness implies that working out what the precautionary principle means in any context necessarily involves going through a consultative process;²¹ and that this means that the precautionary principle contains an essential recognition of the need for democratic procedures in good environmental management.²²

I am not convinced by Jordan and O’Riordan’s pessimism about either the notion of precaution,²³ or matters of value more

²⁰ “[P]recaution is a culturally framed concept that has evolved along different pathways and at different rates in different countries. Searching for a single, all-encompassing definition is, therefore, likely to be a fruitless endeavor because individuals will never agree upon what is or is not precautionary in a given situation. Cultural theory tells us that there is no one single context of risk perception. We all “see” the world in a different way, although four broad archetypes can be distinguished. . . . So those who regard the environment as inherently robust and capable of withstanding sustained human impact will tend to be less precautionary than those who regard human impact on nature as unpredictable and potentially calamitous. These value positions are deeply entrenched, and scientists and policy makers need to be more sensitive to this when they communicate risk to the body politic” (Jordan and O’Riordan 1999, p. 18).

²¹ Jordan and O’Riordan 1999, p. 19.

²² This result seems welcome. For one thing, many enthusiasts of precaution, including Jordan and O’Riordan, believe that democratic consultation is a core component of the approach. For another, it suggests that, though the precautionary principle itself is empty, it is empty in a useful kind of way, and one that is amenable to practical resolution.

²³ The pessimism rests on some questionable assumptions and a dubious argument. Jordan and O’Riordan appear to reason as follows:

- (1) Precaution has evolved differently in different countries
- (2) Therefore, individuals will never agree on what is precaution in a given situation.
- (3) Therefore, search for a single, all-encompassing definition is likely to be fruitless.

But this argument is disputable. First, the meaning of premise (1) is unclear. This is partly because Jordan and O’Riordan stress commonalities as well as differences between cultures in their understandings of precaution. In particular, they assert not only that there are different pathways which countries can share, but that there is something like progress along a pathway, so that different countries can progress at different rates along the same pathway. Second, this undermines the crucial claim in premise (2). For one thing, the existence of common pathways and rates of progress along the same pathway would suggest the possibility of convergence in at least some cases. For another, many environmental problems, and especially global ones, may constitute new contexts for thinking about precaution, and ones that different countries can share. Third, the inference to premise (2) is in any case invalid. It commits a genetic fallacy: one cannot infer from the fact that people’s beliefs have different origins that there is no prospect of their coming to an agreement. (For example, there might be independent standards to which they might refer in generating new beliefs, such as other beliefs that they have (e.g., scientific beliefs).) Fourth, even if the conclusion in (3) could be established on other grounds, this would not necessarily defeat the precautionary principle, since it does not require “a single, all-encompassing definition” of precaution. For example, it might be enough for many purposes that the precautionary principle is shown to be reasonable in a certain set of core cases; and there is a much better chance of agreement here.

generally.²⁴ Still, for current purposes, we can sidestep those issues and highlight some general deficiencies of the Purely Procedural Precautionary Principle (PPPP) itself. The first problem is that the principle plays a very diminished role in decision-making. Its function seems simply to get parties together and then endorse their agreements. It does not direct decision-making in any substantive way: the agreements themselves are made on other, unspecified grounds. This seems to reduce the practical importance of the precautionary principle and make it unlikely that it can really serve as a foundational principle of international environmental policy and law.

The second problem is that the PPPP seems to undermine itself in two important ways. First, its pessimism appears to undercut its own application. Jordan and O’Riordan’s core idea is that, because the concept of precaution is so deeply contested, the precautionary principle can play no role other than simply that of getting all interested parties together (environmentalists, developers, strip-mining interests), to see what can be agreed to. But this creates two worries. One is that, if precaution is really as contested as Jordan and O’Riordan claim, this would seem to count against the possibility of easy practical agreement. The other is that the PPPP does not seem to help here: nothing about the PPPP suggests that it can facilitate the making of either more or better agreements. Second, the PPPP might undermine the motivation for a precautionary approach. For interpreted as a purely procedural principle, it is unclear how the precautionary principle constitutes a distinct approach to environmental policy, in particular how adopting it would help to overcome the (alleged) deficiencies of current policy-making through cost-benefit analysis.

The final problem is perhaps the most important. It is that, even if agreements can be made, the PPPP offers us no reasons to believe that they will actually do anything to protect the environment. This is because the PPPP imposes no restrictions on what is decided or on how such decisions are reached. This objection rests on the intuition that precaution is not, in fact, a purely procedural

²⁴Consider some relevant considerations. First, Jordan and O’Riordan make strong claims about attitudes to risk: that risk perception is a “deeply cultural phenomenon;” that this is because of “entrenched values;” and that this means that precaution is “essentially contested,” in the sense that issues about it are not resolvable by appeal to a set of commonly recognizable standards or cases. But this is all disputable. Second, their claims about environmental value need to be questioned. For one thing, it is not clear why issues of risk should be interpreted as issues of value (as opposed, say, to issues of rationality); for another, even if it were, it is not clear why this would make practical issues which invoke such attitudes irresolvable. (Of course, it is likely that Jordan and O’Riordan’s claims simply emerge from a more through-going skepticism about value. But many environmentalists would want to resist such a metaethics. More importantly, we ought not simply to build such assumptions into a general analysis of the precautionary principle.) Third, it is not clear why we should accept that all that is at stake in such matters is “cultural framing.” For example, is it really true that any possible view about the fragility of the earth is acceptable? Science surely plays some role here. For example, many environmental philosophers seem to think that ecology in particular is transformative of our ethical views. Finally, we could accept some level of cultural framing and not give up the precautionary principle. After all, what counts as a harm and scientific uncertainty is a matter external to the precautionary principle itself. Hence, there might be ways to fit such factors into a precautionary account other than by giving up on the core notion of precaution.

notion. Advocates of the precautionary principle usually believe that there are at least some substantive (as opposed to merely procedural) constraints on what could count as precaution.²⁵

I conclude that, at best, the procedural interpretation offers only a partial account of the role of the precautionary principle. Moreover, if the principle is to be effective in environmental decision-making, we need a less contentious account of this dimension than Jordan and O’Riordan provide and one that allows it to provide more guidance to decision-makers.

V. WEAK PRECAUTIONARY PRINCIPLES

Another way in which the dual trigger characterization might be refined is to look at actual applications of the precautionary principle in public policy. These are often classified as either weak or strong.²⁶ But both versions have been subjected to serious criticism.

Edward Soule characterizes weak versions of the precautionary principle as having two main features. First, they are comprehensive, in the sense that they “do not seriously restrict the factors that decision makers can legitimately take into account.” Second, they are optional, in the sense that “regulators do not receive any specific guidance on the relative weighting of any given factor.”²⁷

These features, Soule says, imply that the weak precautionary principle (WPP) is a pragmatic principle. Its main function is simply to enable regulators to consider a wide range of risk factors (including, but not limited to, economic efficiency) and to weigh them against each other on a case-by-case basis. Hence, the practical importance of the precautionary principle on the weak interpretation is mainly rhetorical: it provides some kind of authoritative basis on which to justify what are actually pragmatic decisions to weigh environmental risks very heavily on particular occasions. Soule says:

If the Weak Precautionary Principle does anything at all it is this: it provides the authority to override other factors and make environmental risk the paramount and deciding concern. Regulators might consider all the factors of a practice and judge the environmental hazards to be so profound that they dismiss as secondary any findings of a cost- or risk-benefit analysis.²⁸

If Soule is right, in cases where the WPP is invoked, the precautionary principle does not function as an independent decision-making principle. Instead, it merely provides cover for environmental decisions made on other grounds. The real work is done through a pragmatic juggling of environmental and

²⁵For example, the destruction of the earth ought not be the necessary result of applying the precautionary principle.

²⁶Soule 2000; Foster et al. 2000.

²⁷Soule 2000, p. 313.

²⁸ibid.

nonenvironmental costs and benefits.²⁹ It is just that if this results in a decision to restrict or prohibit the product in question, and if environmental risks turn out to be the biggest factor in the decision, then the judgment is *labeled* as an instance of the WPP. Thus, the WPP provides a kind of *ex post* justification: it simply highlights the point that in this case those judging believe on independent grounds that environmental risks outweigh other factors.³⁰ For such reasons, Soule says that in most contexts, “[w]eak formulations of the precautionary principle represent somewhat *innocuous or feeble* additions to the regulatory landscape.”³¹ He therefore sees them as mostly unobjectionable, regarding them as essentially vacuous.³²

The WPP seems very close to the vacuous precautionary principles and shares many of their faults.³³ Still, one difference may mark it as at least a slight improvement. The WPP does not presuppose that there is some kind of problem with the notion of precautionary action. Instead, it is compatible with, and in fact appears to suggest, the idea that there are clear cases where a precautionary approach would justify action. The role of the WPP is then to authorize action in such cases, even though it does not itself identify them. Hence, the WPP does not imply that “anything goes,” that the precautionary principle is simply a procedural constraint, with no concrete implications. Rather it allows for the possibility that environmental concerns will prove strong enough to justify action, even when such action would not be justified purely on grounds of a cost-benefit analysis.

VI. STRONG PRECAUTIONARY PRINCIPLES

Although it is less extreme than the vacuous precautionary principles, the WPP seems to have too much in common with them to serve the purposes of environmental policy. Let us see, then, whether the strong precautionary principle (SPP) can do any better.

²⁹On Soule’s view it is not clear how this is to be done. The most likely candidate, CBA, is ruled out, since Soule says that the WPP can conflict with CBA. Perhaps the idea is that there is a process of intuitionistic weighing. But then, given that he says nothing about either what should be weighed or how the weighing should be understood, it is unclear why Soule is as sympathetic as he is to the WPP. For example, why does he say that it is “innocuous”? Surely there is some chance that the process may be hijacked by the personal agendas of the regulators.

³⁰Soule (2000, p. 313) offers as an example of the WPP a communication from the Commission of the European Communities.

³¹*ibid.*, p. 315.

³²Soule does think the WPP can be problematic in international contexts.

³³For example, it provides no way in which to guard against the ultraminimal or ultraconservative interpretations of the precautionary principle, and so no defense against the charge of extremism. Furthermore, it does not seem distinct from CBA in the way proponents of the precautionary principle envisage. For, although it allows for the possibility of acting against CBA, this is simply a result of its general permissiveness about how decisions are justified: it is equally true that it does not exclude the possibility that the CBA will be one’s only basis for decision-making (since the CBA allows for an accounting of risks, in terms of probability, and then a weighing, as the WPP envisages).

Soule characterizes the SPP as having two main features. First, it is exclusive in scope, in the sense that it considers only the environmental risks posed by the policies it considers. (It does not, for example, weigh these risks against possible economic gains.³⁴) Second, it is determinative. Environmental risk is the decisive factor in decision-making, and regulators are required to act on it.³⁵

The SPP is criticized on several grounds.³⁶ The objection that particularly concerns Soule is that it is obsessively narrow. For one thing, it focuses on environmental risk to the exclusion of other environmental factors. So, for example, Soule claims that in assessing the merits of genetically-modified pest protected plants (GMPPPs), the SPP ignores the fact that existing environmental practices involving the widespread use of agrochemicals such as pesticides incur large environmental costs.³⁷ For another, nonenvironmental factors—such as food supply—are not included.³⁸

I think that these are legitimate concerns. The SPP's combination of exclusivity (in the concerns it is willing to consider) and determinative force seems problematic and liable to lead to irrationality. The critics are right to question a principle that is both narrow and decisive.

VII. THE RAWLSIAN MAXIMIN PRINCIPLE

I now want to suggest a more appealing way of understanding one form of the precautionary principle. This involves setting parameters on its application, and draws on the work of John Rawls in identifying criteria for the application of maximin principles. Understood in this way, the precautionary principle is neither the WPP nor the SPP as previously understood; however, it turns out to have more in common with the SPP than the WPP.

The phrase “maximin” means “maximize the minimum.” Maximin principles thus assess the possible outcomes of various courses of action and then decide what to do by focusing on the worst possible outcome of each course of action and choosing that action which has the least bad worst outcome. Consider the following example. Suppose that in a given situation you have two actions, A

³⁴Soule 2000, p. 317.

³⁵Soule (2000, p. 318) cites as an example the Third Ministerial Declaration on the North Sea, 1990; Foster et al. (2000, p. 979) cite the World Charter for Nature.

³⁶One common objection is that it relies on an incoherent attitude to science: on the one hand, proponents of the SPP want to say that there is enough scientific evidence to show that a given policy poses genuine risks; on the other hand, they claim that the science is too impoverished to establish that the policy is safe. Hence, opponents accuse advocates of SPP of wanting to have it both ways with science, and claim that this is incoherent. This criticism should be rejected. As Soule argues, there are often different evidentiary demands for demonstrating risk versus demonstrating safety (Soule 2000, p. 319).

³⁷There are actually two concerns with agrochemicals. One—which the current objection relies on—is about their known environmental costs. But another is that they may pose environmental risks of their own which are comparable in importance and uncertainty to the risks of GMPPPs. Soule emphasizes the second concern in the latter part of his article.

³⁸Soule 2000, p. 324.

and B, available to you. If you choose A, then there are two possible outcomes: either (A1) you will receive \$100, or (A2) you will be shot. If you choose B, there are also two possible outcomes: either (B1) you will receive \$50, or (B2) you will receive a slap on the wrist.³⁹ According to a maximin strategy, one should choose B. This is because: (A2) (getting shot) is the worst outcome on option A and (B2) (getting a slap on the wrist) is the worst option on plan B; and (A2) is worse than (B2).

The Maximin Principle (MP) has something going for it. For one thing, many people think that the MP gets the right answer in examples such as the one above. For another, we seem both to behave in accordance with maximin thinking in important areas of decision-making in real life and also to reflectively endorse such behavior as paradigmatically rational.⁴⁰ But maximin thinking cannot be rational in general. For there are cases in which almost everyone agrees that the MP would lead one seriously astray. Consider the following famous example, from John Harsanyi:

Suppose you live in New York City and are offered two jobs at the same time. One is a tedious and badly paid job in New York City itself, while the other is a very interesting and well-paid job in Chicago. But the catch is that, if you wanted the Chicago job, you would have to take a plane from New York to Chicago (e.g., because this job would have to be taken up the very next day). Therefore there is a very small but positive probability that you might be killed in a plane accident.⁴¹

Harsanyi complains that the MP would demand that you take the bad position in New York City, even though the plane crash is very improbable. Hence, he says, the MP is highly irrational:

If you took the maximin principle seriously then you could not ever cross the street (after all, you might be hit by a car); you could never drive over a bridge (after all, it might collapse); you could never get married (after all, it might end in a disaster), etc. If anybody really acted this way he would soon end up in a mental institution.⁴²

Harsanyi is correct that applying the MP under the circumstances he mentions would be irrational. But he is not right to say that doing so necessarily follows from taking the MP seriously. For we might just say that there are circumstances—including those of the type Harsanyi's examples identify⁴³—under which the MP does not apply. This is Rawls' strategy.

³⁹I learned this specific example from T.H. Irwin. For similar illustrations, and a more general discussion, see Freeman (2003, pp. 14–18).

⁴⁰By this I mean not only that it fits our behavior but that we continue to endorse such behavior even on learning of the problems of applying the MP more generally.

⁴¹Harsanyi 1975, p. 39.

⁴²*ibid.*, p. 40.

⁴³Situations where there is a very low probability of loss, and a very high probability of substantial gains.

Rawls agrees that adopting a maximin strategy in general would be irrational, for the reasons Harsanyi identifies.⁴⁴ But he argues that maximin is a plausible principle under three general circumstances. The first is that decision-makers either lack, or have reason to sharply discount, information about the probabilities of the possible outcomes of their actions.⁴⁵ Rawls says:

Thus it must be, for example, that the situation is one in which a knowledge of likelihoods is impossible, or at best extremely insecure. In this case it is unreasonable not to be skeptical of probabilistic calculations unless there is no other way out, particularly if the decision is a fundamental one that needs to be justified to others.⁴⁶

Second, the decision-makers care relatively little for potential gains that might be made above the minimum that can be guaranteed by the maximin approach. Rawls says:

The person choosing has a conception of the good such that he cares very little, if anything, for what he might gain above the minimum stipend that he can, in fact, be sure of by following the maximin rule. It is not worthwhile for him to take a chance for the sake of a further advantage, especially when it may turn out that he loses much that is important to him.⁴⁷

Third, the decision-makers face unacceptable alternatives. Rawls says:

Rejected alternatives have outcomes that one can hardly accept. The situation involves grave risks.⁴⁸

VIII. A CORE PRECAUTIONARY PRINCIPLE

The question now becomes whether the example of Rawls' conditions is helpful in discerning a middle ground in the debate about the precautionary principle. Two points emerge at the outset. First, suppose we begin by imagining that the Rawlsian conditions constitute criteria for the application of the precautionary principle such that if those criteria are met, the precautionary principle demands action. On this reading, the precautionary principle would be determinative, like the SPP (not merely optional, like the WPP). But, second, the Rawlsian criteria also make the precautionary principle comprehensive, like the WPP (not exclusive, like the SPP). For they do not restrict the kinds of considerations relevant to outcome assessment, either with respect to what counts as a relevant gain, or with respect to what counts as a relevant disaster. Hence, the Rawlsian

⁴⁴Rawls (1999b, p. 133) says: "Clearly the maximin rule is not, in general, a suitable guide for choices under uncertainty. But it holds only in situations marked by certain special features."

⁴⁵In the technical jargon of economics, this makes the situation one of genuine uncertainty, not mere risk.

⁴⁶Rawls 1999b, p. 134.

⁴⁷ibid.

⁴⁸ibid.

criteria pick out a worthwhile intermediate position between the WPP and SPP as Soule characterizes them.

Let us call the intermediate, Rawlsian principle, “the Rawlsian Core Precautionary Principle” (RCPP). The term “core” is appropriate for two reasons. First, the Rawlsian criteria appear only to pick out certain instances where it seems clear that the precautionary principle applies. They do not necessarily assert that these are the *only* circumstances where it applies. (In other words, on the way I am employing them, the Rawlsian conditions pick out sufficient conditions for precaution, not necessary conditions.) Second, the precautionary approach might not coincide with other kinds of maximin thinking (or even with maximin thinking *per se*) outside of the domain constituted by the Rawlsian criteria.⁴⁹ Hence, the convergence of maximin with precaution might be limited to specific kinds of context.⁵⁰

Now, I do not want to claim that Rawls has necessarily got the criteria for the core cases of precaution (or indeed for maximin itself) exactly right. Presumably, there are a number of ways of constructing criteria, and so a variety of different core precautionary principles that might be considered. But assessing these possibilities is beyond the scope of this paper.⁵¹ For current purposes, it will be enough merely to show that the criterial approach itself might be reasonable, and that Rawls has the right kind of criteria. This would be sufficient to suggest that some form of core precautionary principle is initially defensible, and so that the basic idea is worthy of further investigation. It would defeat, or at least postpone, the standard objections to the precautionary principle.

We have, then, a sketch of the criterial approach and one candidate core precautionary principle. It remains to make a case for the former based on the initial plausibility of the latter. Here I will attempt only a modest defense,⁵² focusing on three issues:

- How does the RCPP deal with the usual objections to the precautionary principle?
- What might the Rawlsian criteria amount to in practice? Does the RCPP cover the central cases which enthusiasts of the precautionary principle would like to cover?

⁴⁹In particular, it seems plausible that Rawls’ restricted maximin covers a much more limited domain than the idea of precaution.

⁵⁰One important issue is to what kinds of circumstances the principle can be applied. Rawls (1974, p. 226) himself asserted that the maximin principle ought not to be used for “small-scale situations.” My own view is that in environmental policy the precautionary principle should apply in the first instance at the global level. I hope to explain and develop this view in future work.

⁵¹Other approaches to decision under uncertainty include Savage’s minimax risk criterion and the Hurwicz pessimism-optimism index. See Luce and Raiffa 1957, pp. 278–86.

⁵²This is partly because this is all I am in a position to make. But it is also because I do not want to get bogged down in, or distracted by, the details. Since my main aim is to defend the plausibility of some form of core precautionary principle through defending the criterial approach as such, I want my argument here to be as general as possible, and from this point of view it is good to leave many details to be filled in later, because this could be done in a variety of different ways and still be compatible with the main aim.

- How might one defend the RCPP against some standard objections both to the precautionary principle and to maximin principles?

IX. EXTREMISM REVISITED

A. KNOWLEDGE CONDITIONS

How might the RCPP address the basic criticisms of the precautionary principle we have mentioned already? Let us begin with the objection of extremism. The first thing to notice is that, under the RCPP conditions, the precautionary principle does not look extreme compared to some of its rivals. Indeed, one might even argue that there is a presumption in favor of the RCPP. If one really were faced with the genuine possibility of disaster, cared little for the potential gains to be made by avoiding disaster and had no reliable information about how likely the disaster was to occur, then, other things being equal, choosing to run the risk might well seem like a foolhardy and thereby extreme option. It might, for instance, appear to show an obsession with maximization.⁵³

How then should we conceive of the extremist objection? The first possibility is provided by Harsanyi. Harsanyi's diagnosis of the problem with the maximin principle is:

Conceptually, the basic trouble with the maximin principle is that it violates an important continuity requirement: It is extremely irrational to make your behavior wholly dependent on some highly unlikely unfavorable contingencies *regardless of how little probability you are willing to assign to them*.⁵⁴

Now, on the face of it, the RCPP clearly deals with this objection. It claims that a condition of application of the precautionary principle is that we either lack probability information, or have reason to distrust the information we have. So, the RCPP will not apply in a situation of Harsanyi's sort, when we do have probability information that we believe to be reliable enough to be the basis of a decision.⁵⁵

Still, this response is unlikely to satisfy the critic. For the worry remains that the precautionary principle might assign too much weight in deliberation to extremely unlikely outcomes. Commenting on the precautionary principle

⁵³One principle which would yield this would be that of maximax (trying to maximize the maximum possible outcome). Maximax might be rational under other conditions, such as where we don't care much about losses, but do care a lot about gains. But it does not seem rational under the Rawlsian conditions. A more likely principle would be that of trying to maximize the value of the average outcome. But without probabilities to guide one's assessment this seems like an odd strategy. If the possibility set were well-determined, it would be like trying to maximize the median outcome. But it is not clear that this is reasonable under the disaster and care little for gains conditions. Furthermore, it seems likely that many actual cases where the Rawlsian conditions are met would not allow such a fine-grained individuation of the alternatives.

⁵⁴Harsanyi 1975, p. 40; emphasis in original.

⁵⁵Strict Bayesians will not like this response, since they think that all probability assignments are ultimately subjective, and such assignments can always be made. I defer discussion on that issue until later.

specifically, Neil Manson puts this challenge in another way. He imagines a version of the precautionary principle that he calls “the catastrophe principle,” and says:

The catastrophe principle only requires the mere possibility of catastrophe, and since mere possibilities are so easy to construct, any application of the catastrophe principle will confront a fatal problem: the reasoning it employs can be used to generate a demand for a contradictory course of action. In other words, as it stands, the catastrophe principle is useless as a guide to action. . . . [I]t would be practically impossible to show that there do not exist any catastrophic outcomes that might possibly come about as a result [of precautionary action].⁵⁶

Manson’s central concern is that the epistemic standards for the application of the catastrophe principle are extremely low. Mere possibility is enough. This creates two problems. First, surely mere possibility is not enough to justify drastic precautionary actions. Second, since mere possibilities are easy to construct, Manson thinks that the catastrophe principle can easily be made to license the avoidance of not only any action, but also its contradictory.

Manson has a reasonable concern. However, I think that a proponent of the RCPP can overcome it. The first point to be made is that some writers on precaution distinguish between three epistemic situations.

- Risk: “all possible outcomes are known in advance and . . . their relative likelihood can be adequately expressed as probabilities.”
- Uncertainty: “the adequate empirical or theoretical basis for assigning probabilities to outcomes does not exist.”
- Ignorance: “not only . . . a lack of certainty as to the likelihood of different outcomes, but . . . some of the possibilities themselves remain unknown.”⁵⁷

Of these situations, the RCPP properly applies only in the second, that of uncertainty. The first Rawlsian condition explicitly rules out circumstances of risk, since it stipulates that probability information is known. More importantly, strict ignorance of some possibilities is also ruled out, because the RCPP assumes that in order even to apply a maximin principle one must be able to compare the possible outcomes. And, although this does not mean that one needs to be able to individuate all possible outcomes in a fine-grained way, it at least requires that the range of possible outcomes has been identified, and so excludes the possibility of outcomes outside the range.

It is clear then that the RCPP requires some kind of knowledge of outcomes. Hence, it escapes objections to the precautionary principle based on strict ignorance of outcomes.⁵⁸ Still, this is not quite enough to dispel Manson’s worry.

⁵⁶Manson 2002, p. 273.

⁵⁷European Environment Agency 2001, p. 170, box 16.1.

⁵⁸This kind of case may be important, and may be an important part of a general precautionary movement. But the RCPP does not address it. Since the RCPP aims to capture only part of precautionary thinking, it leaves it open what the proponent of precaution should say under such circumstances. So, the point here is part of my core case strategy.

For Manson sees no gap between ignorance and knowledge of possible outcomes: instead, he imagines that the proponent of the precautionary principle is committed to counting *any imaginable outcome* as possible. I do not think that Manson is correct. But this naturally raises another question: how can the proponent of the RCPP distinguish between bare possibilities and members of the legitimate range of outcomes? How can she avoid taking bizarre possibilities seriously? This, I think, is the central concern of those making the extremist objection.

To respond, the RCPP needs some way of distinguishing a set of reasonable outcomes to contrast with those outcomes which are merely imaginable.⁵⁹ This suggests that the three Rawlsian criteria mentioned so far must be supplemented with a further requirement: that the range of outcomes considered are in some appropriate sense “realistic,” so that, for example, only credible threats are considered.⁶⁰

B. REALISTIC OUTCOMES

The need for a criterion for realistic outcomes is explicit in some criticisms of the precautionary principle and implicit in many others. Some might say, then, that it constitutes just one more objection to the precautionary principle and to the RCPP. But it is not clear that this is so. For the RCPP itself simply assumes that we can have some such criterion. It does not take a position on what it would be.⁶¹ This suggests that the RCPP is not so easily criticized on these grounds. There are two reasons.

The first is that it seems reasonably clear that some such (explicit or implicit) criterion will be necessary on any view of how to deal with uncertainty and ignorance. So, the RCPP is in no worse position than any other view here. The

⁵⁹One might think it should be simply a realistic threat criterion. But one should not be asymmetric. In particular, it does not seem reasonable to have a demanding standard for the “unacceptable outcomes” criterion and an undemanding one for the “care little for gains” criterion.

⁶⁰Actually, it is not clear if “supplement” is the right word. The criteria may be intended by Rawls himself to apply only in situations of uncertainty rather than ignorance. Hence, they may simply presuppose a background account of the outcome set to be considered, which presupposes a notion of realistic threat. Alternatively, perhaps the problem is implicitly dealt with by the conjunction of the “care little for gains,” and “disaster” conditions. For it may be that the real objection to taking the bare possibilities seriously is not their epistemic status, but the costs involved in doing so. The idea might be that precautionary measures in those cases would be prohibitively expensive or restrictive on normal human life—so much so as to constitute a disaster in their own right. (This fits well with an expected utility account—but I argue later that, at least at the present level of analysis, the RCPP need not oppose, and indeed should be compatible with, such a picture.)

⁶¹Manson seems to suggest that mere logical possibility is enough for the Catastrophe Principle. But proponents of precaution usually demand some kind of scientific reason for thinking that there may be a problem. So they envisage natural possibilities. (The standard cases involve scientific evidence for the threat. For example, in climate change, there is scientific knowledge of the basic greenhouse mechanism, together with a body of empirical evidence; with genetically-modified foods, there is some previous experience with newly introduced species.)

second reason is that, though there does seem to be a serious problem with generating a general set of necessary and sufficient conditions for what constitutes a realistic outcome, this does not mean that the realistic outcome criterion itself is useless. Consider the following. First, even when it is not clear where the exact threshold should be, there can be clear cases where it is exceeded.⁶² Second, there are intuitive reasons which suggest that finding general conditions might be difficult. For one thing, it is well-known from empirical work that we tend to compartmentalize our thinking about practical matters into different domains. And it seems reasonable to think that we count outcomes as catastrophic in some domains which we would not in others. For another, there are reasons to think that reasonable threat thresholds are not necessarily fixed across all domains and contexts. This is largely because they are not necessarily independent of the other outcomes in question—e.g., they might vary with badness of the disastrous outcome.⁶³

C. EXTREME RESPONSE CONDITION

The considerations so far have been about objections of extremity in the trigger conditions for precautionary action. But there are also concerns about extremity in response. The basic objection here is that precaution will automatically mean banning a procedure just because of the presence of some potential threat. Here the fact that the RCPP is a maximin principle actually helps it. For it is extremely important to such a principle that *all* the available options are considered, where those outcomes include estimates of the effects of a range of precautionary measures themselves. This explains why, in a range of cases, advocates of precaution are also keen advocates of “safe exit” strategies—that is, strategies that serve to minimize the impact of a realistic outcome that would be very harmful. Where good “safe exit” strategies are available, this changes the set of mutually exclusive action options. Hence, for example, one can go on with an experiment which would otherwise have been banned if one can change the worse-case scenario associated with it.⁶⁴

⁶²This, I would claim, is the case for climate change. There we have a basic theoretical understanding of the greenhouse mechanism, strong empirical evidence that the concentrations of greenhouse gases has increased through industrialization and some evidence which suggests that this is already resulting in climate change. See Gardiner 2004.

⁶³Indeed, this probably accounts for the usefulness of distinguishing a range of opinion about levels of confidence or proof: from “scientifically based concern” to “reasonable grounds for concern” to “balance of evidence” to “beyond reasonable doubt.” Different levels of proof can be appropriate for different purposes (European Environment Agency 2001, p. 184).

⁶⁴There are some theoretical problems for maximin principles in determining how different courses of action are individuated. But this does not count decisively against such principles. For one thing, similar problems beset other decision procedures that require action-individuation. For another, in practice one has to be very careful to imagine the real alternatives including “safe exits” precautions one might take.

X. MYOPIA REVISITED

A second standard objection to the precautionary principle is that it is myopic. This objection might take several forms.

The first is easily dismissed. Sometimes people object to maximin principles because they say that they irrationally focus on the worst outcome to the exclusion of everything else. This might suggest that maximin principles are guilty of a procedural failure, in that they simply refuse to consider the full range of outcomes. But this objection would be a mistake. For one thing, it is not true of maximin principles in general that they ignore the full range of outcomes. After all, initially all outcomes have to be compared, in order to see which is the worst. More importantly, on the Rawlsian interpretation, there are further comparisons of outcomes in the second and last criteria. What maximin principles and the RCPP are guilty of is ignoring the other outcomes in their substantive final decision, in the sense that they do not choose them. But this is not an error—any decision between mutually exclusive options would do that.

The second form of the objection is that the precautionary principle is narrow in the kinds of outcomes it considers worth taking into account. So, for example, Soule objects to the version of the SPP he considers because it is exclusive: it considers only environmental risk. This is a serious objection. But, again, the RCPP is well placed to respond. First, the RCPP provides a check against myopia. For, as a general maximin principle, the RCPP is not exclusive, but inclusive: it includes consideration of all kinds of outcomes, including continuing with the status quo. Second, a Rawlsian analysis can help to explain why actual advocates of the precautionary principle may appear to be applying it in an exclusive way. The kinds of issues to which the precautionary principle is standardly applied are global environmental issues with deep importance to human (and other) life. (So, for example, climate change raises issues of climate security and genetically-modified crops of the security of the world's food.) It is easy to see how the precautionary principle may fail to appear comprehensive in these cases. For many will simply be taking it as obvious that nonenvironmental considerations are irrelevant in these contexts, just because they assume that the second and third Rawlsian conditions are met—i.e., that serious climate or agricultural disruption is unacceptable and that the costs of preventing them is relatively minimal.

A final form of the myopia criticism is theoretical. It is that maximin principles conflict with a more general theory of rational decision-making based on expected utility, and so should be rejected. But this objection can also be resisted. For one thing, expected utility theory might be incorrect. For another, and much more importantly, it is not clear that proponents of expected utility theory should resist the Rawlsian criteria. This is because the controversy about maximin takes place at a level that need not threaten wider theory. Arguably, there are core cases where maximin behavior seems rational, and it is as much a burden on

expected utility theorists as others to justify such behavior. If this is so, then the Rawlsian criteria might be useful to expected utility theorists as well. Indeed, Harsanyi himself might accept this. He says:

Of course, Rawls is right when he argues that in *some* situations the maximin principle will lead to reasonable decisions. But closer inspection will show that this will happen only in those situations where the maximin principle is essentially *equivalent* to the expected-utility maximization principle (in the sense that the policies suggested by the former will yield expected utility levels as high, or almost as high, as the policies suggested by the latter would yield). Yet, the point is that in cases where the two principles suggest policies very dissimilar in their consequences so that they are far from being equivalent, it is always the expected-utility maximization principle that is found on closer inspection to suggest reasonable policies, and it is always the maximin principle that is found to suggest unreasonable ones.⁶⁵

So even Harsanyi seems to think that maximin decision making is reasonable in some contexts. He simply insists that in such contexts it can be justified on grounds of expected utility. But this leaves open the possibility that the Rawlsian conditions, or some other set of appropriate criteria, capture the appropriate context for maximin.

XI. VACUOUSNESS REVISITED

The final problem to address is that of vacuousness. Here I will argue that the RCPP does much better than other versions of the principle we have considered. However, I will also concede that difficult issues of interpretation remain.

A. CLEAR CASES

There are three main reasons to think that the RCPP responds well to the charge of vacuousness. The first is that, at an intuitive level, there seem to be clear cases where the Rawlsian conditions are operative and precautionary action seems justified. Consider, for example, the standard example of taking out household insurance against fire. It is well known that, in strict probability terms, insurance is a bad bet.⁶⁶ The reason is this. In order to stay in business, insurance firms must charge premiums that reflect not just the probability and costs of adverse outcomes, but also salaries, administrative costs and profits for those in the industry. This implies that the premium charged to customers is higher than would be justified by the cost and probability of a negative outcome alone. Hence, anyone with a risk neutral attitude to the possible costs of failing to insure and the benefits foregone by insuring would not buy insurance. But, of course, for cases such as fire insurance, we not only do insure, but think that it is rational

⁶⁵Harsanyi 1975, pp. 595–6; emphasis in original.

⁶⁶It is not clear whether this undermines the uncertainty condition. In any case, the example is relevant since the other conditions appear to be met.

to do so. The RCPP can explain this. For it seems that in such cases, we count the possible costs (losing our home and possessions) as disastrous, and the forgone benefits (the component of the insurance premium that does not reflect the risk) as mattering little.⁶⁷

B. PARADIGM APPLICATIONS

The second reason is that the RCPP appears to work well with those global environmental issues often said to constitute paradigm cases for the precautionary principle, such as climate change and genetically-modified crops. For reasonable cases can be made that the Rawlsian conditions are satisfied in these instances. For example, standard thinking about climate change provides strong reasons for thinking that it satisfies the Rawlsian criteria. First, the “absence of reliable probabilities” condition is satisfied because the inherent complexity of the climate system produces uncertainty about the size, distribution and timing of the costs of climate change. Second, the “unacceptable outcomes” condition is met because it is reasonable to believe that the costs of climate change are likely to be high, and may possibly be catastrophic. Third, the “care little for gains” condition is met because the costs of stabilizing emissions, though large in an absolute sense,⁶⁸ are said to be manageable within the global economic system, especially in relation to the potential costs of climate change.⁶⁹

The third reason to think that the RCPP is not vacuous is that it can often help to explain disputes about the paradigm cases. Consider climate change again. Here the first Rawlsian condition (the “absence of probabilities” claim) is relatively uncontroversial.⁷⁰ But skeptics often dispute the second and third

⁶⁷The RCPP also does well with many cases where the conditions are not met and where precautionary action seems unwarranted: e.g., insurance against tennis shoe malfunction. In the standard cases, insurance seems rational because we care comparatively little about the cost of insurance relative to the costs of losing one’s home or belongings, whereas insurance in the tennis shoe case seems irrational because the relative cost of a new pair of tennis shoes does not constitute a disaster.

⁶⁸In a book that came out just as this article was going to press, Cass Sunstein worries that the “care little for gains” condition threatens to confine the RCPP to trivial cases, and this undermines the application to global warming (see Sunstein 2005, p. 112). I cannot offer a full response here. But we should note that Rawls is speaking of gains that can be made above some minimum we can guarantee through eliminating the worst case scenario. Hence, much depends on how one understands the alternative options. Suppose, for example, that we could avoid the possibility of catastrophic climate change and guarantee a decent quality of life for all, all at the cost of slowing down our rate of accumulation of purely *luxury goods* by two years. This might satisfy the Rawlsian condition even if the cost of those luxury goods in dollar terms were very large.

⁶⁹Some projections suggest costs of around 2% of global product per year. This is a large amount of money in absolute terms, but many writers point out that it constitutes only a delay of a year or two in projected growth. Other models claim that such projections underestimate the indirect benefits of reduced fossil fuel consumption, and that, once this is factored in, mitigation might actually be beneficial even if there were no climate change.

⁷⁰At least, this is true for those inclined to be against precautionary action. The less skeptical might dispute it. For example, IPCC 2001 does assign probabilities to the outcomes it considers, and these are of considerable magnitude.

conditions. For example, Bjorn Lomborg claims both that the impacts of global warming will not be that bad, and also that we should care a great deal about the opportunity costs of climate change mitigation. Hence, he implicitly questions whether the “unacceptable outcomes” and “care little for gains” conditions are met.

Now, I do not think that Lomborg is correct in his claims.⁷¹ Still, it is interesting that he chooses to attack precautionary measures in this way. For if we interpret the precautionary principle as the RCPP, then Lomborg need not really be against precaution in principle. Instead, he could be taken as endorsing the Rawlsian conditions, and merely arguing that they do not in fact apply in this case.⁷²

Similar observations can be made about some aspects of the debate about genetically-modified foods. Consider the following two examples. First, one argument often presented in their favor claims that they offer a solution to the problem of world hunger. This argument denies the Rawlsian “care little for gains” condition. On the other hand, opponents of genetically-modified foods often respond by claiming that such technology is neither necessary for, nor particularly likely to bring about, a solution to global food security. Hence, they might be construed as claiming that the same Rawlsian condition does hold. Second, some advocates claim that the application of the precautionary principle ignores the fact that the main alternative to genetic modification of food crops—industrial pesticides—also have seriously negative environmental effects. And they often assume that this counts against the precautionary principle itself. But this need not be so. Again, what might be at issue is either the second Rawlsian condition, or the claim that relative to the context, the introduction of genetically-modified foods constitutes an unacceptable outcome. For example, opponents of genetically-modified foods are likely to admit that the environmental effects of pesticides are deplorable, but claim that they are better understood, and of a lesser magnitude than the potential effects of introducing new organisms. Once again, the real debate seems to be about the reasonableness of such claims, and so about the application conditions of the RCPP, rather than about whether the precautionary principle itself is an acceptable principle.

In summary, the RCPP seems to be a considerable advance over the previous specifications of the precautionary principle. For one thing, the Rawlsian conditions appear to track precautionary intuitions about some core cases,

⁷¹On the first issue, Lomborg is almost amazingly optimistic. (For example, he envisions a worldwide shift to solar power by 2060. See Lomborg 2001, p. 286.) On the second issue, his claim that the money would be better spent on the world’s poor seems to falsely assume that these are mutually exclusive options.

⁷²Nir Eyal points out to me that perhaps Lomborg might accept the RCPP but believe that global poverty is the “unacceptable outcome” in relation to which we should “care little about the gains” to be made from climate change mitigation.

including the paradigmatic environmental ones.⁷³ For another, they appear to explain the dissent of opponents of precaution in those cases. Hence, the RCPP appears to be an improvement on the WPP, which merely allows for the possibility of cases of precaution, but does nothing to characterize or identify them.

C. “THICK” CONCEPTS

Nevertheless, there remain reasons for caution. In particular, the employment of the Rawlsian conditions does not remove all concerns about how the precautionary principle is to be applied because the RCPP does employ “thick,” or “value-laden” concepts which require interpretation. For example, in order to judge whether the Rawlsian conditions are met we need to decide, amongst other things: what it takes to lack probability information, or for such information to be deemed unreliable; what counts as caring little for gains; and what constitutes an unacceptable outcome. Hence, there remains some issue about the practical robustness, and so usefulness, of the precautionary principle even on the Rawlsian interpretation.

Now some advocates of precaution will see this development as positive. For, whilst, on the one hand, it suggests the need for the kind of democratic participation in environmental decision making that they take to be essential to, and characteristic of, a precautionary approach, on the other, it also adds structure to the decision-making process in a way that focuses discussion and so might facilitate debate and agreement.⁷⁴

However, others will take the invocation of thick concepts to constitute a decisive refutation of the RCPP. Despite its initial promise, the RCPP, they will say, shares the main weakness of the earlier vacuous and weak precautionary principles, in that it fails to provide practical guidance. They might also add that this problem is likely to be especially prevalent in just those controversial cases where value judgments are most prominent and entrenched.

This is not the place for a full response to this objection. However, three general remarks may serve to take the sting out of the complaint. First, the RCPP does seem like a noteworthy advance over the earlier principles. For one thing, it is not *always* unclear how thick terms are to be interpreted: as we have already argued, there can be clear cases in which almost everyone will agree that the Rawlsian conditions are met. For another, even if in some cases the RCPP alone does not provide immediate and univocal practical conclusions, this does not mean that it does nothing. In facilitating a move from “precaution” to other

⁷³Similarly, the criteria allow us to avoid the obvious counterexamples. We do not refuse to fly to Chicago in order to take an excellent job, because we do care a lot about the potential gains in that case, and because we do think we have a decent grasp of the probabilities.

⁷⁴Hence, it accommodates some of the procedural concerns of Jordan and O’Riordan whilst avoiding some of the drawbacks of their proposal.

thick terms, the RCPP provides added structure to practical debates and so makes more focused and substantive discussion possible.

Second, the employment of thick terms is not unusual in practical principles, and may be essential. For example, many other legal principles require interpretation, such as the notion of “reasonable doubt.” And such principles seem to function reasonably well within those contexts.

Third, and perhaps most importantly, the objection may rest on a controversial account of the role of principles in practical decision-making.⁷⁵ For example, suppose one’s implicit picture of principles is top-down and prescriptive. On this view, to be legitimate, the precautionary principle must be a universal, substantive principle of choice, such that, amongst other things, it is (a) known in advance and (b) always, and on its own, sufficient to guide people to a correct decision without any need for further interpretation. Clearly, the RCPP does not meet these demands—but then neither do almost all other reasonable practical principles.

One alternative to this picture is to suppose that principles are bottom-up, descriptive and explanatory devices. On this view, the role of a principle might be simply to summarize and draw our attention to the salient features of our reasoning in particular cases. And here the limitations of the RCPP might seem appropriate. For then its role is to identify some considerations relevant to our judgments in certain core cases. Hence, it need not claim to be either (a) a comprehensive guide to judgment in all cases,⁷⁶ nor (b) completely transparent to those unwilling to make those judgments, nor even (c) absolutely determinate in advance of a detailed consideration of any given case and its context. Still, this does not make the role of the principle disappear. For principles of this kind can capture and explain our reasons to others by making them salient, and they can be useful when considering new cases, by testing for salience. It is just that they do not function as a completely independent, “one size fits all” toolkit. This is because they do not have any decisive justificatory power of their own: they must always be understood in the context of the cases from which they emerge and to which they are applied.

XII. CONCLUSION

In this paper I have tried to defend a version of the precautionary principle against some standard objections. My approach has been to distinguish criteria for the application of a core precautionary principle, modeled on the Rawlsian

⁷⁵Recent work on this debate includes Hooker and Little (2000) and Dancy (1993).

⁷⁶This is important. Even though it captures salient features, a principle of this kind may not exhaust the considerations relevant to the judgment. Hence, one may not be able to simply lift the considerations over from one case to another and say that the same approach is warranted. There may be background conditions that are unexpressed, or perhaps that have not even been directly considered, which differ between the situations and so can disrupt the attempted generalization. (Jonathan Dancy (1993) calls such considerations “defeaters.”)

criteria for the application of the maximin principle. I hope to have shown that a criterial approach might allow the precautionary principle to escape standard objections, and that such an approach provides for a more robust version of the principle than has yet been envisaged. It therefore provides a promising setting in which to discuss the future of precaution in environmental policy.

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