

Precautionary discourse

Thinking through the distinction between the precautionary principle and the precautionary approach in theory and practice

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ABSTRACT. This paper addresses the distinction, arising from the different ways the European Union and United States have come to adopt precaution regarding various environmental and health-related risks, between the precautionary principle and the precautionary approach in both theory and practice. First, this paper addresses how the precautionary principle has been variously defined, along with an exploration of some of the concepts with which it has been associated. Next, it addresses how the distinction between the precautionary principle and precautionary approach manifested itself within the political realm. Last, it considers the theoretical foundation of the precautionary principle in the philosophy of Hans Jonas, considering whether the principled-pragmatic distinction regarding precaution does or doesn't hold up in Jonas' thought.

Key words: Precautionary principle, precautionary approach, WTO Sanitary Phytosanitary Agreement, Hans Jonas, Jonathan B. Wiener

Precautionary discourse is the discussion of the theory, legality, and application of the *precautionary principle* and the idea of *precaution simply*. Generally speaking, *precaution simply* is an expression used to emphasize that not all precautionary measures invoke a principled form of precaution. Rather, the emphasis is placed upon the notion that proceeding with precaution would be useful and practical (and hence, pragmatic) given the state of scientific uncertainty regarding a specific risk. In contrast, while those who invoke the *precautionary principle* are not opposed to precaution being deemed pragmatic, they nonetheless take the argument for precaution a step further in appealing to its principledness (e.g., the duty to future generations, preserving the “image of man,” and respect for human dignity) in

order to morally or legally ground precautionary measures. Both proponents and opponents of the precautionary principle have helped to shape the discourse, along with those who take neither side. With this in mind, my use of the phrase “precautionary discourse” is more encompassing than Karen Litfin's narrow use of it to describe the agenda-setting stage of ozone policy.¹ Instead, I define “precautionary discourse” as being an exchange of ideas or a contested realm regarding the normative status of precaution, be it understood as principled or nonprincipled, along with a discussion of its legality and applicability regarding specific risks.

To be sure, an initial foray into the discourse reveals more than a few variations of the precautionary principle, as well as a number of associated concepts that are at times difficult to pin down, especially when specific policy issues and contexts are considered

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individually or in conjunction with one another. The attempt to grasp the basics of the discourse can be a bewildering experience given the fact that not all conceptual or practical problems are consistently interpreted or easily resolvable, if they are resolvable at all. At times, the implementation of any general idea not only issues in problems as regards logistics of application but could quite possibly call into question the theoretical foundation of the idea. This dynamic is what I am most interested in capturing in focusing on the alleged distinction between the precautionary principle and the precautionary approach, which can also be viewed as *principled* precaution versus *pragmatic* precaution and, for the sake of brevity, will at times be rendered as the principled-pragmatic distinction.

The aim of this essay is to examine when and why the principled-pragmatic distinction regarding precaution is adopted and whether it holds at the various levels of precautionary discourse. This inquiry arises due to the different ways in which the European Union and the United States have come to adopt precaution regarding various environmental and health-related risks. This distinction is primarily the result of the preferred language of the United States.^{2,3,4,5} In preferring the language of the *precautionary approach* to that of the *precautionary principle*, the United States perceives such language to be compatible with risk assessment and benefit-cost analysis. But such a distinction leads to the misunderstanding that the precautionary principle is not compatible with risk assessment, and hence follows the misunderstanding that the precautionary principle is anti-science while risk assessment is objective or value-free and thus grounded in sound science.^{6,7,8}

In addition, the opponents of the precautionary principle fear that where the principle is explicitly conveyed in international laws it might be used to legally bind states that did not consent to it being an “enforceable norm of customary international law.”^{9,10,11,12} As it turns out, the “precautionary approach” does not elicit the same level of concern, since it is construed as an approach to the study of risk, not a “general customary rule of law or at least a general principle of law” (paras. 43, 122; cf. with paras. 16, 60, 124).² Despite the occasional drawing of lines between *principled* precaution and *pragmatic* precaution, at times there is no real effort made to distinguish in scholarship the precautionary principle

from a precautionary approach, and thus the two seem to be synonymous with each other,^{13,14} leading one to wonder if the language preference is merely political and thus exposes no real threat to the theoretical understanding of *principled* precaution. In fact, the most widely cited basis for the precautionary principle is the Rio Declaration on the Environment and Development, which uses the language of “the precautionary approach” without mentioning explicitly the “precautionary principle;” however, the section where it is discussed in the document is “Principle 15,” explaining, perhaps, the reason why it is seen as harboring the precautionary principle.

However that may be, the alleged principled-pragmatic distinction regarding precaution, even if it be only political in nature, is nonetheless still significant, and some would argue all the more so, and must be taken into consideration in analyses. In an otherwise intriguing empirical analysis of the precautionary principle, Di Salvo and Raymond fail to discuss the principled-pragmatic distinction.¹⁵ In their study they inquire as to whether it is the case that European scholars render the principle along the hazard-based paradigm, which offers a stronger version of the principle, while American scholars are more risk-based, which offers a weaker version of the principle. In a sample of 238 journal articles, where the phrase “precautionary principle” was used to search in three major databases, the precautionary principle was found to be defined using a mixture of “hazard and risk-based principles,” with both exerting “significant influence over the principle’s definition and usage” (pp. 95, 99–100).¹⁵ With no statistically significant difference between European and American scholars on how they define the precautionary principle, one conclusion that could be hastily drawn, which the authors do not make, is that the alleged principled-pragmatic distinction is irrelevant. Yet, as I will demonstrate, the principled-pragmatic distinction exists in the realm of politics and within the scholarly literature on the precautionary principle, and thus treating it as irrelevant or to overlook it entirely is possibly a grave oversight. In short, an empirical analysis emphasizing the “dominant interpretation” of the precautionary principle as based upon the frequency with which the most common definition and usage occurs runs the risk of missing out on the more nuanced arguments that precautionary discourse has to offer.

My own methodology does not focus on the frequency of various interpretations, which I don't discount as a worthwhile research agenda. As a political and international relations theorist my methodological tendency is to gravitate toward arguments pertaining to political ideas and then examine how they fare when reflected within policy, especially as it pertains to the interplay between values and science in environmental decision-making. As an environmental ethicist and environmental political theorist, my attention was drawn to the reoccurring times in which Hans Jonas' name is associated with the precautionary principle. Having a research interest that focuses on the work of Jonas, I became interested in how his legacy has been arguably boosted, depending upon one's perspective, in being deemed by many to be the theoretical founder of the precautionary principle. Knowing these aspects, the reader will better understand the scope of this article, which spans from problems in interpreting an international trade agreement to those involved in the philosophic interpretation of the precautionary principle.

To better understand whether there is a need to distinguish between precaution that is "principled" and that which is "pragmatic," I consider this question in both its theoretical and political dimensions. The essay begins at the practical level and proceeds to the theoretical, with the understanding that the practical can inform the theoretical, as surely the latter does the former. One reason for ascending from the practical to the theoretical is to begin with what is unfolding politically in an effort to attain the advantage of knowing some of the political difficulties revolving around the idea of precaution before turning to its theoretical articulation.

Another reason is that the distinction being made between what is "principled" and what is an "approach" or "pragmatic" regarding precaution seems to have originated in the practical realm of politics. That this distinction was made in the realm of politics, however, does not entail that such a distinction holds for the theoretical realm as well, nor, for that matter, that it even ultimately holds at the practical realm. Nevertheless, the calling into question of the "principle" of the precautionary principle through the alleged principled-pragmatic distinction invites an inquiry into the political origins of this questioning, not only to judge the reason for the distinction but also to

determine if the theoretical foundation for the precautionary principle is perhaps in need of revision.

Accordingly, the essay is thus divided into three sections, and throughout the sections the scholarship of Jonathan B. Wiener is emphasized, who even prior to his recently coedited book, *The Reality of Precaution: Comparing Risk Regulation in the United States and Europe*,¹⁶ was steadily making his name as a critic of the principledness of precaution without abandoning the logic of precaution per se. With this in mind, his perspective is crucial to consider in weighing whether his criticisms of the precautionary principle are adequate at the various levels of precautionary discourse, ranging from ethical theory to policy implementation.

In the first section, "Precautionary language and associated concepts," I briefly discuss how the precautionary principle has been variously defined and then address some of its associated and competing concepts, such as high level of protection versus significant risk, single-case risk versus countervailing risks, normative judgments and deliberation versus objective science. In the second section, "The politics of the *precautionary principle* versus the *precautionary approach*," I draw upon accounts comparing the United States and the European Union in how each has made use of precautionary reasoning when dealing with a number of risks. What these accounts serve to illustrate is how the distinction between the *precautionary principle* and the *precautionary approach* originated in the realm of international politics, where a quarrel has emerged over who is "more precautionary"—the United States or the European Union.

Regardless of who is "more precautionary," what is indicated is that both are concerned with the perception of being precautionary with regard to risk. It is worth keeping in mind that a subtler quarrel over whose normative or moral perspective is better is being played out as well, with one side being the champion of principledness (European Union) and the other the champion of pragmatism (United States). To illustrate this dynamic, I demonstrate how the World Trade Organization's Sanitary and Phytosanitary (SPS) Agreement has been variously interpreted regarding whether it expresses the precautionary principle. For this reason, I thought the selection of it for my study to be conducive to the task of thinking through the ambiguous interpretations as they pertain to the aim of this essay. In the last section, "Precautionary theory," I

analyze the theoretical foundation of the precautionary principle in the philosophy of Hans Jonas. Not only is Jonas considered by most accounts to have offered the first theoretical foundation for the precautionary principle,^{6,17,18,19,20,21,22,23} his *Imperative of Responsibility: In Search of an Ethics for the Technological Age* (published originally in German in 1979 and in English in 1984) has been considered one of three key sources central to the development of how precaution became “principled.”⁶ Jonas, then, appears to be the natural counter to Wiener’s discounting of the principledness of precaution.

I. Precautionary language and associated concepts

Some 19 versions of the precautionary principle have been identified.²⁴ The precautionary principle defined at a basic level “is a principle of public decision making that requires decision makers in cases where there are ‘threats’ of environmental or health harm not to use ‘lack of full scientific certainty’ as a reason for not taking measures to prevent such harm” (p. 2).⁷ Beyond this basic level but beneath the 19 different versions, the precautionary principle can be distilled into three versions that can act as points of reference on a scale that ranges from a stronger version to a weaker one. Wiener describes version 1 in terms of “uncertainty does not justify inaction,” version 2 in terms of “uncertain risk justifies action,” and version 3 in terms of “shifting the burden of proof” (see Table 1) (pp. 528–529).²⁴

The difference between version 1 and version 2 is mainly described, respectively, as “permitting” action versus “justifying” action. Version 2, as a result, is more precautionary in that intervention regarding environmental and human health is deemed necessary or highly advisable.²⁵ Version 3 is even more stringent than version 2, since when invoked, this version of the precautionary principle would forbid a “risky activity until the proponent of the activity demonstrates that it poses no (or acceptable) risk.” It also specifies an action to take when confronted with an uncertainty, whereas neither versions 1 nor 2 suggest what actions to take in the face of uncertainty, be it banning an activity, requiring labels and warnings, or investigating other options (pp. 1514–1516).⁸

Table 1. Wiener’s versions of the precautionary principle.

Version 1	“Uncertainty does not justify inaction”
Version 2	“Uncertainty Justifies Action”
Version 3	“Shifting the Burden of Proof”

The regulatory actions sanctioned by version 3 could result in overregulation, specifically, if the burden of proof is rather stringent and hence difficult to satisfy. Wiener, however, notes that the real-world application of version 3 is usually balanced. He suggests that the U.S. Supreme Court case *Industrial Union, AFL-CIO v. American Petroleum Institute* (1980), also known as the *Benzene* case, held that “no risk” does not determine the standard of what is “safe.” Rather, what is “safe” is couched in the language of “no significant risk,” which is to be determined in this case by the Occupational Safety and Health Administration (p. 1516).⁸ As such, the regulation of risk cannot simply be based on conjecture about some uncertain risk. Worth noting is that Wiener also cites this case, along with the National Academy of Sciences’ 1983 guidebook, as spurring the “widespread adoption of risk assessment,” which provides the means to move beyond mere conjecture about a risk and, moreover, displays how the precautionary approach is compatible with science-based risk assessment (p. 1510).⁸ Wiener also gives the examples of how the U.S. Federal Food Drug and Cosmetic Act, in regard to its drug licensing provisions, requires proponents to demonstrate “net benefits to the target patient population,” and how both the Toxic Substances Control Act and the Federal Insecticide, Fungicide, and Rodenticide Act require new substances to exhibit no “unreasonable risk” in order to be approved (pp. 1516–1517).⁸

Shelia Jasanoff points out that appeals to “sound science,” however, enter into the discussion when the acceptable level of risk is based on risk assessments, thus tempting regulators to suggest that their decisions are objective and not burdened with value judgments (pp. 265–266).²⁶ In a paradoxical twist, it seems that version 3 of the precautionary principle could possibly be associated with appeals to “sound science” and objectivity when risk assessment is used to determine the appropriate level of risk. The paradox, namely, is that the precautionary principle is usually seen as providing the justification for normative judgment and

action when sound science and objectivity are not possible due to the uncertain nature of the risk. After all, how is the acceptable level of risk to be determined when the scientific assessment of an uncertain risk cannot be quantifiably measured?

Despite the problems of validation in choosing the appropriate level of risk, the United States, like European states, places the burden of proof on manufacturers to provide information that new products do not pose “significant risks.” Yet, Jasanoff argues that in some instances the burden of proof can be based on rather low threshold standards for safety (pp. 260, 262).²⁶ The European Union, perhaps for this reason, emphasizes the language of a “high level of protection” instead of “significant risks” in its regulatory regimes, as this would raise the bar higher than what a risk assessment might deem to be scientifically safe. Member states of the European Union are also permitted to set higher standards than those already established at a “high level of protection.” In an effort to keep standards roughly equivalent in member states, the European Union tends to “preempt national action by choosing very high levels of protection” (pp. 28–29).¹⁰

In comparison, at least one U.S. environmental law and Supreme Court ruling prohibited a state from setting higher standards than those set at the national level (pp. 241–242).²⁷ Moreover, the United States, in addition to setting low thresholds for burdens of proof in some instances, has also been accused of regulating “small risks,” thus leading Christoforou to infer that the United States “appears to be exhibiting...the symptoms of a mature regulatory system in decline” (p. 30).¹⁰ Although Wiener does not wonder whether the U.S. regulatory system is in decline, he also notes, despite his critique of Christoforou’s analysis, the “problems of tunnel vision (excessive regulation of minor risks) and random agenda selection that have plagued U.S. regulation” (p. 87).²⁸ Be that as it may, the European approach that emphasizes a “high level of protection” appears not to be as susceptible to grounding the chosen level of protection solely in appeals to sound science and objectivity. Instead, normative judgments and deliberation, along with risk assessments, are all considered in setting regulatory standards.^{29,30}

Normative judgments and deliberation are not only needed in setting the appropriate level of protection but also in choosing what risks to regulate, which

foregrounds the relevance of values in the making of environmental and public health policy. For instance, the precautionary principle has not been evenly applied in Europe regarding the development of nuclear energy, where Germany has twice announced plans (in 2002 and 2011) to phase out nuclear power by 2022 (p.135),^{6,31,32} while France opposes the precautionary principle when applied to its nuclear power plants (p. 1523).⁸ France, however, is the first EU member state to have “incorporated the [precautionary principle] in its Constitution, via a dedicated Charter of the Environment,” which was adopted in February 2005.^{33,34} The Maastricht Treaty of 1992 that established the European Union, moving the European Parliament from being a consultative body with no legislative power to being on a more equal footing with the European Council in approving legislation (pp. 72–73),²⁶ also incorporated the precautionary principle in an effort to prevent rapidly growing environmental degradation and out of a “desire to create a normative basis for action even in the absence of clear evidence of harm and causality” (pp. 21–22).¹⁰ Within the treaties of the EU, the precautionary principle is explicitly invoked (Article 130r of the 1992 Maastricht Treaty; Article 174 of the 2001 Nice Treaty; and Article 191 of the 2009 Lisbon Treaty on the Functioning of the EU):

Union policy on the environment shall aim at a high level of protection taking into account the diversity of situations in the various regions of the Union. It shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay.

In this context, harmonisation measures answering environmental protection requirements shall include, where appropriate, a safeguard clause allowing Member States to take provisional measures, for non-economic environmental reasons, subject to a procedure of inspection by the Union.

Although the emphasis on a “high level of protection” in relation to the precautionary principle is shown in these statements, Christoforou notes, “the EC Treaty did not provide a definition of the precautionary principle” (p. 243).³⁰ He, however, is quick to point out that the European Court of Justice (ECJ) ruling on

bovine spongiform encephalopathy (BSE), commonly known as mad cow disease, “contains all the necessary elements of a general definition of the precautionary principle that can be applied in all areas of EC law,” which contains the “three basic conditions that may trigger application of the precautionary principle in EC law: uncertainty, risk, and lack of proof of direct causal link” (p. 243).³⁰ The ECJ’s precautionary judgment is as follows:

Where there is uncertainty as to the existence or extent of risks to human health, the institutions may take protective measures without having to wait until the reality and seriousness of those risks become fully apparent (p. 243).³⁰

Worth considering, however, is that, according to Julian Morris, the ECJ did not cite the precautionary principle in this case but instead “another apparently similar principle, ‘that preventative action should be taken’” (p. 6).³⁵ Morris’ argument rests upon the notion that prevention is distinct from precaution within the treaties of the EU. In this context, it is also worth considering how Bourq and Whiteside stress the common error of confusing the concepts of precaution and prevention with each other (p. 101, see also p. 93),³⁶ while Wiener recommends that the phrase “degrees of precaution” is more appropriate than maintaining a distinction between precaution and prevention. Wiener takes issue with the notion that prevention applies to “known” risks, since for Wiener “all risks are uncertain” and thus the idea of a “known” risk is misleading. In using the language of “degrees of precaution,” Wiener seeks to circumvent the “quagmire” of drawing a distinction between precaution and prevention (p. 530).²⁴

Wiener also takes issue with these three basic conditions for the precautionary principle: uncertainty, risk, and lack of proof of direct causal link. He argues, first of all, that human beings always act in the face of uncertainty, since “there is never ‘full scientific certainty’ or ‘conclusive evidence’” (p. 604).⁹ Secondly, he asserts, “All activities involve risk... Dealing with risk is an inescapable element of the human condition... By risk we mean the likelihood (probability) that exposure to a hazard will cause an adverse outcome (harm) to occur, combined with the seriousness of that outcome (e.g., mortality, morbidity, or impaired quality of life)”

(p. 1511).⁸ Wiener, of course, is not oblivious to the fact that some risks are better grasped and documented than others that remain relatively unknown and hence display more uncertainty. For instance, the prediction of highway accidents next year can be determined with a fair amount of confidence, while prediction of whether cell phones cause brain tumors remains uncertain on the level of direct causality, and even more so on the probability of the technology actually causing cancer; that is, should a causal link be discovered. Despite the relative confidence in the yearly prediction of highway accidents, it still remains practically impossible to predict highway accidents on a given day or for an individual. With this in mind, Wiener argues, “All risks are probabilistic and uncertain because we can never know the future with complete certainty” (p. 1511).⁸

Although Wiener may be right to some degree in pointing out how the three basic conditions for the precautionary principle are problematic, he nonetheless tends to rely upon everyday risks to make his general point about the nature of risk (p. 1511).⁸ In doing so, his argument is not as sound as it could be if he had kept his argument to risks that have been directly targeted by the precautionary principle. Granted, risk is certainly “an inescapable element of the human condition,” and choking on food and cracking one’s head on the pavement during an evening stroll are probably more likely to occur and, for the sake of argument, be more severe in their effects than any risk that may be associated with eating transgenic foods. Yet, it seems that the precautionary principle is primarily directed toward novel technologies and processes associated with modernity (e.g., genetically modified foods, nuclear power, or turning cattle into omnivores), toward activities that threaten the environment or human health (e.g., toxins and hazardous waste), and toward the social ramifications of a new technology (e.g., the patenting of life).

The point, to be precise, is that Wiener’s criticisms, although they are certainly worth considering and may be useful argumentatively in foregrounding problems regarding the basic conditions for the precautionary principle, detract from the context in which the precautionary principle is invoked. And thus the comparisons between risks associated with cell phone radiation to the risks associated with driving on the highway or the chance of being struck by lightning

seem to be misplaced. That said, Wiener certainly addresses risks that are or can be targeted by the precautionary principle. And the strength of his argument lies in arguing the need to consider countervailing risks and not simply single-case risks.^{37,38,39,40} It is to this argument we now turn.

Normative value judgments are perhaps the most prevalent when it comes to having to choose one risk over another, otherwise known as countervailing risks. In a multi-risk world, weighing the risks and choosing a line of action is always a gamble, especially when the uncertainty is great. For instance, supposing the adoption of nuclear power or increasing reliance upon it would curtail the risk associated with the worst-case scenario regarding global warming, are the risks that accompany the use of nuclear power worth it? Or conversely, would the mere act of banning nuclear power increase the rate of global warming? As mentioned above, France opposed the precautionary principle when it was directed at its nuclear power plants. It seems plausible that France could have responded with the countervailing risk of global warming. Given what we know about the risks associated with nuclear energy and the durability of nuclear waste, one could reasonably wonder if increasing the reliance upon nuclear energy is a good choice. And for the sake of argument, one could doubt the predicted severity with which global warming could alter the planet. Why not simply hedge one's bets with what is better known? The problem, perhaps, is that no one knows how severe the effects of global warming will be, or how soon they will come, or if specific effects will indeed come at all. There seems to be no easy way out and plausible arguments can be made on both sides. In this regard, decision-making does not always side with relative knowledge over and against ignorance when imagining future consequences.

Another difficulty involves false positives and false negatives. In science, a false positive, also known as a Type I error, is defined by "errantly claiming a significant effect." A false negative is known as a Type II error and is defined by "failing to detect a significant effect." Laboratory science typically prefers a false negative to a false positive, in that the former will merely lead to delays while the latter could lead research astray. Yet, when dealing with endangered or threatened species, McGarvey argues that a Type I error is preferable to a Type II error, since failure to

detect a threat to an endangered species could result in irreversible damage, such as species extinction.^{41,42,43,44} In a similar vein, Christoforou claims, "existing risk assessment methodologies are inherently biased in favor of avoiding overinclusive regulatory measures (i.e., the inclination is to avoid false positives) for fear of imposing undue costs on technological progress and society" (pp. 34–35).¹⁰ It appears, then, that a "more" precautionary scientific risk regime would invert the preference order of laboratory science and encourage the inclination to avoid false negatives. If Christoforou's claim is true, then once again value judgments would certainly seem to play a role in regulatory science, since a more precautionary risk regime would arguably not be as concerned with the possible influence that false positives would have on technological progress. With this in mind, overregulation would be the result of false positives and underregulation that of false negatives.

Some might argue, then, that the cost of underregulating harms the environment and human health, while overregulation creates no real harms except the loss of revenue and perhaps technological progress. Wiener questions this line of reasoning. Overregulation, for instance, of genetically modified organisms could cause more environmental damage and harm to health, in that one argument for genetically modified organisms is that they are in theory thought to reduce the amount of chemical pesticides used in agriculture (hence ignoring the actual compatibility of biotechnologies and chemical pesticides, such as Monsanto's Round-Up Ready Crops) and add nutritional value as well as increase yields that could be used in the fight against hunger. Wiener's notion of countervailing risks applies here in thinking through the issue of false positives and false negatives. Simply arguing that a preference for false positives leads to more precautionary regulation does not hold up when met with the dilemma of countervailing risks. This is not to say that Wiener thinks that regulation should favor false negatives over false positives but rather an effort must be made to determine what the countervailing risks are when one risk is regulated. Given the presence of false negatives and false positives, overregulation of a risk that in time may turn out to be benign could possibly detract from a risk that is underregulated and

may, in fact, be in need of more regulation. Wiener argues,

A general shortcoming of the PP [that is, the precautionary principle] is that it addresses risks one at a time as if uncertainty were the crucial issue. But the reality is that risks are multiple and trade-offs are the crucial issue. The PP thus neglects interconnectedness and neglects the potential adverse health and environmental effects of precautionary measures themselves. Ironically, the PP neglects the ecological insight of interconnection (p. 1519).⁸

Instead of focusing too much attention on a single risk, Wiener offers the notion of “optimal precaution,” which does not seek to maximize precaution in one area at the expense of neglecting a risk in another; rather, a balance is sought within a multi-risk framework where trade-offs are weighed and the overall, negative consequences minimized. With this notion, he asserts, “Precautionary regulation should be followed by continuing surveillance and research to foster learning and adaptive revisions. And we need risk-superior options that reduce multiple risks in concert” (p. 1521).⁸

Wiener certainly makes a good point, or rather several good points, in his argument. However, he never gives any real consideration to how such a multi-risk framework has worked or how it ought to work. Furthermore, the only mention of how a multi-risk framework should work suggests that “optimal precaution” makes possible “continuing surveillance and research to foster learning and adaptive revisions,” implying that the precautionary principle does not do these things when applied (which does not always seem to be the case) (cf. p. 34).²⁹

Another difficulty of Wiener’s framing of the issue of multiple risks is how one weighs countervailing risks when risks are seemingly incommensurable. For instance, using the example of endangered species, how would one determine the risk of denying public land allotments to ranchers in the West, whose livelihood usually depends on such allotments, when an endangered species is allegedly threatened by the grazing of cattle?⁴⁵ One could certainly argue that the open spaces that ranches provide are much better for the endangered species than the housing developments that will possibly take the place of ranches that are

foreclosed on due to the ranchers being denied access to allotments. As far as I am aware, Wiener does not say how, and moreover, his analysis never considers the normative dimension of risk regulation in the context of balancing multiple risks, leading one to wonder if Wiener himself believes strongly in the notion that sound science can see us through the muddle made by countervailing risks. To be fair, perhaps, he has no research interests in the role of normative value judgments in risk regulation. He does mention, however, the normative dimension, which he seems to equate with base rhetoric, that has surfaced in comparative analyses between Europe and the United States on who is “more precautionary than thou” in regulating risk (p. 77).²⁸ To these analyses we now turn.

II. The politics of the *precautionary principle* versus the *precautionary approach*

In setting the stage for a discussion of the principled-pragmatic distinction regarding precaution, it is important to keep in mind that the subtle quarrel over whose normative perspective is better is a component of the larger debate over whether the European Union is more precautionary than the United States. Along the lines of the “flip-flop hypothesis,” Christoforou describes three phases of regulatory history when comparing the United States with the European Union:

the early phase (up to 1970s), when the regulation of risk on the basis of precaution in the United States was more rigorously applied; the second phase (up to 1990s), when the European Community accomplished tremendous progress in regulating risk to health and the environment and nearly closed the gap with the United States; and the final phase (from the early 1990s to the present), in which more stringent regulation of risk on the basis of precaution has become greater in the European Community than in the United States (p.17).¹⁰

In a like manner, David Vogel argues,

From the 1960s through the mid-1980s, the regulation of health, safety, and environmental risks was generally stricter in the United States than Europe. Since the mid-

1980s, the obverse has often been the case (quoted on p. 319).²⁵

Wiener and Rogers find problems with the “flip-flop hypothesis” and counter with the argument that it is “oversimplified and largely incorrect.” They claim,

The reality is much more complex; issue-specific context is crucial. Sometimes Europe does take a more precautionary stance than the US, but sometimes the US is the more precautionary regulator. This complex pattern is occurring today and occurred in the past. One may find a marked difference in relative precaution on particular risks taken one at a time (such as genetic engineering), but a broader analysis of the evidence across the range of health and environmental risk suggests that there has been no general “flip-flop” of relative precaution between the US and EU. Ultimately, neither Europe nor America can claim to be the more precautionary actor across the board. Thus, the notion of a great transatlantic struggle over risk and precaution is misleading. And, we suggest, a debate over who is (or a race to be) “more precautionary than thou” is not the best way to improve regulatory policy or transatlantic understanding (p. 319).²⁵

In response to this criticism, Vogel concedes that, on the whole, “Europe is not more precautionary than the United States, since virtually all the relatively risk-averse statutes enacted by the United States before 1991 are still in effect.” He adds that it is neither the case that European regulations enacted since 1990 are “more stringent or comprehensive than in America.” In clarifying his argument, Vogel argues,

It is rather that the most powerful determinant for the relative stringency or innovativeness of consumer and environmental regulations in the United States and Europe is the timeframe during which they were enacted. For the most important consumer and environmental regulations enacted prior to the mid-1980s in which American and European policies were divergent, American policies were more likely to be either more stringent or innovative...For regulations which emerged on either the European or American regulatory agenda after 1990, European regulations are more likely to be either more stringent or comprehensive...Policies enacted in the interim, namely between 1985 and 1990, present a more mixed pattern (p. 579).⁴⁶

Despite this clarification, Wiener cites a number of examples to support his claim that the United States has—and continues to make—stringent and innovative regulations since the mid-1980s up through to the present. He is quick to mention, however, that one should not infer that all of these regulations are desirable or that countries should compete for the “more precautionary than thou” award. Rather, he simply wants to lay to rest the image that the United States is inactive regarding regulation, (pp. 75–76).²⁸ After all, on the global spectrum both the United States and the European Union are at the “highly precautionary end,” even though there are differences as to how precaution has been particularized (pp. 74, 82, 91).²⁸ Keeping up the “more precautionary than thou” competition, according to Wiener, “may look baffling and hairsplitting to the billions of people who live in countries that (compared with either the United States or Europe) have less stringent environmental standards, less institutional capacity to enforce those standards, less scientific capacity to detect and warn of future risks, and much more pressing immediate crises in hunger, health, and environmental quality” (p. 77).²⁸ Wiener argues persuasively and seems all the more persuasive in light of a point made by Krämer regarding the difficulty of comparing the United States with the European Union, since the European integration process has been and remains rather complex (p. 53).¹¹

Be that as it may, in this discussion of who is more precautionary, Wiener has often made comments pitting “optimal precaution,” which claims to manage multiple risks and assess the impacts of how the risks were managed, against the particularized or single-case use of the “precautionary principle” (pp. 600, 611–612),⁹ while others, such as Christoforou, affirm the principled language of the precautionary principle. In both instances precaution is maintained, but the principledness of precaution is called into question through Wiener’s presentation.

When it comes to interpreting international agreements, questions arise as to whether the precautionary principle is implied when precautionary language is used, even though the principle itself is not explicitly mentioned. The World Trade Organization’s Agreement on Sanitary and Phytosanitary Measures (SPS) is such a document. Foster describes the goal of the agreement as follows: “The SPS Agreement regulates barriers to trade that are adopted to counter sanitary

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and phytosanitary risks (specifically, risks from pests, diseases, and additives and contaminants in food) by requiring them to be based on science” (p. 50).⁴⁷ Article 2.2 of the agreement holds that SPS measures, which must be based upon science and can only be maintained without sufficient scientific evidence by appealing to Article 5.7, which is the section that some have interpreted as implicitly entailing the precautionary principle. Article 5.1 is the section that requires risk assessment in order to meet the demands of Article 2.2.^{47,48,49,50}

In what follows, I have compiled a sampling of the various interpretations of Article 5.7, the section that arguably implies the precautionary principle. The first two interpretations find that the precautionary principle is implied in Article 5.7. As Christoforou contends,

Article 5.7 of the Agreement on Sanitary and Phytosanitary Measures (SPS) is also considered to reflect the precautionary principle [e.g., World Trade Organization (WTO) Appellate Body report in *Meat Hormones* case, at paragraph 124] (p. 23).¹⁰

Similarly, Godard asserts, in a matter-of-fact tone,

The precautionary principle (PP) has been introduced and progressively acknowledged in environmental law for more than fifteen years, but to a differing extent in international, European and domestic law. Outside Europe, many countries still refuse to give it legal effect, although it is reflected in a number of international agreements, even in the World Trade Organization (WTO) Sanitary and Phytosanitary (SPS) Agreement (p. 63).³³

In the opposite manner of these two interpretations, Wiener states,

disputes in the World Trade Organization (WTO) over precautionary restrictions on beef hormones, asbestos, and genetically modified foods have raised the question whether international trade law, particularly *the Agreement on the Application of Sanitary and Phytosanitary (SPS) Measures, precludes the precautionary principle by requiring regulation to be based on risk assessment*. In response, some have asserted that the PP may now be so widely adopted that it is ripening into an enforceable norm of customary law, potentially binding states even if they have not consented to it explicitly...Others have argued that state practice on precaution is so diverse and inconsistent, and the formulations of the PP so

varied...that no clear and binding norm can be discerned (p. 601; italics added).⁹

Does the SPS Agreement, then, reflect the precautionary principle or not?

In sorting out the politics of whether the SPS Agreement contains the precautionary principle, Vogel recalls that the United States insisted upon the inclusion of the SPS Agreement in the WTO Uruguay Round Agreement. “Many American exporters felt they had been disadvantaged by the unfair application of technical, food and agriculture standards, and they wanted such standards to be subject to WTO scrutiny” (p. 234).⁵¹ Such scrutiny found expression in the example of the European Union’s ban on beef hormones justified on the grounds of the precautionary principle. The United States and Canada’s Panel Reports find that, “the precautionary principle cannot override our finding...namely that the EU import ban...is not based on risk assessment,” which is a requirement of the SPS Agreement’s Article 5.1 (para. 120; p. 242).^{2,51} Does the SPS Agreement not reflect the precautionary principle, or does science-based risk assessment have the upper hand within the SPS Agreement? One could easily imagine that the United States’ insistence for adopting the SPS agreement was carried out in an effort to privilege risk assessment in the document. In the report of the Appellate Body, *European Communities – Measures Concerning Meat and Meat Products (Hormones)*, Article 5.7 is interpreted by the United States as providing a “precautionary approach”:

In the view of the United States, the claim of the European Communities that there is a generally accepted principle of international law which may be referred to as the “precautionary principle” is erroneous as a matter of international law. The United States does not consider that the “precautionary principle” represents a principle of customary international law; rather, it may be characterized as an “approach”—the context of which may vary from context to context. The *SPS Agreement* does recognize a precautionary approach; indeed, Article 5.7 permits the provisional adoption of SPS measures even where the relevant scientific evidence is insufficient (para. 43).²

Thus those, as described by Wiener, who believe that the SPS Agreement “precludes the precautionary principle by requiring regulation to be based on risk

assessment” are captured in the *EC Hormones* dispute as drawing the principled-pragmatic distinction regarding precaution along the same lines. The Appellate Body, however, leaves the “status of the precautionary principle in international law...to be the subject of debate among academics, law practitioners, regulators and judges...We consider...that it is unnecessary, and probably imprudent, for the Appellate Body in this appeal to take a position on this important, but abstract, question” (para. 123).²

Nonetheless, the WTO does indeed interpret Article 5.7 as reflecting the “precautionary principle” (para. 124).² In a section on “Standards and Safety” in the WTO’s *Understanding the WTO: The Agreements*, the trade document states that:

Member countries are encouraged to use international standards, guidelines and recommendations where they exist. When they do, they are unlikely to be challenged legally in a WTO dispute. However, members may use measures which result in higher standards if there is scientific justification. They can also set higher standards based on appropriate assessment of risks so long as the approach is consistent, not arbitrary. And they can to some extent apply the “precautionary principle,” a kind of “safety first” approach to deal with scientific uncertainty. Article 5.7 of the SPS Agreement allows temporary “precautionary” measures.⁵²

Yet when one goes to this section of the SPS Agreement, no explicit reference to the precautionary principle is made. Rather, it reads thusly:

Article 5.7: In cases where relevant scientific evidence is insufficient, a Member may provisionally adopt sanitary or phytosanitary measures on the basis of available pertinent information, including that from the relevant international organizations as well as from sanitary or phytosanitary measures applied by other Members. In such circumstances, Members shall seek to obtain the additional information necessary for a more objective assessment of risk and review the sanitary or phytosanitary measure accordingly within a reasonable period of time.⁵³

Assuming “sanitary and phytosanitary measures” are synonymous with “precautionary measures,” Article 5.7 seems to allow for “precautionary” actions of a

sort. Yet, these measures are provisional and in need of “more objective assessment.”

The WTO’s interpretation of Article 5.7 in the SPS Agreement, however, is consistent with other European interpretations of the precautionary principle as being compatible with risk assessment. In thinking through the status of the precautionary principle in the French Constitution, Godard opposes the precautionary principle against the principle of abstention, in that the former is accompanied by the principle of proportionality. The principle of proportionality asserts that 1) “Assessment of new activities and technologies should consider both possible damages and benefits,” and 2) “The practical effect to give to hypotheses of risks cannot be the same whatever the level of scientific consistency of those hypotheses; other things being equal, preventive measures should be less severe as hypotheses of risks are weakly supported by existing scientific knowledge.” The difference between the SPS Agreement and, for example, the French Constitution, however, is that the latter mentions the precautionary principle explicitly. What can be served by using the actual expression? Godard does not address this question directly, but he does say,

the PP provides guidance about the measures that can be taken in such circumstances of scientific uncertainty: they have to be chosen from actions ranging from scientific observation and research, information to the public, targeted incentives and administrative procedures for authorization to a provisional ban on the particular risk-generating technology or product. The key reference for assessing the appropriateness of such measures is the concept of proportionality (p. 65).³³

What, then, is the difference between risk assessment’s benefit-cost analysis and the proportionality of the precautionary principle? It rather seems that the United States and the European Union are converging in how they think about the regulation of risk, despite differences in the preferred language regarding precaution (p. 83).²⁸

Why, then, does the United States hold that the SPS Agreement cannot be considered as including the precautionary principle, even if only inferred? After all, it seems that the precautionary principle when applied has largely been pragmatic and not absolutist in the sense that the principle of abstention is. If this is

so, why does Wiener not simply make a straightforward argument on behalf of this version of the precautionary principle? One senses that Wiener associates “principles” with simple-mindedness or absolutism in their “overarching” reach. If so, then one can understand why Wiener prefers the language of “prudent precaution” (p. 319)²⁵ or “optimal precaution,” which suggests that precaution should move toward “pragmatic consequentialism” and thus away from “ideological” rhetoric (pp. 1521, 1526).⁸

Nonetheless, European expressions of the precautionary principle and even the WTO’s interpretation of the SPS Agreement are pragmatic and thus consequentialist by nature. The United States, in turn, has made it clear that although it finds a “precautionary element” to be “consistent with WTO rules,” along with being “an essential element of the U.S. regulatory system,” regulators do not believe that the precautionary principle should be substituted for precaution based on a scientific approach. So far, such a concern is consistent with the European expression of the precautionary principle. The greater concern of the United States is that the “precautionary principle” will be used as a “guise for protectionist measures.” Vogel argues:

The U.S. is satisfied with provisions of the SPS Agreement which permit a country to set high standards even when the scientific evidence on risk is uncertain, with the stipulation that such standards be regarded as provisional and thus subject to modification as more evidence becomes available. But the US is concerned that “explicitly embedding a precautionary principle in the SPS or TBT sections of the WTO framework would... allow countries to block imports on environmental or health grounds in the absence of any scientific evidence of significant risk” (pp. 242–243).⁵¹

Besides the possible protectionist use of the precautionary principle, the European Union may need the “hortatory rhetoric” of the “precautionary principle” more so than the United States, Wiener and Rogers suggest, since with regard to the latter’s fears, there is the possible consequence of the precautionary principle being treated as an “enforceable law” within the U.S. tort system. Is, however, the precautionary principle merely “hortatory rhetoric”? Regardless, they argue, “This difference in envisioned legal consequences, rather than a difference in aspirations for protection

of public health and the environment, may help explain the differences in willingness to espouse the precautionary principle” (p. 340).²⁵ With this in mind, it seems reasonably based upon legal grounds, even if not entirely convincing, for the United States to urge the use of the “precautionary approach” over the “precautionary principle” (pp. 513, 528–529).^{8,24}

What has been described thus far sheds light on the political and legal use of the principled-pragmatic distinction regarding precaution. With the United States maintaining the distinction and the European Union overcoming it, or never having bothered with it in the first place, the next section of the paper discerns whether the principled-pragmatic distinction regarding precaution holds in light of a close, yet brief, reading of Jonas’ *The Imperative of Responsibility*. To set the stage for this reading, a recap and elaboration of Wiener’s opposition to the principled nature of precaution will be given.

III. Precautionary theory

Wiener and Graham claim that, “there is no such thing as ‘the’ precautionary principle” (p. 466).³⁸ As pointed out above, there are at least 19 versions of the precautionary principle, which Wiener has distilled into three versions, and thus for Wiener and Graham there is, strictly speaking, no “one” precautionary principle. Yet, Wiener does not stop there. As I have shown throughout this essay, he has an aversion to viewing precaution as principled and prefers to view it in a pragmatic light. As such, Wiener in his scholarship maintains the principled-pragmatic distinction regarding precaution along the same lines of how it manifests itself within the political realm.

In his most recent work, he has written on “The Rhetoric of Precaution” and “The Real Pattern of Precaution,” which are included in a volume he coedited called *The Reality of Precaution*. In “The Rhetoric of Precaution,” he outlines the debate between who is more precautionary, the United States or Europe. He also makes the case that the essays included in *The Reality of Precaution* help move the discussion beyond the “few celebrated examples” of the debate by focusing more on risks and “the descriptive comparison and evolution of regulatory systems” (p. 5).⁵⁴ The book as a whole, according to

Wiener, is normatively neutral: “Normatively, this book neither defends nor attacks precaution per se” (p. 5).⁵⁴ Yet, he also contends, “The optimal degree of precaution varies across risks and contexts, as is evident from the diverse normative views expressed among the case study chapters of this book” (pp. 544–545).²⁴ Is the book normatively neutral, then?

That question aside, the alleged stance of being normatively neutral is a pose seemingly struck to overcome the “impasse in transatlantic debates over precaution as an abstract principle by looking at the reality of precaution as applied in actual policies” (p. 23).⁵⁶ As I read them, the transatlantic debates have revolved around whether the precautionary principle was an enforceable principle of international law, which is not the same as being simply an “abstract principle” in terms of being philosophically understood. Nonetheless, Wiener, in summarizing the case studies in *The Reality of Precaution*, concludes, “our case studies and our quantitative analysis both indicate that over the broad array of risks, neither the United States nor Europe can claim to be ‘more precautionary’ across the board. The reality of precaution has not been principle, it has been *parity and particularity*. In the aggregate, we find little overall transatlantic difference over the past several decades” (p. 28).⁵⁶ Thus, while he says in “The Real Pattern of Precaution” that the “more precautionary than thou” debate “has been fought on both normative and descriptive terms,” it appears that the conclusions drawn from *The Reality of Precaution* seek to dispel the “rhetoric of precaution with the reality of precaution” (p. 519).²⁴

For Wiener, “The real pattern of precaution is not purity of principle, but parity and particularity” (p. 521).²⁴ I do not dispute that Wiener has contributed overwhelmingly to calling into question the popular notion that Europe is more precautionary than the United States. He does so through making the case that the two appear to be on par overall when it comes to being precautionary in regulating risks, even if some specific risks are given more attention or are differently regulated from one context to another. What I am concerned with is his tendency to equate principle and normativity with mere rhetoric, thus discarding the theoretical and principled nature of precaution without offering a sufficient argument for doing so. While the empirical and descriptive approach that he encourages is methodologically sound,

one must wonder if grounding the discussion of precaution this way is not simply meant to undermine the popular opinion of Europe being more precautionary than the United States but also to challenge the transcendent status of the abstract and universal notion of precaution. Now, it may certainly be the case that the popular opinion that Europe is more precautionary than the United States has arisen from the former’s open espousal and endorsement of the precautionary principle and latter’s resistance to any affirmation of it being legally binding. This alone seems likely to having contributed significantly to the belief that Europe is more precautionary. According to Wiener, “The notion of the US–EU precaution gap may persist because people imbue it with their own normative slants—even if it does not actually exist or is far more textured” (p. 523).²⁴ In response to these “normative slants,” Wiener brings the “reality of precaution” to bear upon the debate.

One must wonder, however, whether his appeal to the “real pattern of precaution” harbors his own normative bias for pragmatic precaution. In fact, in his concluding sentence, he says, “This imperative [that is, of managing emerging risks and then assessing the impact of how the risks are managed] is reflected, both descriptively and normatively, in the reality of precaution” (p. 557).²⁴ Wiener would improve his argument by highlighting what he takes to be the normative aspect of the reality of precaution and, moreover, whether he intends for it to call into question the principledness of precaution. From what I have gathered, Wiener would wage the normative battle along the principled-pragmatic divide. After all, Wiener quite commonly sets particular or relative precaution at odds with the “broad precautionary principle” and “precaution as a universal principle,” where the latter are portrayed as having shortcomings that could be corrected through removing the principled aspect of precaution (p. 546).²⁴

Yet, what Wiener’s philosophic position is in the end regarding the precautionary principle remains an open question. Would he accept the principledness of precaution if he could arrive at the conclusion that principles are simply guiding imperatives that are not so rigid as to become impractical when it comes to circumstances? That he might is displayed in the following, and I might add uncharacteristic, statement of his:

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In practice, the PP is neither salvation nor apocalypse. The reality of precaution is not the pure principle that both advocates and detractors imagine. It is more moderate. Indeed, the more binding the legal rule, the more moderate the PP typically becomes. For example, the European's Commission's Communication on the PP of February 2000 stressed that be revised in light of new science. The French Environment Charter of 2004 emphasizes that precautionary measures are to be provisional and proportionate. The lesson is that we must seek optimal precaution, not maximal (or minimal) precaution (p. 547).²⁴

However, what if the theoretical foundation of the precautionary principle is not as rigid as some of its advocates and detractors have imagined? What if the precautionary principle in theory was moderate to begin with? What this quote from Wiener implicitly concedes is that the principledness of precaution as openly espoused in France's Constitution is compatible with his notion of optimal precaution. What I have yet to see in Wiener's work is an open espousal of optimal precaution as an expression of the precautionary principle.

Wiener, nonetheless, may simply not be willing to openly espouse the precautionary principle in the way that Edmund Burke did not openly espouse the doctrine of natural rights. Burke granted in *Reflections on the Revolution in France* that there were such things as real rights of men. He, nevertheless, goes on to argue, "Government is not made in virtue of natural rights, which may and do exist in total independence of it, and exist in much greater clearness and in much greater degree of abstract perfection; but their abstract perfection is their practical defect" (pp. 51–52).⁵⁵ Since Wiener seems to implicitly share the view of precaution as espoused in France's Constitution, one might wonder if his hesitancy in openly espousing the precautionary principle is similar to Burke's with regard to natural rights. Instead of speaking of natural rights, Burke speaks of British rights. Like Burke, the abstract language of the precautionary principle, according to Wiener, has many shortcomings due to its universal and abstract nature. One could imagine Wiener speaking of the precautionary principle in the sense that "abstract perfection is [its] practical defect." Still, Wiener has not explicitly conceded the principledness of precaution due to his thoughts on the "reality of precaution."

However that may be, the whole principled-pragmatic distinction as expressed in the political realm may in the end come down to the realpolitik of precaution, be it through protecting against lawsuits or through boosting one's political reputation in being *seen* as principled. After all, it might be deemed prudent to withhold a confirmation of the precautionary principle, since were it to acquire the status of an enforceable law in the U.S. tort system, the consequences could be great; whereas, openly espousing the precautionary principle in Europe may not trouble European officials because compared to the United States "they lack as robust a tort system" (p. 97).²⁸ The sheer possibility of such a threat seems to call for the United States to take Burkean "precautionary" measures against the precautionary principle. It seems, however, that in order for Wiener's argument to gain persuasive force he would have to discuss in greater depth the potentially negative outcomes resulting from the inclusion of the precautionary principle in U.S. tort law. In other words, would such a scenario be potentially bad for industry and technological innovation as well as being bad for environmental and human health? Be that as it may, the main point is that principles can guide action, but they may also face challenges or present problems when attempts are made to implement them in a legal context. That the latter may occur is not reason enough to deny that such principles exist in the philosophic sense. More importantly, it means that when using a principle to guide action, prudence is central to political action in considering how different circumstances call for responses attuned to the particulars.

Leaving aside for the moment the politics of precaution, it is time to turn to its philosophic treatment. It is generally accepted that, in *The Imperative of Responsibility: In Search of an Ethics for the Technological Age*, Jonas gives the first articulation of the theoretical foundation of the precautionary principle. Interestingly enough, Jonas himself never explicitly refers to the precautionary principle. Yet commentators of the precautionary principle have seen enough of a similarity between it and Jonas' imperative of responsibility to grant Jonas this honor. Regarding the aim of this essay, Jonas' *Imperative of Responsibility* has been accredited with being one source out of three for how precaution became "principled" (pp. 75–76).⁶ In what follows, the first concern is to understand the theoretical foundation

for the precautionary principle, and the second concern is to understand Jonas' thoughts on the application of the principle in human affairs.

In making the distinction between the *precautionary principle* and the *precautionary approach*, it is the former and not the latter that is called into question. After all, no one could reasonably doubt the benefits of a precautionary approach for risk regulation. It even seems plausible that the mere attempt to regulate risk by employing benefit-cost analysis or the principle of proportionality could be understood as a precautionary approach. The question then is not whether precaution can be implemented; rather, the question is whether it is theoretically permissible to speak of precaution as being principled. Such a question, then, is not easily resolved by pointing to how it has been useful or operationalized in treaties and other documents (pp. 4–6).⁷ Instead, the question of whether the precautionary principle is theoretically sound requires one to consider the theoretical argument itself.

Any attempt to summarize Jonas' thought on the imperative of responsibility and how it is grounded in his metaphysical speculations on philosophical biological is by necessity going to have to focus on the broader points while overlooking the depths and heights to which his thought can go. For present purposes, no attempt will be made here to assess whether or not Jonas succeeds in his efforts to adequately lay the foundation for the precautionary principle, since an assessment of the strengths and weaknesses of his argument is beyond the scope of this essay. It will be enough to demonstrate that Jonas views his project as offering an imperative or principle that could be of use in governing human affairs.

Jonas' imperative of responsibility makes no appeal to religion; rather, he argues, "secular reason must base the normative concept of man on a cogent, at the least persuasive, doctrine of general being: metaphysics must underpin ethics. Hence, a speculative attempt is made at such an underpinning of man's duties toward himself, his distant posterity, and the plenitude terrestrial life under his dominion" (p. x).⁵⁶ Jonas' metaphysics is grounded on an evolutionary understanding of nature, and thus his ethical theory bases "itself on an essential sufficiency of our nature such as it has evolved within this world." In the flux of nature, our evolved human nature displays an "innate sufficiency" that enables "any creative steering of destiny,

and which is nothing other than the sufficiency (albeit fallible) for truth, valuation, and freedom;" this "unique" capacity is a thing "stupendous to behold in the stream of becoming, out of which it emerged, which in essence it transcends, but by which it can also be swallowed again. Its possession therefore, as much as we were granted of it, purports that there is something *infinite* for us to preserve in the flux, but something infinite also to lose. Most evidently, the authority which it imparts can never include disfiguring, endangering, or refashioning of itself. No gain is worth this price, no hope of gain justifies this risk." The "prophecy of doom" thus ought to drown out "the prophecy of hope," as the latter wagers on finite winnings at the "risk of infinite loss" (pp. 33–34).⁵⁶

Jonas argues that the "ethical principle" behind the "prophecy of doom," which he calls the principle's "pragmatic expression," issues forth from the need to face squarely the "*uncertainty* of all long-term projections, which by the equipoise of alternatives threatens to paralyze the application of principles to the sphere of fact." Meeting this uncertainty, according to Jonas, requires the discovery of a "principle which itself is no longer an uncertain one" (pp. 34, 37).⁵⁶ This principle is none other than the imperative of responsibility:

This principle for the treatment of uncertainty is itself not uncertain at all, and it binds us unconditionally—that is, not just as an advice of moral prudence but as an unqualified command—*provided* we accept the responsibility for what will be. Under such responsibility, *caution*, otherwise a peripheral matter of our discretion, becomes the core of moral action (p. 38).⁵⁶

With caution becoming "the core of moral action," not a "calculation of advantages presented to self-interest," its morally commanding stature rests on "a primary duty to opt for being and against nothingness" (p. 38).⁵⁶ This is the "imperative of existence," that there is something rather than nothing, which through natural evolution has made possible the capacities expressed in the "*idea of Man*" (p. 43).⁵⁶ For Jonas, this idea entails a distinction that human beings alone are capable of responsibility; it is an "*a priori* capacity" that demonstrates that moral responsibility is "concretely given with the very existence of man" (p. 99).⁵⁶ The first command of responsibility states, "the possibility of there being responsibility in the world,

which is bound to the existence of men, is of all objects of responsibility the first" (p. 99).⁵⁶ For Jonas this imperative is categorical and thus unconditional.

The certainty of this principle is what commands caution in the treatment of uncertainty in the technological age. Despite the first imperative being overly anthropocentric, he latter articulates the imperative in a way so as not to have it succumb to a narrow or ruthless anthropocentrism, especially in arguing that sacrificing the rest of nature for the needs of human beings "can only result in the dehumanization of man" (p. 136, see also pp. 45–46).⁵⁶ Jonas' positioning of caution or responsibility at the core of his moral theory and making an argument for it being a categorical imperative demonstrates that Jonas attempted to make precaution principled. What has to be treated in further detail is Jonas' thoughts on how this principledness has arisen as technology has become global, where the "changed nature of human action changes the very nature of politics" (p. 9).⁵⁶ The next aspect to consider, then, is how Jonas relates his principle to public policy.

It should first be mentioned that Jonas is enough of an Aristotelian to recognize that theory is meant to guide action and not act as a rigid plan for implementation (pp. 85, 116, 173, 176, 204).⁵⁶ But more specifically, his notion of the imperative of responsibility arises out of the circumstances of modern technological society, and thus is not an eternal theoretical norm. He makes explicit that the principle of being responsible that future generations of humanity come into existence and that human beings ought to be responsible for their actions toward nature would have been hubris before the rise of modern technology (p. 124).⁵⁶ Previously, humankind lacked the power to obliterate itself from the face of the planet as well to do any real damage to nature with its limited technologies (pp. ix, 1, 6–8; cf. p. 3).⁵⁶ With the advent of modern technology, however, human action has changed, in that now an excess of power exists over the knowledge to wield it (p. 119).⁵⁶ The imperative of responsibility is chiefly meant to act as a bridle on this excess by prescribing the virtue of caution when it comes to the prowess afforded to humankind through modern science (pp. x, 117, 119).⁵⁶ This is not to say that caution is equally distributed. Rather, Jonas argues repeatedly, "responsibility is a 'correlate of power,'" and thus the "scope and kind of power determine the scope and kind of responsibility" (p. 128).⁵⁶ Jonas does

not explain how this scope is to be determined, but it seems plausible that the principle of proportionality could contribute something to delimiting it.

Jonas suggests that the political realm has always been beset by the problem of predicting the casual reach of certain actions, and is thus never "free of an element of gambling"—an outlook that coincides with Wiener's thought that all risk has an element of uncertainty, where some risks call for a greater "degree of precaution" than others. More specifically, the problem today is that,

global technology has raised the stakes immeasurably and, at the same time, has only widened the gap between the power wielded and the predictability of its long-range effects. To be sure, the time span of informed planning has lengthened greatly with the aid of science and its analytical tools, but the span of objective responsibility even more so with the runaway momentum of the novel things set afoot with the same aid (p. 118).⁵⁶

One should not confuse Jonas' imperative of responsibility with neo-Ludditism or as being anti-science. In fact, he argues, "It is clear, however—and this is our principal problem—that every constructive solution requires a massive infusion of technology (the sheer numbers of the earth's present population excludes a return to earlier conditions), and the wounds thereby inflicted on the environment demand further technical progress for their healing, that is, more and better technology already from sheer defensive necessity" (p. 184).⁵⁶ With this concession, Jonas notes that due to the circumstances created by modern science, the imperative of responsibility issues in the "call to caution" (p. 189).⁵⁶ For this reason, Jonas speaks of a "guarded progress" that is meant to "preserve the integrity of [man's] essence, which implies that of his natural environment" (p. 202).⁵⁶

Some of Jonas' arguments have been accused of focusing overly on the catastrophic aspect of risk (pp. 66, 76).³³ Certainly, there is some truth to this accusation, but it need not be understood as a shortcoming, however. The precautionary principle is arguably best suited for this type of risk. However that may be, Jonas' imperative of responsibility does not ignore the multitude of risks with which we are faced. Given the nature of risk in today's society, it is no easy matter to weigh risks against each other. The only time in Wiener's work where he cites Jonas' *The Imperative*

of *Responsibility* is when he writes, “We live in a networked world...a web of risks rather than a world of separate risks each taken one at a time. We must envision the future consequences of our current choices, understanding that we weave the web of our own interconnections (Jonas 1984)” (p. 546).²⁴ Perhaps this is Wiener’s summation of Jonas’ work as a whole, but if I were to endeavor to identify the exact reference point within the *Imperative of Responsibility* it would be the following:

A new science is needed for that, which will have to deal with an enormous complexity of interdependencies...it must include the biochemical fate of soil and water, planetary oxygen economy, and so on. So long as we have not attained certainty of prediction here, and especially in view of the likely irreversibility of some of the initiated processes beyond a still undetermined point, *caution* is the better part of bravery and surely a command of responsibility: *perhaps for ever*, namely, if such a science should transcend all real capacities regarding completeness of data and more so their joint computability. Uncertainty may be our permanent fate—which has moral consequences (p. 191).⁵⁶

Wiener’s summary of Jonas I think rightly portrays Jonas’ imperative of responsibility as being compatible with the notion of optimal precaution and thus being concerned with all types of risks linked to modernity.

In being neither anti-scientific nor anti-technological, Jonas believes that technological progress must go on despite the new risks that are bound to accompany such innovations. Such progress should not proceed unguarded, given what Jonas perceives to be at stake. He blatantly acknowledges, however, that the statement “we live in an apocalyptic situation” is an assumption (p. 140).⁵⁶ This assumption, while perhaps sounding overly dramatic to some, holds given the uncertain knowledge we have regarding the consequences of our actions for the natural environment (pp. 183, 189).⁵⁶ Jonas thus believes that there is a “call to caution,” which “heightens the duty to that vigilance over the beginnings which grants priority to well-grounded possibilities of disaster (different from mere fearful fantasies) over hopes even if no less well grounded” (p. 32).⁵⁶ “Guarded progress” precisely depicts the “vigilance over the beginnings,” especially when there is a “well-grounded possibility of disaster.”

To be sure, his “call to caution” seeks to overcome the paralysis that uncertainty can foster.

Guarded progress as the response that issues from an imperative of responsibility requires, in addition to the philosophic knowledge of principles, a “scientific futurology” (p. x).⁵⁶ His notion of what this would look like is described in the following way:

But from the “ideal” truth about principles we must soon pass to a very different kind of truth which—being about facts—is a matter of scientific (not philosophic) knowledge: truth about predictable future conditions of mankind and the earth, on which those first, philosophic verities are to pass judgment. That judgment then will react on today’s activities, from whose discerned trends those future conditions were seen, by long-range extrapolation, to follow as their certain, probable, or possible outcome. This (still theoretical) conjectural knowledge of the real and the probable in the realm of facts is thus interposed between the ideal knowledge of the ethical principles and the practical knowledge of political application, which must operate with such hypothetical projections of what hope or fear have to expect—what to promote and what to prevent. We thus need a science of hypothetical prediction, a “comparative futurology,” which indeed has lately begun to appear on the scene (p. 26).⁵⁶

Although Jonas’ *Imperative of Responsibility* does not delve into a detailed analysis of specific risks, it nonetheless provides the principle for why precaution is needed. In his theoretical account, Jonas shows that the principled-pragmatic distinction regarding precaution does not hold up. How the principle of precaution is implemented requires the circumstances warranting regulation to be considered.

In assuming the claim to be true that the imperative of responsibility provides the theoretical foundation for the precautionary principle, it appears that its founder followed the more reasonable Aristotle rather than the simple-minded absolutists. As such, the precautionary principle, even in theory, seems not to be the basis for ideological rigidity but instead displays the features of “pragmatic consequentialism,” to use Wiener’s expression, or, simply put, prudence. And thus while in theory there seems to be no need to think that the precautionary principle and a precautionary approach are incompatible, there might be grounds for thinking so in the political realm. Such grounds, nonetheless, should be

carefully weighed against the potential edifying benefits of openly espousing the precautionary principle.

Conclusion

The aim of this essay has been to think through the distinction between the precautionary principle and the precautionary approach. In order to prepare the grounds for this discussion an effort was made in the first section to address some, not all, of the basic concepts that arise within precautionary discourse. Those discussed were the most suited in addressing the principled-pragmatic distinction regarding precaution. Both proponents and opponents of the precautionary principle have helped to shape the discourse and contributions to it seem to be ever increasing. Precautionary discourse will most likely remain relevant indefinitely into the future.

This essay contributes to the discussion by offering a comprehensive account of the principled-pragmatic distinction at all levels of precautionary discourse. The second section thus looked at how this distinction arose within politics, focusing on the various interpretations of the SPS Agreement in the *EC-Hormones* dispute, and then provided an account of how Wiener's treatment of precaution seems to discard the principled nature of it. In this section, it was observed that whether the precautionary principle is an enforceable legal norm is an open question. Moreover, those who champion a precautionary approach over the precautionary principle seem to do so on account of the legal ramifications that might arise were the principle to be accepted as a legal norm. This posture, however, seems to call into question whether precaution can be principled in the philosophical, rather than legal, sense, which led to a discussion of Jonas' imperative of responsibility, since it is deemed to have been one of the ways in which precaution became principled.

In conclusion, I have attempted to show how one could think through the distinction between the precautionary principle and the precautionary approach. That it is maintained in some political circumstances and not in others is likely the result of a country's or community's legal character. In the end, however, the distinction does not diminish concern with being perceived as displaying precaution with regard to the regulation of risk. In fact, the quarrel over whether

Europe is more precautionary than the United States confirms this claim. Yet the subtler quarrel that emerges from the more pronounced quarrel of who is more precautionary is the concern over whether the pragmatic approach to precaution is better than the principled one. This essay has sought to bring this subtler quarrel into the foreground, so as to demonstrate that normative judgments are paramount whether one sides with being pragmatic over being principled, or vice versa. Future research within precautionary discourse would do well to more rigorously address this quarrel, which takes place at the philosophical level. However, as witnessed in the case of Jonas' *The Imperative of Responsibility*, the distinction does not have to come down to different normative perspectives, even though it most certainly can. Quite simply at the philosophical level, the precautionary approach could be understood as the application of the precautionary principle. In the end, for Jonas, the principled-pragmatic distinction, as it has manifested itself in politics and in the scholarship associated with precautionary discourse, does not appear to hold in the realm of theory.

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