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Managing Uncertainty: Psychological Issues are Critical for Risk Policy

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Abstract

The target article 'Risk analysis, uncertainty and innovation: what does this mean for the Dutch energy transition?' advocates dropping use of the precautionary principle proposing an alternative Tolerability of Risk (ToR) approach to foster both protection and innovation in the face of uncertain risks. Inclusion of stakeholder views and values is a key feature of ToR with fundamental appeal. However the status of public perceptions of risk is contentious. Evaluating and integrating potentially conflicting views into regulatory policy presents significant challenges.

Keywords: Precautionary principle; cultural cognition; cognitive biases; risk perceptions; stakeholder engagement

In their consideration of how to navigate the challenge of dealing with the uncertainties arising from the effort to make innovative progress with risky technologies Bouder & Lofstedt make a clear – and what will be for many (though certainly not all) very welcome - call for a move away from use of the precautionary principle. In a number of previous publications (e.g. Lofstedt, 2014; Lofstedt, Fischhoff & Fischhoff, 2002; Lofstedt & Bouder, 2021) these authors have previously expressed some unease about the use and impact of this principle. Their analyses of the developmental history, implementation and consequences for regulatory policy of this principle have been extensive. Nevertheless, while pointing out that both the definitions and applications of the precautionary principle have been subject to considerable variation, their evaluation of the principle has been largely based on pragmatic rather than conceptual grounds, charting its impact on a range of policies rather than critiquing its normative status. Consequently, to appreciate what is at stake - what might be gained or lost by this move - it is worth briefly reviewing how the precautionary principle has come under prolonged attack concerning its legitimacy as a *principle* of regulatory policy. As Aven (2019) remarked: "Few policies for risk management have created more controversy than the precautionary principle" (p. 178).

So what is the problem? Firstly we should be clear about identifying what the precautionary principle is – though one of the complaints lodged about it is that this is far easier said than done. The principle, frequently summarised by the somewhat ambiguous shorthand phrase that one should be "better safe than sorry", sounds deceptively uncontentious (taking this notion at face value, who on earth wouldn't rather be safe than sorry?). Yet the fact is that definitions of the principle are notoriously variable. For example, noting the many versions of the principle, Manson (2002) complained that "Given the importance accorded to it, the lack of uniformity regarding its formulation comes as a surprise" (p. 263). Nonetheless,

despite this lack of uniformity, Manson claimed to detect a three-part logical structure common to the various competing formulations.

In his 2005 book critiquing the precautionary principle Sunstein gave a less charitable evaluation of the assorted varieties of the principle complaining that: “There are twenty or more definitions and they are not compatible with one another” (p. 18). Nevertheless Sunstein identified a “strong version” of the principle which prescribes that: " when there is a risk of significant health or environmental damage… and when there is scientific uncertainty as to the nature of that damage or the likelihood of the risk, then decisions should be made so as to prevent such activities… unless and until scientific evidence shows that the damage will not occur.” [p.19]. In this instance, as Sunstein points out, the words “will not occur” seem to require that proponents of activities must establish that they present no risk at all which, in practise, will often be impossible to establish.

According to Sunstein the broader problem with any strong form of the precautionary principle, is that, in practice, it does not help individuals or nations make difficult choices in a non-arbitrary way: “The real problem with the precautionary principle in its strongest form is that it is incoherent; it purports to give guidance, but it fails to do so because it condemns the very steps that it requires. The regulation that the principle requires always gives rise to risks of its own – and hence the principle bans what it simultaneously mandates”. “The principle threatens to be paralyzing, providing no direction at all forbidding regulation, inaction, and every step inbetween” (Sunstein, 2005, p. 14)[1].

[1] Note that Sunstein does see certain qualified uses of the precautionary idea as entirely uncontroversial. Thus: “…refinements of the precautionary principle make sense, including the control of potentially catastrophic harms whose probability cannot be assessed with any confidence. Hence an Anti-Catastrophe Principle deserves public endorsement.” (Sunstein, 2005, p. 15).

While a move away from these difficulties may be welcome, the alternative tolerability of risk (ToR) approach for the management of uncertainties presented by Bouder & Lofstedt will, in calling for "mechanisms for the inclusion of stakeholder views", "the study of societal preferences" and "the need to generate perception and concern data as a key input into the ToR judgement" need to navigate other challenges. Specifically, quite how views, judgments, preferences and perceptions should be used as input for decision making will require careful consideration. The aim of meaningfully engaging with those who will be impacted by policies has a fundamental appeal but is hardly a straightforward task. While the methodology for ascertaining this input is clearly identified - Bouder & Lofstedt refer to public surveys, focus group research and qualitative interviews – exactly how the obtained input should inform policy remains somewhat moot.

To appreciate the force of this issue note that one of Sunstein's arguments against the precautionary principle is that it is unduly sensitive to public misperceptions. Because people use mental heuristics, which can produce severe and systematic errors, human beings are prone to what Sunstein (2006) described as "misfearing": people fear things that are not dangerous, and they do not fear things that present serious risks. Indeed Sunstein (2005) attributes the very appeal of the precautionary principle as stemming, not from any established normative credentials, but as a psychological phenomenon arising as a result of a cocktail of cognitive biases that render it operational by generating an illusion of guidance[2]. Sunstein implicated such well-established psychological phenomena as: *availability* (judging more vivid and easily imaginable events as more likely); *dread risk* (greater aversion to

[2] On finding that they could not reduce its ambiguity without sacrificing its plausibility, Turner & Hartzell (2004) concluded that the plausibility of the precautionary principle may actually depend on its vagueness.

events where many may be harmed at one point in time than events in which a similar or even greater number may be harmed but over a longer time period); *familiarity* (events involving familiar understood events are less aversive than new unfamiliar risks); *loss aversion* (giving greater weight to prospective losses than prospective gains resulting in undue insensitivity to the benefits of risky innovations) and *probability neglect* (insensitivity to the relative likelihood of threatening events).

However compelling this account of the psychological drivers of the allure of the precautionary principle, we might be wary of what some may view as a pernicious consequence of this characterization of the precautionary principle; specifically the denigration of the competence of people to reasonably engage with the issues arising from risk and uncertainty. In this regard Madsen et al, (2024) have recently argued that, in formulating public policies with behavioural assumptions and/or implications, policy makers should not adopt, as a default starting point, the assumption that people are unreasonable. Instead, developing a position that chimes with Bouder & Lofstedt's call for stakeholder engagement, Madsen et al propose that, before assuming irrationality, both researchers and policymakers need to exhaust alternative explanations based on people's goals and social environments and to do that by using methods that engage all stakeholders as participatory partners - not merely as passive targets - of interventions. As well as the use of qualitative interviews and focus groups as endorsed by Bouder & Lofstedt, Madsen et al, also recommend citizens assemblies where citizens are encouraged to engage in structured dialogue with experts, evidence and others with whom they may disagree, citizen science initiatives and the development of a more cyclical process for feedback to policy makers.

Sunstein (2006) makes clear his view that, in a democratic society, officials responsible for policy should respond to people's values, but not to their "blunders". Nevertheless, there is disagreement as to how values and blunders might be distinguished. Take for example the well-established finding that there are measurable differences between the risk perceptions of experts and the public. Sunstein (2005) explained that: "Often experts are aware of the facts and ordinary people are not" (p. 86), and "Hence a form of irrationality, not a different set of values, often helps explain the different risk judgments of experts and ordinary people" (p. 86).

Kahan et al. (2006) are explicitly critical of this analysis. In their review of Sunstein's (2005) book, pointedly entitled "Fear of Democracy: A Cultural Evaluation of Sunstein on Risk" Kahan et al argue that Sunstein's perspective overlooks the role of "cultural cognition". Kahan et al. refer to Sunstein's comments on expert risk perceptions in order to articulate their opposing view that the variation in risk perceptions seen across individuals, between experts and the public and even between experts themselves, should not be attributed to error or irrational biases, but to the way people's values and views determine how they react to events and activities. Because of the way that values imbue their thinking, individuals' risk perceptions: "…might or might not be accurate when evaluated from an actuarial standpoint; policies based on them might or might not be in the interest of society measured according to any welfarist metric. Nevertheless, which activities individuals view as dangerous and which policies they view as effective embody coherent visions of social justice and individual virtue." (Kahan et al. 2006, p. 1088).

Unsurprisingly, in responding to Kahan et al, Sunstein (2006) rejected the notion that he is not democratic or does not favour democratic deliberation. While affirming that democracies

should indeed respond to the public will, and that values can legitimately influence people's priorities, Sunstein argued that, nonetheless, values should not be confused with empirical matters and reiterated that there is reason for real concern if small problems receive significant attention and resources and/or if large problems receive little or none. Ultimately, in order to resolve any conflicts, policymakers will need to make an evaluation of these inputs: "If citizens are not blundering on the facts, but are responding to "coherent visions of the good society and the virtuous life," then they are making a perfectly legitimate request. Whether officials should yield to that request depends on the arguments that are brought forward on its behalf." (Sunstein 2006, p.1123).

This debate concerning the precautionary principle reveals a discrepancy in the interpretation of behavioural risk phenomena with stark policy implications. Development of the ToR framework so that it provides "mechanisms for the inclusion of stakeholder views", "the study of societal preferences" and "generate perception and concern data as a key input" will entail adopting a perspective on the psychology of risk perception. Policymakers will need to determine not just what people's views, perceptions, judgments and preferences are; they will also need to determine the status of these responses in order either to accommodate them into policy, or override them, or perhaps even attempt to influence them so as to offset or pre-empt disputes over competing values.

Bouder & Lofstedt's conclusion that it is vital to change course because the current approach for managing uncertainty is overly risk avoidant clearly has prominent support. At the same time it is evident that establishing a better framework for risk regulation presents profound challenges. However as the value of progress here would be significant for a wide range of human activities there is a strong incentive to pursue it.

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