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Healthy Public Policy

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PUBLIC POLICIES GUIDED BY THE PRECAUTIONARY PRINCIPLE

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EDITOR'S INTRODUCTION

This paper is part of a series of essays developed for the *National Collaborating Centre for Healthy Public Policy* by researchers associated with the *Centre de recherche en éthique de l'Université de Montréal (Université de Montréal Research Centre in Ethics)*.

The essays in this series are intended to present public health actors with syntheses of today's key ethical issues as they intersect with public policies affecting the population's state of health. The essays are also intended to provoke reflection.

This paper, developed by Valérie Beloin, addresses the use of the precautionary principle in public health. The precautionary principle was most explicitly developed by and through the development of environmental risk management policies, and has been used for a number of years in this public policy domain. As its increasingly frequent use by public health actors shows*, it can also be useful when public policy decisions need to be made in situations where, based on available scientific knowledge, the very existence of health risks to the population is uncertain. One reason that the use of the principle is the subject of vigorous ethical debate is because it is in tension with the ever-increasing call for emphasis on evidence-based public policies.

In her essay, the author deals with the principle itself in order to examine its relevance to public health. It is in this spirit that she goes beyond its particular embodiments in concrete situations to focus on clearly explaining the foundations of the principle, primarily through an examination of four elements that form its general structure. Then, the author proceeds to examine three of the main criticisms that have been formulated against the use of the principle, while presenting directions in which effective responses may be developed.

*See, for example, the mobilization of the principle by the author of a memoir concerning the management of pesticides in urban settings, published by l'Institut National de Santé Publique du Québec (INSPQ): Samuel, O. (2001) *Réflexions sur l'utilisation des pesticides en milieu urbain, Mémoire présenté au Groupe de réflexion sur les pesticides en milieu urbain*, Direction des risques biologiques, environnementaux et occupationnels, INSPQ, 22 p. Accessed August 21, 2008: http://www.inspq.qc.ca/pdf/publications/063_Memoire_pesticides.pdf

The World Health Organization (WHO) has also recently produced a reflection document regarding the use of the principle: WHO (2004) *The precautionary principle: protecting public health, the environment and the future of our children*, Marco Martuzzi and Joel A. Tickner Ed., 220 p. Accessed August 22, 2008: <http://www.euro.who.int/document/e83079.pdf>

INTRODUCTION

Public health actors are continually confronted with ethical questions relating to public policies that have an impact on health. For example, values such as freedom and safety may come into conflict when a choice is being made between two public policies that share the same objective. How is it possible to weigh these issues and choose a policy? This type of ethical problem is certainly disconcerting; however, the situation can become even more complex when the dilemma arises in a context of uncertainty. How can safety and freedom be weighed against each other when the threat to safety that we wish to address *is uncertain* (its very existence is a hypothesis rather than a certainty)?

“Risk and uncertainty management” generates a particular array of ethical issues. Reflection on these issues can be enhanced by familiarity with the concept of “precaution” and with the decision-making principle it gives rise to: the “precautionary principle.” This principle is based on the idea that it is better to exercise prudence when our behaviour could result in significant loss. The first part of this paper is aimed at clarifying the concept of *precaution* and the nature of the *precautionary principle*. The second part is devoted to showing how the precautionary principle can help guide action. Finally, the main ethical and conceptual difficulties arising from use of the precautionary principle will be briefly discussed.

1 CLARIFICATION OF THE CONCEPT OF PRECAUTION AND THE NATURE OF THE PRECAUTIONARY PRINCIPLE

In recent years, the precautionary principle has become an inescapable element of all international treaties related to the environment. This is probably because it gives expression to a widely shared notion drawn from popular wisdom (we need only think of the proverb “an ounce of prevention is worth a pound of cure”). As formulated in various treaties, the precautionary principle states, more precisely, that it is sometimes justified or obligatory to adopt protective measures in response to a given risk, even if current scientific knowledge has not established the existence of that risk as scientific fact. The precautionary principle might, for example, apply to a decision regarding authorization of the cultivation and/or commercialization of genetically modified organisms. This would depend on whether it could be demonstrated that a risk (even if its existence is uncertain) *might* be associated with GMOs. We will subsequently specify the nature of the “proof” that must be provided as well as how “serious” the risk must be for the precautionary principle to apply.

The precautionary principle as a decision-making principle

The *precautionary principle* refers primarily to a legal principle; in a broader sense, it can also designate a decision-making principle (applicable, for example, during policy development). This paper will be referring to the precautionary principle as a decision-making principle. It may be part of a legal framework, but this does not have to be the case. Moreover, its field of application extends beyond the environmental sector. Ultimately, it can be justified on either moral¹ or prudential grounds.²

¹ See for example, M. A. Saner, “An ethical analysis of the precautionary principle,” in *International Journal of Biotechnology*, 4; 1 (2002), pp. 81–95, and Karsten Klint Jensen, “The moral foundation of the precautionary principle,” in *Journal of Agricultural and Environmental Ethics*, 15; 1 (2002), pp. 39–55.

Even when refusing to consider the precautionary principle strictly as a legal principle, it is preferable to use a statement drawn from an international treaty as a point of reference. It would be problematic to rely on popular maxims expressing the idea of precaution because, for one thing, they do not distinguish between the concepts of *precaution* and *prevention*.³ The formulation preferred here is found in the fifteenth principle of the Rio Declaration, which was adopted during the United Nations Earth Summit in 1992. The English text reads as follows:

In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

Activities whose effects are sometimes thought to justify invoking the precautionary principle include, in addition to the cultivation of GMOs, the production of nuclear energy, the administration of growth hormones to animals destined for human consumption, certain means of disposing of toxic or nuclear waste, and the use of nanoparticles.⁴

The general structure common to all formulations of the precautionary principle

The general organizing structure of the various versions of the principle comprises four main elements.⁵ The first will be referred to here as the *damage condition*. This specifies what makes it possible to describe an effect linked to an activity as a form of damage; that is, to declare in what sense the effect is not value-neutral. For example, certain damage conditions specify that an effect constitutes damage when it is irreversible, catastrophic, serious, or results in a reduction of biodiversity. According to the Rio Declaration, an effect constitutes damage if it can be described as “serious or irreversible...environmental degradation.”

Secondly, every statement invokes a *knowledge condition*. This specifies what level of certainty is required, with respect to the relationship between the activity and the damaging effect, for the precautionary principle to apply. The knowledge condition is considered to have been met, depending on the formulation, if it is believable that a relationship exists between the activity and the damaging effect, if it is reasonable to believe this, if the relationship is plausible, or if it has not been proven beyond doubt that the relationship does not exist. In the Rio Declaration, the knowledge condition specifies that “full scientific certainty” as to the existence of the relationship is not necessary.

The third element included in the generic structure of the principle is the description of a *measure* to be applied or an *action* to be taken. This indicates precisely how the principle is to be applied. It may suggest prohibiting the risky activity, imposing a moratorium on it, delaying its introduction, strictly regulating it

² See for example, S. Haller, *Apocalypse Soon? Wagering on Warnings of Global Catastrophe*, Montréal and Kingston, McGill-Queens University Press, 2002, and John Harris, Soren Holm, “Extending human lifespan and the precautionary paradox,” in *Journal of Medicine and Philosophy*, 27; 3 (2002), pp. 355–368.

³ Precaution, unlike prevention, applies to a context of uncertainty (when the probability of the consequences occurring cannot be determined). Moreover, precaution constitutes a normative principle. Whereas the concept of prevention is value-neutral, precaution prescribes the use of action to avoid an undesirable consequence.

⁴ Fabien Deglise, “Nanotechnologies : les risques ne doivent pas être minimisés, préviennent les éthiciens,” *Le Devoir*, November 21, 2006.

⁵ The general structure described here is broadly inspired by Neil A. Manson, “Formulating the Precautionary Principle,” in *Environmental Ethics*, 24; 3 (2002), pp. 263–274.

or requiring specific follow-up. The measure can also consist in requiring that specific information be provided to consumers, or in demanding that work be carried out to reduce the level of uncertainty.⁶ The Rio Declaration states that precautionary measures should be “effective,” “widely applied” and “immediate.” When these three elements are combined, the structure of all formulations of the precautionary principle takes the following form: *if the potential effect linked to an activity meets the damage condition, and if the link between this activity and its damaging effect meets the knowledge condition, then decision-makers should remedy the situation by applying the specified measure.*

Are all formulations of the precautionary principle *unconditional* and *absolute*, as this general structure seems to imply? In fact, this is not the case. Many formulations specify that the costs and benefits of measures must be assessed, that the development needs of certain countries or regions must be taken into account, or that decision-makers may be influenced by technical factors. Such directives place restraints on application of the measure, and their effect is to render the precautionary principle *conditional*. In the Rio Declaration, the conditional nature of the principle is signalled by the passage referring to the “capacity of States.” Secondly, it should be noted that many formulations indicate the degree to which application of the precautionary principle is obligatory. They may specify that prescribed measures are mandatory or, instead, simply justified. Thus, all versions of the precautionary principle are not *absolute*. The Rio Declaration specifies that the absence of certainty “shall not be used as a reason for postponing” the adoption of precautionary measures. It states, therefore, that a particular type of argument must be considered *inadmissible* (the absence of certainty). However, this does not mean the precautionary principle is absolute (other arguments could justify postponing the adoption of measures). For this reason, it is appropriate to add a fourth element to the three principles discussed so far. This fourth dimension, which relates to the *content* of the obligation, is often present, although it cannot be integrated into the general structure common to *all* formulations. It can include conditions related to the application of the principle or indications about its more or less binding nature. It implies prior recognition of the possibility of conflicts between the precautionary principle and other decision-making principles.⁷

2 USE OF THE PRECAUTIONARY PRINCIPLE BY PUBLIC HEALTH ACTORS

First, let us present a concrete case involving application of the precautionary principle in a decision-making context. The precautionary principle is included in the French constitution through the medium of the Charte de l’environnement (charter of the environment). In the fall of 2005, the principle was invoked in relation to medical food safety to justify the decision to adopt measures in response to the problem of avian flu (confinement of commercially raised poultry, recommendations to avoid eating raw eggs or insufficiently cooked meat). The European Commission later expressed discontent regarding the French precautionary measure. According to Jean-Yves Nau, “While admitting that no current scientific research demonstrates that the H5N1 virus can contaminate the human organism through the digestive tract, [the European Food Safety Authority] explained that there is also no scientific research allowing for

⁶ Neil A. Manson, “Formulating the Precautionary Principle,” in *Environmental Ethics*, 24; 3 (2002), pp. 263–274. See also Corinne Lepage and François Guery, *La politique de précaution*, Paris, Presses universitaires de France, 2001, p. 119.

⁷ Per Sandin, in contrast to N. A. Manson, refers to such a dimension when he mentions the “command dimension.” Per Sandin, *Better Safe than Sorry. Applying Philosophical Methods to the Debate on Risk and the Precautionary Principle*, Stockholm, Thesis in Philosophy from the Royal Institute of Technology, 5 (2004), paper III.

exclusion of this hypothesis.” [translation]⁸ Did France make abusive use of the principle? The answer to this depends on the nature of the knowledge condition contained in the principle. If it is very easy to satisfy (for example, if the mere possibility that a risk exists suffices), then the context indeed called for application of the precautionary principle. Given a more stringent knowledge condition, the European Commission’s dissatisfaction could be justified.

This example makes evident, first of all, the importance of being able to refer to a precisely formulated precautionary principle. It also demonstrates that, as mentioned earlier, the use of the precautionary principle is not strictly limited to the environmental field.

However, regardless of the decisional arena, the principle will at times have an impact on public health. Thus, the following question can be asked: How can the precautionary principle be brought to bear on public policies that may affect health? When making a choice, public health actors must compare various options, paying particular attention to their effects on health. Even if these effects must be described as *risks* rather than as *definite effects* (that is, with a 100% probability of occurring), it remains possible, in a classical risk management scenario, to compare them. This would be done by taking into account the significance of the risk, as determined by two factors: the *probability* of the risk and the *magnitude of the damage* that would result. However, some risks fall outside this “classic” framework because they are surrounded by scientific uncertainty, which makes it impossible to assign probabilities to them or to calculate the potential damage they may cause. In such cases the precautionary principle can guide decision-making. GMOs represent such a case. Another example, from the field of commercial policy, involves the decision to authorize or to prohibit the sale of products that use nanoparticles (for example, paint or shampoo). We do not know for certain whether nanoparticles in fact represent a risk. Moreover, if this risk exists, we definitely do not know the magnitude of the potential damage or the probability of its occurrence.

The precautionary principle can help guide action during at least three stages of the public policy process. Firstly, it can be useful when the risks that must be taken into account are being *identified*. The nanoparticles example illustrates the difference between a process of policy reflection that takes into account the precautionary principle and one that adheres to a classical risk management framework. If the precautionary principle is invoked during the reflection process, this will not lead directly to prohibiting the use of nanoparticles; however, it will add another factor to those being considered during analysis (health problems that may be linked to nanoparticles).

Thus, application of the precautionary principle invites consideration of risks that would have been left out of a classical analysis. But, is the principle unable to address the need to compare these risks with “classical” risks (which may be assigned probabilities and whose magnitude is known)? Not quite, since it is also possible to view the precautionary principle as a guide to the *hierarchization* of risks. For illustrative purposes, let us suppose that a formulation of the principle including very stringent damage and knowledge conditions has been adopted. This makes it possible to argue that the risks brought forward under the precautionary principle should be prioritized relative to other risks considered to be definite. For example, if it is reasonable to conclude (stringent *knowledge condition*) that a catastrophic risk (stringent *damage condition*) is associated with GMOs, it could be justifiable to assign this risk priority over a risk whose existence is proven beyond doubt but which would result in only minor damages affecting a tiny portion of the population.

⁸ Jean-Yves Nau, “Grippe aviaire et précaution politique,” *Le Monde*, October 30–31, 2005.

It should also be understood that the process of reflection would lead to different conclusions depending on the measure or action prescribed in the formulation of the precautionary principle adopted. The third point at which the precautionary principle can help guide action in the field of public policy is during *selection of an action or a measure* to be undertaken.

3 POTENTIAL ETHICAL (AND CONCEPTUAL) DIFFICULTIES

Despite being rooted in common sense, the precautionary principle faces numerous objections. Three of these, which could be termed “classic” if the debate on the precautionary principle had begun less recently, will be presented below.

The “inability to guide action” argument

According to this argument, the precautionary principle can be used to justify too wide a range of decisions regarding a given situation and can even simultaneously legitimize contradictory choices. This makes it an empty principle and is sufficient to discredit it.⁹ Some even contend that the legal and regulatory success of the precautionary principle can be explained precisely by its inability to guide action; it is flexible enough to be used in support of whatever action or decision one wishes to justify. Thus, it can be adopted with little constraint.¹⁰

In general, there are many reasons for claiming that a principle is empty and unable to guide action. For example, this may be said if the principle, although very precise, does not apply to any real situation. However, it should be pointed out here that, in debates on the precautionary principle, the argument that it is “useless as a guide to action” is understood to follow directly from the principle’s problematic vagueness. This vagueness explains how the principle lends itself to such excessively free interpretation.

Thus, analysis of the first classic objection indicates that for a formulation of the precautionary principle to be acceptable, each of the elements that compose it must be defined with sufficient precision.

The “paralysis” argument

A second very widespread criticism of the precautionary principle can be referred to as the “paralysis” argument. This line of reasoning consists in pointing out that if the precautionary principle is applied during evaluation of a given activity, then it should also be applied during evaluation of the precautionary measure prescribed. Moreover, precaution will inevitably have to be exercised with respect to the precautionary measure itself, thus causing paralysis and making application of the principle impossible. Indeed, for any precautionary measure envisioned, it is always possible to imagine a complex

⁹ Pierre Le Hir, “Le principe de précaution, pour le meilleur et pour le pire,” in *Le Monde*, June 2, 2004: “The problem is that this notion of precaution opens onto an extremely wide field of reference, and is applied by everyone based on their own understanding.” [Translation]

¹⁰ A. Jordan, T. O’Riordan, “The precautionary principle in contemporary environmental policy and politics,” in C. Raffensberger, J. Tickner, *Protecting Public Health and the Environment: Implementing the Precautionary Principle*, Washington, D.C., Island Press, 1999, pp. 15–35 (p. 22): “While it [the precautionary principle] 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.” (p. 32): “The precautionary principle is vague enough to be acknowledged by all governments regardless of how well they protect the environment.”

scenario in which the measure in question *could* itself result in damage. However, it is important to indicate here the limits of the paralysis argument. It is only valid for certain formulations, in particular those whose knowledge condition is neither very stringent (for example, the mere *possibility* that damage could result) nor very precise. If the knowledge condition is stringent and precise, it becomes almost impossible to demonstrate that *all* imaginable precautionary measures could produce an effect that would satisfy the damage condition.

The “technological status quo” argument

A third common objection is that the principle blocks scientific and technological progress. Let us first point out that every technological innovation is, of course, associated with a certain degree of uncertainty, since not all the consequences of its use can be predicted. However, with use, uncertainty diminishes and often ends up disappearing completely once it becomes possible to calculate associated risks. The technological status quo argument advances the claim that adopting the precautionary principle blocks all technological innovation because the latter is necessarily accompanied by uncertainty. Conversely, technologies already in use prior to adoption of the precautionary principle are not affected because their use has led to a better understanding of their associated risks. From a psychological point of view, use also makes technological risk more acceptable, because people become more familiar with it. The problem is that new technology (now blocked by the precautionary principle) might prove to be less risky than the technology currently in use, or more beneficial on another level. Thus, the precautionary principle not only impedes scientific progress, it also potentially causes harm to our well-being by favouring only the short term reduction of risks. Again, it must be pointed out that this argument is only valid with respect to some formulations. It applies particularly well to those whose damage and knowledge conditions are not very stringent, and when precautionary measures consist simply in refraining from implementing the innovation. If, on the other hand, the proposed measure consists in pursuing further study to try to reduce uncertainty, it can easily be claimed that the principle promotes research.¹¹

Thus, the response to the technological status quo argument is to adopt a formulation of the precautionary principle that includes relatively stringent damage and knowledge conditions and to call for precautionary measures other than simple abstention. It should be added that, as when responding to the paralysis objection, these three elements must be presented in a sufficiently precise manner.

CONCLUSION

The conceptual clarification developed in the first part of this paper made it possible to identify the general structure of all formulations of the precautionary principle and to draw attention to the multiplicity of possible formulations. Next, an attempt was made to identify the stages at which the precautionary principle could be particularly relevant to the process of reflection engaged in by public health actors. These were the points at which the risks to be considered were *identified* and *hierarchized* and at which *an action or measure was chosen*. Finally, three reasons were given why the precautionary principle does not enjoy an entirely enviable philosophical reputation. Each objection related to the more general issue of the precautionary principle’s vague character. Thus, it seems that for the principle to be of use to public health actors it must necessarily be precisely formulated. However, this is not a sufficient condition for its usefulness, since it has been shown that the proposed formulation must also be

¹¹ For a refutation of the technological status quo argument, see also Tristram H. Engelhardt Jr., Fabrice Jotterand, “The Precautionary Principle: A Dialectical Reconsideration,” in *Journal of Medicine and Philosophy*, 29; 3 (2004), pp. 301–312.

characterized by relatively stringent knowledge and damage conditions and must refer to precautionary measures other than simple abstention.

Despite the usefulness of the precautionary principle in the decision-making process given a context of uncertainty, new questions arise from the need to adopt a formulation that counters the objections related to the principle's vagueness. Among other things, we might ask if it is really possible to define the damage condition with sufficient precision. For example, if the concept of *unacceptable damage* is introduced, how is it possible to arrive at a sufficiently precise definition? Is this concept not, in fact, so dependent on cultural values and references that its meaning cannot be confined to a brief definition and must instead be understood through experience and critical reflection?

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