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THE MORAL FOUNDATION OF THE PRECAUTIONARY PRINCIPLE

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ABSTRACT. The Commission's recent interpretation of the Precautionary Principle is used as starting point for an analysis of the moral foundation of this principle. The Precautionary Principle is shown to have the ethical status of an amendment to a liberal principle to the effect that a state only may restrict a person's actions in order to prevent unacceptable harm to others. The amendment allows for restrictions being justified even in cases where there is no conclusive scientific evidence for the risk of harmful effects.

However, the liberal tradition has serious problems in determining when a risk of harm is unacceptable. Nevertheless, reasonable liberal arguments in favor of precaution can be based on considerations of irreversible harm and general fear of harm. But it is unclear when these considerations can be overridden.

Within the liberal framework, the Commission advocates a so-called proportional version of the Precautionary Principle. This should be clearly distinguished from a welfare-based approach to precaution based on risk-averse weighing up of expected costs and benefits. However, in the last resort, the Commission does seem to make a covert appeal to such considerations.

KEY WORDS: harm, liberalism, proportionality, rights, risk

1. INTRODUCTION

During the last decade, the Precautionary Principle has won acceptance as a general principle in international law. Roughly, the principle says that, in the face of reasonable fear of severe harmful effects on people or the environment, governments may be justified in imposing measures to prevent this harm, even in the absence of conclusive scientific evidence. However, there is no explicit statement of the principle in the legal texts, and hence the precise content and scope of the principle remains somewhat unclear. Firstly, what precisely characterize the situations in which the Precautionary Principle *can* be applied? In such a situation, secondly, what determines whether or not the Precautionary Principle actually *should* be applied? Thirdly, which degree of precaution (or risk aversion) does the Precautionary Principle then prescribe?



Recently, the Commission of the European Communities has issued a “Communication on the Precautionary Principle” (2000),¹ which attempts to answer these questions. The aim of this paper is to state precisely the Commission’s interpretation of the Precautionary Principle, and to place this interpretation in its proper relation to ethics and risk management in general, in order to uncover the moral foundation of applying the Precautionary Principle.

2. THE LIBERAL CONTEXT

The Precautionary Principle made its appearance in the context of environmental policy. However, the Commission “considers the precautionary principle is a general one which should in particular be taken into consideration in the fields of environmental protection and human, animal and plant health” (p. 10). “Recourse to the precautionary principle is a central plank of Community policy” (p. 13), and the principle’s importance is internationally recognized, not least by the WTO agreement.²

According to the Commission, the issue of when and how to use the Precautionary Principle is a matter of finding the correct balance between two opposing considerations:

Thus, decision makers are constantly faced with the dilemma of balancing the freedom and rights of individuals, industry and organisations with the need to reduce risk of adverse effects to the environment, human, animal or plant health (pp. 3, 8).

This balancing belongs to the context of (political) liberalism. I should like to make clear, firstly, what is involved in this balancing, and secondly, where the Precautionary Principle fits in.

The defining characteristic of “liberalism,” as I shall use this term, is the claim that the state should protect the rights and liberties of individuals. The Commission, I suggest, implicitly assume that decision makers should be guided by an underlying liberal principle to something like the following effect:

The “Liberal Principle”: the only reason for which persons may be restricted in their actions by the use of coercion is to prevent unacceptable harm to entities worthy of protection.

¹ Page numbers below refers to this text, unless otherwise noted.

² The Commission goes through the legal foundation for the Precautionary Principle within the Community and in international law, cf. pp. 9–13 and Annex I–II.

Accordingly, a person may not, against his own will, be restricted in his actions with reference to his own best interests;³ and neither may a person be restricted in his actions, against his own will, in order to create benefits to others. This contrasts with what I shall call a welfare-based approach, according to which a person sometimes also may be restricted in his actions, against his own will, for the sake of his own best interest or for the sake of benefits to others. I discuss this contrast in Section 5.

The “Liberal Principle” is meant to ensure freedom of action for autonomous individuals (persons) only. However, the protection against harm is extended to all humans as well as to animals, plants, and the environment (hence the term “entities worthy of protection”). I add the qualification “unacceptable,” because not all harms should necessarily be avoided from a liberal point of view. For instance, certain religious or sexual behaviors might seriously offend others and thus harm them. But these are clearly not the harms the liberal tradition wanted to protect *against* – quite to the contrary, the tradition wanted to protect a person’s right to freedom of religious or sexual orientation. If some harms are acceptable, then of course the liberal principle only protects against “unacceptable” harm. I shall have to leave it to intuition how exactly the line between them is to be drawn.

Balancing is needed in judging what is an acceptable level of protection for the entities worthy of protection that does not interfere more than necessary with a person’s rights and liberties. If entities worthy of protection are entitled to not being exposed to *risks* of harm (as the Commission clearly seems to imply), then the balancing is extended to cover what is an acceptable level of such risk that does not restrict more than necessary the rights and liberties of persons.

“Liberalism,” in my broad sense, is intended to cover a great variety of views in the liberal tradition as to the exact content of persons’ rights and liberties, and as to their justification. Some liberalists (e.g., Robert Nozick, 1974) justify the rights of persons by pointing at the existence of fundamental moral rights. Others do not accept or assume the existence of fundamental moral rights, but they nevertheless find it justified by other considerations that the state recognizes certain rights, for instance by the objective of maximizing utility (e.g., John Stuart Mill, 1859),⁴ or

³ Some liberalists (e.g., John Locke, 1690; Immanuel Kant, 1797) believe that there are moral constraints on what a person may do to himself. For instance, he has no right to take his own life, or to consent to slavery. Others (e.g., John Stuart Mill, 1859; Robert Nozick, 1974) accept no such constraints.

⁴ Even though he is a utilitarian, Mill accepts a version of the liberal principle, see further below.

by considerations of justice and fairness (John Rawls, 1972). It is compatible with this liberalism that, apart from protecting the rights and liberties of individuals, the state can offer a wide range of services (including a welfare system) as long as this does not interfere with any person's rights. However, there is disagreement about when this happens. Some liberalists (e.g., Rawls, 1972; Mill, 1859) accept that social and economic goods can be redistributed to some extent,⁵ whereas others (e.g., Nozick, 1974) believe that any coercive redistribution of justly acquired goods violates the right of property.⁶ I believe that most strains of liberalism, given some qualifications, would support the underlying "Liberal Principle" I ascribe to the Commission. But several remarks should be added to this claim.

Liberalists in the natural rights tradition accept that persons have a right not to be harmed by others in their "life, health, liberty, and possessions"⁷ (even though they might disagree on the implications of this right). Many liberalists extend the right not to be harmed in life and health to cover non-autonomous humans (i.e., children, mentally disabled, etc.), and they extend the right not to be harmed in health to animals as well (or at least animals of the higher species). Hence, if a type of action involves harmful effects on the life or health of other humans or the health of animals, the state may be liberally justified in prohibiting it (or at least restricting it).

Similarly, when the utilitarian liberal tradition claims that "the only purpose for which power can be rightfully exercised over any member of a civilized community, against his will, is to prevent harm to others" (Mill, 1859, p. 78), this clearly involves protection of humans against harm in life and health. It is also in line with the utilitarian tradition to protect animals against harm to their health. I shall address the specific question of how the liberal traditions handle risks of harm in the next sections.

It clearly goes beyond the classical liberal views, though, to accept "the environment" as such or "plant health" as worthy of protection. In recent years, however, some environmental ethicists (e.g., Paul Taylor, 1986; Holmes Rolston III, 1988, to name a few) have argued in favor of this kind of extension of the class entities worthy of protection.⁸ And even if the matter is still somewhat controversial, this extension is clearly compatible with a liberal framework. As a matter of fact, the Commission (in accord-

⁵ It is an important problem, whether or not taxation for welfare purposes should be seen as a restriction of a person's actions. At least some liberalists accept taxation for welfare purposes (see further below). If this taxation *is* considered a restriction, albeit an acceptable one, the "Liberal Principle" has to be revised to allow for it.

⁶ Nozick would of course accept voluntary redistributions.

⁷ As put famously by John Locke (1690, p. 119).

⁸ To be sure, Taylor and Rolston do not claim that plants have genuine moral rights; but they have a legitimate claim to have their good respected.

ance with the WTO agreement and other international agreements) accepts the environment and plant health as worthy of protection.⁹

Next, liberalists generally accept that legal entities such as industrial companies or organizations are (to some degree) assigned rights and liberties as persons. Moreover, liberalists generally accept that persons (including legal entities) have a right to enter into voluntary contracts with each other, including of course trading contracts. The state should set up the general legal and institutional framework for the economy.¹⁰ But within this general liberal framework, particular restrictions on free trade can – in principle – be justified only by reference to prevention of harming third parties. In most areas, though, products are required to meet certain security or health standards, either by law or by voluntary agreement among the producers. However, even when the law coerces such restrictions, they need not be incompatible with liberalism, as I shall attempt to show in Section 4.

If a government wants to restrict or prohibit a certain product or procedure with reference to its potential harmful effects, then liberalism requires this reason to be sufficiently weighty to justify specific restrictions on the actions of individual or companies. The justification for prohibiting or restricting a certain product or procedure must therefore normally be based on sufficient scientific evidence of a causal link between product and the possible harmful effect, as well as of the frequency and the severity of the harm in question.

This is precisely the point where the Precautionary Principle enters the scene. There may be cases where “there are reasonable grounds for concern that potential hazards may affect the environment or human, animal or plant health” (p. 9), but where the insufficient or inconclusive nature of the scientific data precludes the risk from being “fully demonstrated or quantified or its effects determined” with certainty (p. 13). The Precautionary Principle claims that, in these cases, decision makers may be justified in acting, i.e., restricting the rights or liberties of a person, company, or organization in order to reduce the alleged risk.

To sum up, the “Liberal Principle” is a criterion for decision makers, which is justifiable by several strains of liberalism. The reason “to prevent unacceptable harm to entities worthy of protection” is normally understood

⁹ There is the complication that even if a law mentions plants or the environment as worthy of protection in their own right, the ultimate justification for this might refer to their value for human beings. However, I believe that, in many cases at least, both interpretations are possible.

¹⁰ For instance, some liberalists believe that a person has no moral right to trade certain things, such as his body or his organs.

as presupposing unacceptable (risk of) harm, of which sufficient scientific evidence has been produced. The Precautionary Principle corrects this understanding by allowing for cases where sufficiently certain evidence of the risk has not (yet) been produced. The Precautionary Principle, as I understand the Commission, has the ethical status of a clarifying amendment to a “Liberal Principle”.

Hence, it is reasonable to expect that the Precautionary Principle should be consistent with the principles guiding decision makers, when a risk *can* be determined with sufficient certainty. The Commission confirms this expectation (pp. 5, 16).

3. WHEN CAN THE PRECAUTIONARY PRINCIPLE BE APPLIED?

According to the Commission, recourse to the Precautionary Principle presupposes (p. 15):

- Identification of potentially negative effects resulting from a phenomenon, product or procedure,
- A scientific evaluation of the risk that because of the insufficiency of the data, their inconclusive or imprecise nature, makes it impossible to determine with sufficient certainty the risk in question.

It is important for the Commission to stress that recourse to the Precautionary Principle should not be groundless or arbitrary, or grounded in protectionism only. Therefore, it is a necessary condition that such recourse is based on a scientific evaluation of the risk. This seems to imply, firstly, that certain specific negative events, which there is reason to believe may be caused by the phenomenon, product, or procedure in question, are clearly identified. I take this to imply, roughly, that at least some acknowledged members of the scientific community in the relevant field should be seriously worried about the possibility of a causal link, although the present findings neither give any clear evidence nor suggest any hypothesis about the mechanism (e.g., p. 17).

Secondly, a scientific assessment of the risk should be produced as completely as is feasible, “leading to a conclusion which expresses the possibility of occurrence and the severity of the hazard’s impact on the environment, or health of a given population including the extent of possible damage, persistency, reversibility, and delayed effect” (p. 14). In addition, there should be an evaluation of the reliability of this risk assessment and its components, and an indication of the remaining uncertainty (p. 14).

There is no doubt a long way to go in turning these suggestions into a workable practice, but I believe the Commission has made some progress in outlining more precisely the necessary conditions for recourse to the Precautionary Principle.¹¹ Since there is no sharp boundary between “complete” and “incomplete” scientific risk assessments, I believe that one immediate consequence of the suggestions must be that *all* risk assessments should include an evaluation of the reliability of their data and conclusions, and an indication of the remaining uncertainty. This would clearly increase the transparency of risk management decisions.

However, by making the necessary conditions for recourse to the Precautionary Principle more precise, the Commission also makes them more controversial. Some people will probably think that the Commission sets up too strong conditions for invoking the Precautionary Principle by requiring prior identification of a specific negative effect and *some* scientific justification of the risk of its occurrence. Is it not a sufficient condition that there is uncertainty about the possible effects? Clearly, this is a point where opinions may divide. I believe the reason for the Commission’s stronger conditions has to do with the legal Proportionality Principle.¹² I return to this issue in Section 5; but I shall not myself, in this paper, attempt an answer to the question of what the conditions for invoking the Precautionary Principle should be.

On another level, the Commission’s suggestions are not as transparent as one could wish. It clearly seems to be another necessary condition for recourse to the Precautionary Principle that the risk is above a certain threshold, where “the desired level of protection for the environment or a population group could be jeopardised” (p. 17). Presumably, a risk above this level is unacceptable. (If it is, the question is still whether or not to act. I turn to this question in the next section.) The Commission has nothing to say about what this level is, or how to judge what it should be – only that the judgment is “an eminently *political* responsibility” (p. 4).

However, if the Commission intends to defend recourse to the Precautionary Principle against charges for arbitrariness or disguised protectionism, this political value base is probably more in need of elaboration

¹¹ Furthermore, the Commission has launched a project on the complex issue of scientific uncertainty called “Technological Risk and the Management of Uncertainty” (p. 15), from which four reports now have been published by the EU Forward Studies Unit and the joint research centers.

¹² Hence, the Commission’s interpretation of the Precautionary Principle is sometimes called a “proportional version” of that principle (Bernard Chevassus-au-Louis, 2000, pp. 6–7).

than is the notion of scientific uncertainty.¹³ This is so much more the case, since the scientific evaluation cannot be independent of the political decision or of other value decisions. The whole point of the evaluation is to provide information to answer the question, “Is the desired level of protection jeopardized?” Hence, its entire design must reflect the chosen “‘acceptable’ level of risk” and the notion of harm implicit in it. It is this notion of harm that determines which potentially negative effects it is at all relevant to consider. And it is this chosen “‘acceptable’ level of risk” that the final evaluation of the risk should be held up against.

Furthermore, as the Commission itself acknowledges, a scientific risk assessment is based on a “prudential approach,” i.e., a number of practical decisions that are based on practical “prudence” rather than on strict science. The Commission mentions a number of recommendations for estimating “dose-response” relationship of a particular hazard (p. 15). I should like to add the prudential elements involved in deciding when a scientific risk assessment is at all necessary. This is the step that initiates the whole procedure leading up to a possible recourse to the Precautionary Principle. Practical prudence is also involved in deciding when an assessment provides sufficient information to act upon. There are many other prudential elements. If a decision to apply the Precautionary Principle is to be transparent, then all these elements should be presented.

What is involved, anyway, in judging on a liberal foundation what the “‘acceptable’ level of risk” or the “desired level of protection” should be? I shall briefly consider this question. The necessary liberal condition for prohibiting (or restricting) an act is that it involves an unacceptable harm to others. The trouble is to decide when a *risky* action involves an unacceptable harm to others. Assume that a given harm is unacceptable. Suppose we have an act imposing only a certain probability of the harm occurring. Does this act also involve an unacceptable harm? It certainly seems implausible if any act only slightly risking an unacceptable harm is also actually itself an unacceptable harm.

A natural suggestion would be that there is some threshold risk, such that an expected harm (i.e., the sum of, for all possible harms in the situation, a measure of the severity of that harm multiplied by its probability) above the threshold is unacceptable, whereas an expected harm below the threshold is not. In fact, it seems that the Commission accepts this idea. But how should the threshold be determined? And even if one action alone has an expected harm below some threshold, what should then be done about a large number of such acts, the totality of which clearly represents an

¹³ This point is nicely presented by Susan Carr (2002) in the case of EU regulation of genetically modified crops.

expected harm above the threshold? Moreover, how should uncertainty in the assessment of the risk be handled? Does uncertainty in the assessment of probability or other forms of scientific uncertainty imply that a possible adverse effect counts for less in terms of unacceptable harm as compared with a complete risk assessment of the same harm? Or does it not?

As pointed out by Nozick (1974, pp. 74–75),¹⁴ the treatment of risky actions poses serious problems for the liberal tradition. The problem in establishing a general threshold of expected harm, above which the risk is unacceptable, on the basis of considerations of unacceptable harms only, is that there is no lower threshold limit for unacceptable harms occurring for certain. This makes it very difficult to see what any threshold for risk of harm could be based upon.

One possibility is to suggest that any person has a right to impose the same risks on others that he is willing to undergo himself; and that he should accept these same risks being imposed on him from others. However, there is no natural symmetry in this matter. People do not accept the same risks, and they may be willing to undergo bigger risks for themselves than they are willing to let others impose on them. Furthermore, neither future generations nor the environment impose any risks on us, but we cannot help imposing risks on them. So it may not be easy to get this suggestion off the ground.

If there is no basis for deciding the level above which risks of harm are unacceptable, we seem to reach the conclusion that *any* level of risk of harm is *prima facie* unacceptable. This is clearly not an attractive conclusion from a liberal point of view. However, there is still the possibility of claiming that the final level of unacceptable risk of harm is to be determined by comparing the available alternatives of action in the situation. For instance, even a relatively small risk should be reduced, if it can be so without serious restrictions; on the other hand, a relatively great risk may have to be allowed, if it can only be reduced by serious restrictions. This means that the level of risk necessary for invoking the Precautionary Principle cannot be determined in isolation from the available alternative actions in the situation. I discuss this suggestion further in the next section.

¹⁴ See also Shelly Kagan (1989, pp. 87–91).

4. WHEN *SHOULD* THE PRECAUTIONARY PRINCIPLE BE APPLIED?

Let us now assume that we have a case where the necessary conditions for recourse to the Precautionary Principle are fulfilled. There is a reasonable fear of seriously harmful effects on humans or the environment. That is, there is a fear of harmful effects on humans or the environment of a certain severity that is believed to occur with a certain probability, and this belief is sufficiently reliable, such that all things considered, the desirable threshold level of protection is exceeded. I shall leave undetermined what exactly this threshold level is – it might even be zero.

The question is now whether or not to act in this situation.¹⁵ More precisely, the question is how to choose between a number of alternative actions, one of which is “not to act,” and the others are measures of varying degree of restriction. As a matter of fact, the scientific evaluation of the risk is supposed to analyze the consequences of the possible alternatives of action, including inaction and the decision to wait for more information (cf. p. 17). However, I shall start by considering the decision whether or not to act. How should this decision be made?

The Commission has very little to say about this. All it says is that in this kind of situation, there might be varying degrees of pressure from public opinion, and that “the appropriate response in a given situation is thus the result of a political decision, a function of the risk level that is ‘acceptable’ to the society on which the risk is imposed” (p. 16). With this statement, the Commission perhaps hints at the idea that the right response in the situation is determined in the last resort by the preferences of society; and hence decision makers should attempt to reflect these preferences in their decisions. And perhaps even the threshold level of acceptable risk should be determined in this way.

That would seem to be a perfectly sound democratic policy. However, it might not necessarily lead to what is the right decision from a (liberal) moral point of view. In a liberal society, the morally right decision should be derived from considerations of the rights and liberties that individuals have in the situation versus the need to prevent unacceptable harm (or to reduce the risk of such harm). But the society’s preferences might point at another decision. Of course, it is possible to defend the view that rights

¹⁵ In his reconstruction of the Precautionary Principle, Per Sandin (1999) suggests that the necessary conditions outlined above are also sufficient condition for precautionary action. This is clearly true of some statements of the principle, but it is not true of The Commission’s interpretation.

of a person or company have no moral foundation whatsoever; all there is to a right is that the majority has decided to recognize it. However, if a nation argues from this view and acts upon it, it is likely to look as pure national self-interest from the outside. Moreover, “the preferences of society” is not a well-defined objective. It is a well known result in social choice theory that any general rule for aggregating people’s preferences into one preference of the society will violate at least one out of a set of very plausible conditions (cf. Arrow, 1963). Clearly, if the Commission wants to avoid charges of arbitrary decisions, much more transparency is needed in this area.

I shall now consider the arguments in favor of applying the Precautionary Principle that a liberal foundation makes available. First, what is the alternative of *not* applying the Precautionary Principle in the assumed situation, that is, the decision not to act? It is *not* to prohibit or restrict the action (or ban or restrict the product or procedure) in question. To allow a risky action, however, does not mean that potential victims are completely unprotected. In many cases, there is liability such that if a risky action results in actual harm on another, the victim must be compensated. For some actions such as driving a car, it is even obligatory to have a liability insurance in order to perform them. The general choice, then, for any kind of action (risky or actually harmful), is the choice between prohibiting it and allowing it, possibly under conditions of liability. Which considerations could guide this choice in a liberal context?

Perhaps in the absence of any important countervailing considerations, there is no reason to allow any act that involves risk of harm, as we saw in the last section. However, I shall concentrate on two other important considerations in favor of prohibition. One is that certain harms (not the least death) are irreversible and may not be possible to compensate fully. Since full compensation is impossible, the wrong consisting in an unacceptable harm cannot be put right again; the act remains a wrong in all cases, and therefore it should not be allowed.¹⁶ This argument goes for cases where the risk can be evaluated completely, as well as for cases where it can be evaluated only incompletely. As a matter of fact, the most important reasons for invoking the Precautionary Principle have so far probably been that certain damage on the environment may be irreversible and impossible to compensate for, or that certain harm on future generations may not be possible to compensate fully.

¹⁶ Of course, some liberalists would claim that, even if full compensation is made, the act remains a wrong. But this fact might still not be sufficient reason to prohibit it.

Another consideration is concerned with fear. Certain harms (for instance being knocked down), even knowing we should be compensated fully for their happening to us, would create great fear, if they were not prohibited and punishable. The point is that the uncertainty about whom and when such harms will hit creates a general fear among people, which itself may be considered harmful; hence, the prohibition (and possibly punishment) should effectively deter commission of these acts, such that the general fear is diminished. This reason, too, easily extends to covering the Precautionary Principle, because it applies to cases where there is uncertainty about the risk.

The fact that a certain risk of harm creates general fear is often used as a reason for reacting more restrictive than the magnitude of the risk of that harm in terms of its frequency in itself dictates. For instance, it could be argued that even though the risk for humans from Bovine Spongiform Encephalopathy (BSE) in terms of the frequency of human deaths seems to be rather small,¹⁷ and hence perhaps negligible from a liberal point of view. However, the general fear created by the severity of the possible harm, coupled with the uncertainty about whom and when it hits, may be so great that it justifies very strong precautionary restrictions.¹⁸

However, there are also opposing considerations to restricting risky actions (and hence to applying the Precautionary Principle). The reason why potential harmful acts sometimes should be allowed (possibly under conditions of liability) is presumably the great benefits of the act. However, from a liberal point of view, it is not possible to argue that the protection from harm from some act should be relaxed in order to ensure benefits to some people. Rather, it has to be argued that the act plays such an important role in people's lives that it is a part of their rights and liberties to perform it. Sometimes an action is allowed, even if it involves risk of irreversible harm, which cannot be fully compensated, or if it creates great fear, e.g., car driving or private possession of guns in the US. In practice, all nations

¹⁷ Of course, the exact size of the risk for humans from BSE in a given context is dependent on number of facts about the prehistory, the precautionary measures taken already, etc. And even given information about these facts, there remains uncertainty about its exact magnitude.

¹⁸ In general, it seems compatible with a liberal framework to ensure that people can feel safe about their food, rather than just give them full information about the risks from foods, and then let them decide for themselves which risks they want to run. We are all dependent on food, and the issue of food risks is very complicated. Hence, even if we get full information, there might be a general fear that we overlook some important risk due to lack of time or understanding. It seems reasonable, by the same token as above, to reduce such general fear in this and similar cases by requiring that all products on the market fulfill certain general safety standards.

take a cautious approach in some areas, and allow risky actions in other areas; but the distribution between these areas vary from one nation to the other, probably due to differences in culture and tradition.

In these cases, the moral problem consists in deciding which consideration overrides the other, i.e., when the entitlement not to be exposed to (risk of) harm overrides the right to perform a risky action and when it does not. If any risk of harm, however small, is *prima facie* unacceptable, we have this problem in all cases. However, this is another notoriously difficult issue within the liberal tradition. On top of this, there is the additional problem for the Precautionary Principle of how to handle the uncertainty inherent in the evaluation of the risk.

Of course, it would be very natural to say that the answer is a matter of weighing up the expected harms and benefits on each side against each other. But this answer is not available for the liberal framework, according to which persons have rights and liberties that only can be restricted with reference to prevention of harm. For the liberal, the question is a matter of weighing up how strong or important the right or liberty to perform the risky action is compared with how important it is to protect against the risk of harm of this particular kind and size. As long as we have no clear indication of how to measure the importance on either side, it seems very hard to derive a principled liberal answer to this question.

5. WHICH DEGREE OF PRECAUTION DOES THE PRECAUTIONARY PRINCIPLE PRESCRIBE?

Once it is clear that the Precautionary Principle should be applied, it still remains to decide which measures are to be taken. Since the choice is how to respond to a situation where the necessary conditions for applying the Precautionary Principle are fulfilled, the choice of measure is also covered by the statement that “the appropriate response in a given situation is thus the result of a political decision, a function of the risk level that is ‘acceptable’ to the society on which the risk is imposed” (p. 16). However, to this the Commission adds five “general principles of application” (p. 18): proportionality, non-discrimination, consistency, examination of the benefits and costs of action and lack of action, and examination of scientific developments. I shall comment on proportionality and the examination of the benefits and costs of action and lack of action only.

Bernard Chevassus-au-Louis (2000, pp. 6–7) has characterized the Commission’s interpretation of the Precautionary Principle as a “proportional version,” where “the strictness of our approach [i.e., the choice of

measure] must somehow be made proportionate to the nature of the potential risk” as opposed to a “radical version, which always results in bans whenever doubts remain.” The “Proportionality Principle” is a general legal principle. It implies that the choice of measure should be in proportion to the objective of a regulation. This means, roughly, that the measure should be the least restrictive means that is necessary for reaching the objective, and that does not restrict any further than necessary for that objective.

I believe the “Proportionality Principle” requires that there must be *some* justification of the causal link between the chosen measures and the objective of reducing the risk; this means again that there must be *some* justification of the risk in the first place, before the Precautionary Principle can be invoked, cf. Section 3. But this should not be understood as entailing that there is proportionality regarding the objective of reducing the risk. True, it may be somewhat unclear whether or not the Precautionary Principle should be applied in a situation where “the desired level of protection is jeopardized,” because applying it might interfere with important rights and because of the uncertainty of the risk. But once it is clear that it should be applied, the objective is clear: the risk must be reduced to an “acceptable” level. There can be no proportionality concerning this objective.

However, the sketchy remarks on an “examination of the benefits and costs of action and lack of action” are harder to interpret. The Commission writes (p. 19):

A comparison must be made between the most likely positive or negative consequences of the envisaged action and those of inaction in terms of the overall costs to the Community, both in the long- and short-term. The measures envisaged must produce an overall advantage as regards reducing risks to an acceptable level. Examination of the pros and cons cannot be reduced to an economic cost-benefit analysis. It is wider in scope and includes non-economic considerations.

In a liberal context, once the Precautionary Principle applies, the only objective is to reduce the risk to an acceptable level. The “cost” by pursuing this objective is a restriction of the rights and liberties of persons, but of course there are also economic costs, at least in the short term. However, the “Commission affirms [...] that requirements linked to protection of public health should undoubtedly be given greater weight than economic considerations” (p. 20).

It is not clear which costs the Commission has in mind here. The only suggestion I can think of, being compatible with a liberal framework, is that the envisaged action should be such that the expected positive consequences in terms of risk reduction should not be overridden by the

costs of the restrictions (in some cases perhaps at least partly in terms of economic costs), however that comparison is to be made. This could be seen as another requirement of the legal “Proportionality Principle.” The costs of reducing the risk to an acceptable level should not be unduly high; if they are, the envisaged action is too restrictive, that is, out of proportion to the objective of reducing the risk, and hence it should not be adopted.

Quite another interpretation is that the cost-benefit analysis should help in determining what the objective itself should be, that is, what the acceptable level risk should be given the expected consequences of the available alternative actions (including inaction and waiting for more information), and consequently what the right action is in the situation. However, if the objective of the regulation is to be determined by weighing up both costs and benefits of the available alternative actions in order to choose the best – rather than be given by the fact that individuals are entitled not to be exposed to risks above a certain level in the situation – then we have left the liberal context in favor of what I shall call a welfare-based approach.

A welfare-based approach sets up a general moral objective. It could be the utilitarian objective maximizing the sum of welfare. But it could also be an objective that gives weight to other considerations; for instance, it could be an objective that gives some weight to both the sum of welfare and to the equality in the distribution of welfare. The point is that whether or not to allow a risky action becomes a matter of weighing up the expected costs *and benefits*, i.e., the expected negative and positive contributions to the overall objective. If the expected benefits of some action are great, it might be reasonable to run a greater risk than if the expected benefits are not so great. The liberal framework, on the other hand, has to consider the risks in isolation from the possible benefits. It has to treat unacceptable risks of the same size in the same way, whatever the size of the expected benefits. This may seem irrational.

However, weighing up costs and benefits can be done with different attitudes to risk. Which attitude to risk is it reasonable to have? This question has been discussed within decision theory. A radical (i.e., very risk averse) approach is the decision criterion known as

Maximin: The right action is the action whose worst possible outcome is better than the worst possible outcome of any alternative.

This criterion only looks at the worst possible outcome, and it is concerned neither with assessments of probabilities (in so far as they are possible) nor with the more beneficial possible outcomes. Again, this seems irrational, and we could not live a normal life if we ought *never* to run even the slightest risk for the sake of a possible benefit, not even a very great one. However, advocates of the Maximin criterion claim that the criterion

should be used only in certain circumstances (roughly corresponding to the situations fulfilling the necessary conditions for invoking the Precautionary Principle).¹⁹ Hence, Sven Ove Hansson (1997) has suggested the Maximin criterion as a possible interpretation of the Precautionary Principle. But this interpretation seems to have some of the same problems as the liberal interpretation.

Another approach is known as Bayesian decision theory. It says, roughly, that it *is* rational to act on (consistent) probability assessments, and hence to consider *all* possible outcomes, not just the worst possible. However, it has nothing to say about the right attitude to risk. This question falls outside the domain of the theory and has to be decided on other grounds. But it is possible to have a clearly risk-averse attitude that could earn the name of a (“proportional”) version of the Precautionary Principle.

A welfare-based risk-averse Bayesian approach may seem a more rational approach to risky actions than the liberal or the Maximin approaches. Moreover, it overcomes the problems that haunt liberalism in determining the acceptable level of risk in a non-arbitrary way, and in determining whether or not the risk of harm from some action is overridden by the importance to persons of performing the action. So when the Commission appeals to a cost-benefit analysis, it may be a covert appeal to weighing up of expected costs and benefits as the only practical solution to these problems. This appeal has to be covert, however, because the flipside of a welfare-based approach is that a person may be coerced for the sake of benefits to others; and this is precisely what the liberal tradition does not want to allow.

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¹⁹ One such advocate is John Rawls (1972) in his discussion of what it is rational to choose behind the veil of ignorance.

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