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AN OTHER HISTORY OF KNOWLEDGE AND DECISION IN PRECAUTIONARY APPROACHES TO SUSTAINABILITY

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"If there are connections everywhere, why do we persist in turning dynamic, interconnected phenomena into static, disconnected things? Some of this is owing, perhaps, to the way we have learned our own history."[1]

"Our attitude towards poisons has undergone a subtle change."[2]

INTRODUCTION

Last year, a post in *The Guardian* reiterated the popular notion that "[t]he 'Precautionary Principle'[3] is a blunt instrument, a 90s

* For my friend Reema Ray (1982–2013). S.J.D. Candidate, Harvard Law School. The preparation of this Article has incurred many pleasant debts. I would like to thank Duncan Kennedy, Sheila Jasanoff, Jane Fair Bestor, and Lisa Kelly for their support and thoughtful reading of earlier drafts; the Article's weaknesses will, I suspect, map nicely onto occasions when I have strayed from their counsel. Siddhartha Velandy, Courtney Walsh, Asma Pataudi, Christopher Taggart, and Rachel Liebman, as friends and colleagues, were early and enduring sources of encouragement. I am thankful to Jason Robison, Daniel Vargas, and Yun Ru Chen for organizing the Graduate Program Forum Panel on *State and Nature: Global Perspectives on Institutions for Environmental Governance in the 21st Century* (Harvard Law School, Apr. 2011) and engaging with initial thoughts on the project. The organizers and participants of the *Institute For Global Law & Policy's 2013 Conference* (Harvard Law School, June 2013) contributed much by their thoughtful commentary on an earlier draft. Further thanks are owed to M. P. Ram Mohan, Anand Jayachandran, A. V. N'Gurz, Stephen Wiles, Teresa Saint-Amour, and Aslihan Bulut, for their repeated assistance with research. The opinions conveyed here are my own, and other usual caveats apply.

1. ERIC R. WOLF, EUROPE AND THE PEOPLE WITHOUT HISTORY 4–5 (1982).
2. RACHEL CARSON, SILENT SPRING 155 (1962).

throwback out of place in an era of 'smart solutions' and big data."[4] Such remarks are not unusual descriptors for a principle that has been described as everything from irresponsible to anti-democratic and more. And yet, constitutions, legislations, policies, and judicial decisions continue to endorse the term[5] while struggling to refine its

3. The Precautionary Principle facilitates decision-making to protect the environment despite uncertainty as to the nature and scope of a threat. *See* United Nations Conference on Environment and Development, Rio de Janiero, Braz., June 3–14, 1992, *Rio Declaration on Environment and Development*, U.N. Doc. A/CONF.151/5/Rev.1, Principle 15 [hereinafter *Rio Declaration*]. For an introduction to the Precautionary Principle as a legal principle, see P. SANDS, PRINCIPLES OF INTERNATIONAL ENVIRONMENTAL LAW 266–79 (2003). See also Case C-180/96, United Kingdom of Great Britain and Northern Ireland v. Comm'n of the Eur. Cmtys., 1998 E.C.R. I-2265, ¶ 99, where the European Court of Justice states, "When 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." The Court in that case was relying on Article 174(2) of the European Commission (EC) Treaty (then, Article 130r), which incorporates the Precautionary Principle; Case T-13/99, Pfizer Animal Health SA v. Council of the European Union, 2002 E.C.R. II-3305, ¶¶ 141, 335; *Rio Declaration*, *supra* (stating, "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."); Paul Johnston & David Santillo, *The Precautionary Principle: A Barrier to Innovation and Progress*, GREENPEACE RESEARCH LAB. (2006), http://www.greenpeace.to/greenpeace/wp-content/uploads/2011/05/precaution-and-innovation.pdf.

4. Tracey Brown, *The Precautionary Principle Is a Blunt Instrument*, GUARDIAN (July 9, 2013, 2:30 PM), http://www.theguardian.com/science/political-science/2013/jul/09/precautionary-principle-blunt-instrument.

5. Despite controversy as to whether or not the Precautionary Principle is a part of international legal custom, the Principle has already been widely incorporated into the policies and rhetoric of a large number of states and international institutions. *See, e.g.*, 1958 CONST. pmbl. (Fr.) (giving constitutional authority to the Charter for the Environment of 2004); A.P. Pollution Control Bd. v. Prof. M.V. Nayudu (Retd.) and Ors., A.I.R. 1999 S.C. 812, ¶¶ 29–38 (India); *Communication from the Commission on the Precautionary Principle*, COMM'N OF THE EURO. CMTYS. (2000) 1 final (Feb. 2, 2000), http://ec.europa.eu/dgs/health_consumer/library/pub/pub07_en.pdf [hereinafter *Communication*]; Andrew Jordan & Timothy O'Riordan, *The Precautionary Principle in U.K. Environmental Law and Policy* (CSERGE Working Paper No. GEC 94-11, 1994), *available at* http://www.cserge.ac.uk/sites/default/files/gec_1994_11.pdf; BRIAN J. PRESTON, ECOLOGICAL SUSTAINABLE DEVELOPMENT IN THE COURTS IN AUSTRALIA AND ASIA 12–20 (2006), *available at* http://www.lec.lawlink.nsw.gov.au/agdbasev7wr/_

meaning as something more than a blanket ban—a strategy that is indeed "blunt." In this Article, I offer an alternative reading of precaution, with the hope of recovering the capacity of this ethic to facilitate legal and political decisions.[6]

Since the Precautionary Principle began to gain international recognition in the early 1980s,[7] its interpretation within treaties, judicial decisions, and commentary have shuffled along a number of

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assets/lec/m4203011721754/preston_ecologically%20sustainable%20development%20in%20the%20courts%20in%20australia%20and%20asia.pdf; discussion *supra* Part III (about Germany). Despite governmental resistance (*see* SANDS, *supra* note 3, at 268), this Principle seems to be gaining ground even within the United States. *See, e.g.*, WINGSPREAD STATEMENT ON THE PRECAUTIONARY PRINCIPLE (1998), *available at* http://www.who.int/ifcs/documents/forums/forum5/wingspread.doc; *see also* Nancy Myers, *The Precautionary Principle Puts Values First*, 22 BULL. OF SCI., TECH. & SOC'Y 210, 211–12 (2002) (describing how information about the Precautionary Principle has grown in demand across citizens and organizations within the United States). Further, North American businesses and production facilities have continued to pervade foreign, and often less developed, states that have previously faced devastation at the hands of foreign investment. *See, e.g.*, Union Carbide v. Union of India, (1989) 3 S.C.C. 38 (India); *Chronology*, BHOPAL INFO. CTR., *available at* http://www.bhopal.com/chrono.htm (last updated Nov. 2013).

6. For a discussion of decisionism in legal theory, see Duncan Kennedy, *A Semiotics of Critique*, 22 CARDOZO L. REV. 1147, 1162–67 (2001); *see also* Walter Kaufmann, *Existentialism from Dostoevsky to Sartre*, *in* EXISTENTIALISM FROM DOSTOEVSKY TO SARTRE 11, 11–51 (Walter Kaufmann ed., rev. & expanded ed. 1975) (discussing the relationship between experiential ethics and decision).

7. The following data-points are touched on by most of the commentary on the subject. *See* Arie Trouwborst, *Prevention, Precaution, Logic and Law: The Relationship between the Precautionary Principle and the Preventative Principle in International and Associated Questions*, 2 ERASMUS L. REV. 105, 107–10 (2009). Widely acknowledged as drawn from the German environmental policy of *Vorsorgeprinzip*, the Precautionary Principle began to gain in popularity in the 1980s, when it was integrated into a number of international instruments. *See, e.g.*, Resolution on World Charter for Nature, G.A. Res., 37/7, U.N. Doc. A/RES/37/7, Principle 11 (Oct. 28, 1982) [hereinafter World Charter for Nature]; *see also Rio Declaration*, *supra* note 3, Principle 15. For a discussion of *Vorsorge*, see *infra* Part III; Sonja Boehmer-Christiansen, *The Precautionary Principle in Germany—Enabling Government*, *in* INTERPRETING THE PRECAUTIONARY PRINCIPLE 31 (Timothy O'Riordan & James Cameron eds., 1994); NICOLAS DE SADELEER, ENVIRONMENTAL PRINCIPLES: FROM POLITICAL SLOGANS TO LEGAL RULES 93, 125–30 (2002).

well-worn trails.[8] In virtually all such instances, decision-makers and commentators have understood this Principle to reflect an immemorial[9] and natural (and therefore apolitical) instinct[10] for

8. A few instances will suffice: First, there are discussions that identify differences between the various descriptions of the principle across international instruments. *See, e.g.*, David VanderZwaag, *The Precautionary Principle in Environmental Law and Policy: Elusive Rhetoric and First Embraces*, 8 J. ENVTL. L. & PRAC. 355 (1999). Second, there are comments on how the changed terminology raises, lowers, or otherwise alters the corresponding obligations/standards of states under international environmental law. Of the remarkable volume of writing on this second aspect, Daniel Bodansky's work is a comprehensive illustration. *See, e.g.*, Daniel Bodansky, *Deconstructing the Precautionary Principle*, *in* BRINGING NEW LAW TO OCEAN WATERS 381 (David D. Caron & Harry N. Scheiber eds., 2004) [hereinafter Bodansky, *Deconstructing*] (discussing the existing orientations of the Precautionary Principle: as a negative mandate (that seeks to legitimize environmental protection measures, when independently taken, in the face of scientific uncertainty as to harm); its positive description (that supplies an affirmative obligation as a license or a duty to act to protect the environment); and its temporal and potentiality-of-harm aspects (involving debates on when the principle may be considered activated and applicable); as well as the related evidentiary requirements to attest that such activation is legitimate). A third order of descriptions analyzes the status of the Precautionary Principle in the context of international custom. *See, e.g.*, Owen McIntyre & Thomas Mosedale, *The Precautionary Principle as a Norm of Customary International Law*, 9 J. ENVTL. L. 221, 221–41 (1997); Daniel Bodansky, *Customary (and Not So Customary) International Environmental Law*, 3 GLOBAL LEG. STUD. J. 105 (1991). Alternatively, a fourth form of discussions considers whether the Precautionary Principle is a *legal norm* at all. *See, e.g.*, SANDS, *supra* note 3, at 266–79. As readers familiar with legal argument will appreciate, however, too often such discussions restrict themselves to analyzing the value of signifiers such as "shall" and "should" across legal rules. A fifth approach describes the Precautionary Principle as a policy orientation. *See, e.g.*, ARIE TROUWBORST, EVOLUTION AND STATUS OF THE PRECAUTIONARY PRINCIPLE IN INTERNATIONAL LAW 4–6 (2002). Alternatively, a sixth variation counts the Precautionary Principle as an approach. *See, e.g.*, Ellen Hey, *The Precautionary Concept in Environmental Policy and Law: Institutionalizing Caution*, 4 GEO. INT'L ENVTL. L. REV. 303, 308 (1992). Finally, a seventh trend takes up the task of exploring the kinds of actions and measures that may actually be considered "precautionary." *See, e.g.*, Christopher D. Stone, *Is There a Precautionary Principle*, 31 ENVTL. L. REP. 10790, 10799 (2001).

9. See, e.g., TROUWBORST, *supra* note 8, at 8, listing a variety of adages explaining why "precaution strikes such a common chord." Samples include: "an ounce of prevention is worth a pound of cure," "a stitch in time saves nine," "discretion is the better part of valour," and "better safe than sorry." *Id.* We should remember, however, that in their meaning and implications, such phrases resemble

preserving the natural environment in the event of scientific uncertainty as to the consequences of human intervention.[11] By contrast, I argue that "precaution" and "sustainability" should be

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others such as "stone's throw," "within earshot," or "bucketful," that we know arose from actual political struggles involving the quantification of space (/distance) and quantity (/volume). *See* JAMES C. SCOTT, SEEING LIKE A STATE 25 (1998).

10. Myers, *supra* note 5, at 210 (describing the Precautionary Principle as representing "the normal human instinct for self-preservation."). The Principle has also been held to reflect "intuition" and "common sense." *See* Timothy O'Riordan & Andrew Jordan, *The Precautionary Principle in Contemporary Environmental Politics*, 4 ENVTL. VALUES 191, 192 (1995) ("an intuitively simple guide to humans on how to intervene in environmental systems in a manner that is less damaging."). *See also id.* at 193–94; TROUWBORST, *supra* note 8, at ch. 2.1, n.10 (and corresponding text) ("the precautionary principle is a statement of commonsense and has already been applied by decision-makers in appropriate circumstances prior to the principle being spelt out . . . Its premise is that where uncertainty or ignorance exists concerning the nature or scope of environmental harm . . . decision-makers should be cautious . . .").

11. World Charter for Nature, *supra* note 7. Principle 11 states:

> Activities which might have an impact on nature shall be controlled, and the best available technologies that minimize significant risks to nature or other adverse effects shall be used; in particular:
> (a) Activities which are likely to cause irreversible damage to nature shall be avoided; (b) Activities which are likely to pose a significant risk to nature shall be preceded by an exhaustive examination; their proponents shall demonstrate that expected benefits outweigh potential damage to nature, and where potential adverse effects are not fully understood, the activities should not proceed; (c) Activities which may disturb nature shall be preceded by assessment of their consequences, and environmental impact studies of development projects shall be conducted sufficiently in advance, and if they are to be undertaken, such activities shall be planned and carried out so as to minimize potential adverse effects; (d) Agriculture, grazing, forestry and fisheries practices shall be adapted to the natural characteristics and constraints of given areas; (e) Areas degraded by human activities shall be rehabilitated for purposes in accord with their natural potential and compatible with the well-being of affected populations.

See also Rio Declaration, *supra* note 3, Principle 15.

understood as articulations of certain historically contingent,[12] necessarily political and still-evolving moral relations.[13] Precaution, understood in the context of environmental law, is a cultural strategy[14] that accepts the imperfectness of human knowledge and facilitates decisions that guard against easy anthropocentric assumptions[15] of redundancy in the natural environment. In embracing scientific uncertainty and related insecurities, precautionary thinking identifies with a moral tradition that facilitates decision-making by prioritizing experiential knowledge[16] and moral

12. See, e.g., Peter Singer, *Famine, Affluence, and Morality*, 1 PHIL. & PUB. AFF. 229, 236–37 (1972), where, in discussing Urmson's "imperatives of duty," Singer writes, "Moral attitudes are shaped by the needs of society, and no doubt society needs people who will observe the rules that make social existence tolerable. From the point of view of a particular society, it is essential to prevent violations of norms against killing, stealing, and so on. It is quite inessential, however, to help people outside one's own society."

13. While many local cultures and societies have historically valued the natural environment for its own sake, it is not difficult to accept that heightened global awareness of environmental concerns is a recent trend. It was only in the 1980s and 1990s that states and international institutions undertook the task of ordering the "global environment." *See, e.g.*, Clark A. Miller, *Climate Science and the Making of a Global Political Order*, *in* STATES OF KNOWLEDGE: THE CO-PRODUCTION OF SCIENCE AND SOCIAL ORDER 46 (Sheila Jasanoff ed., 2004).

14. "Cultural strategy" refers not only to meaning-making practices bound by national or other group-affiliation, but also to the modernist culture/nature dichotomy, which understands human society ("culture") as objectively distinguishable from "nature." *See, e.g.*, CLAUDE LÉVI-STRAUSS, THE ELEMENTARY STRUCTURES OF KINSHIP 3 (1969); BRUNO LATOUR, WE HAVE NEVER BEEN MODERN (Catherine Porter trans., 1993).

15. "Anthropocentric assumptions" means the 19th century perspective of viewing and capturing the "natural" as inferior and existing only to fulfill human desires.

16. "Experiential knowledge" means to give priority viewing ecological problems in terms of the experience of actors always already dwelling and working on it. For instance, the forest, as people and animals know it, exists not only because of the action of the elements, but also because it has been the dwelling and site of labor for people, animals, insects, and plants over millennia. The forest, accordingly, is not simply "land" (i.e., something quantitative, homogenous, and controlled by legal title), nor can it be collapsed with nature or the environment. Rather, the forest is a "landscape" (something qualitative, heterogeneous, and opposed to a binary opposition between man and nature). *See* Tim Ingold, *The Temporality of the Landscape*, 25 WORLD ARCHAEOLOGY 152, 153–57 (1993).

choice[17] over a rationalistic valuation of ecological interests.[18] By contrast, contemporary legal practices read precaution as a natural and objective strategy, thereby depoliticizing this articulation by removing its historical context and moral basis, rendering it obvious[19] and automatically adaptable to the scheme of Sustainable Development.[20] Precaution, as a relational-articulation, has no internal logically formal rationality,[21] nor do I hold it to be generalizeable across time and space.[22] Quite to the contrary, I hold

17. The words "moral" and "ethical" are used interchangeably to describe political decision-making involving choosing between diverse social bargains. But such choices always include moments of self-sacrifice, as opposed to neutral ideas of morality (satisfying equality, generality, and universality) or still narrower claims involving "self interest, class interest, national interest or purely aesthetic concerns." RICHARD W. MILLER, ANALYZING MARX 17 (1984).

18. For seminal critiques of cost-benefit analysis in this context, see generally Christopher D. Stone, *Should Trees Have Standing?—Toward Legal Rights for Natural Objects*, 45 S. CAL. L. REV. 450 (1972); Laurence H. Tribe, *Ways Not to Think about Plastic Trees: New Foundations for Environmental Law*, 83 YALE L.J. 1315 (1974).

19. Accordingly, erstwhile critics like Bodansky have come around to compare the Precautionary Principle to "proscriptions against murder and theft," arguing that the logic of the precaution is inevitable. For Bodansky's critique of precaution, see Daniel Bodansky, *Scientific Uncertainty and the Precautionary Principle*, ENV'T, Sept. 1991, at 4, 5 [hereinafter Bodansky, *Scientific Uncertainty*] ("the precautionary principle . . . is too vague to serve as a regulatory standard because it does not specify how much caution should be taken."). For Bodansky's subsequent affirmation, see Bodansky, *Deconstructing*, *supra* note 8, at 381 ("[T]he precautionary principle is difficult to argue with. Who would acknowledge that an action they support is reckless? Who would prefer to be sorry than safe?").

20. *See* WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT, OUR COMMON FUTURE (1987), *available at* http://conspect.nl/pdf/Our_Common_Future-Brundtland_Report_1987.pdf [hereinafter BRUNDTLAND COMMISSION REPORT]; *see also infra* Part II; *Rio Declaration*, *supra* note 3, Principles 1, 4. For a survey of Sustainable Development literature, see generally Alan Boyle & David Freestone, *Introduction*, *in* INTERNATIONAL LAW AND SUSTAINABLE DEVELOPMENT: PAST ACHIEVEMENTS AND FUTURE CHALLENGES 1, 1–18 (Allen Boyle & David Freestone eds., 1999).

21. This move is akin to the fallacy involved in mistaking "'the things of logic for the logic of things.'" Pierre Bourdieu, *Men and Machines*, *in* ADVANCES IN SOCIAL THEORY AND METHODOLOGY: TOWARD AN INTEGRATION OF MICRO- AND MACRO-SOCIOLOGY 304, 305 (K. Knorr-Cetina & A. V. Cicourel eds., 1981).

22. What I have described as a relational articulation, above, bears a resemblance to but is not synonymous with a more general safety-focused attitude toward life. Marchant actually references the latter when reasoning, "Every risk

the development, presentation,[23] and circulation of precaution to be deeply personal, intensely moral,[24] and a product of certain historical moments.[25] Stephen Dovers et al. put it eloquently, describing the Precautionary Principle as "an attempt to institutionalize a value shift in society . . . a moral injunction, reminding decision makers of this societal expectation."[26]

By presenting a thicker history of precautionary governance at exemplary moments of ecological crisis, I trace the changing legal and political interpretations of precaution and show that through the 19th and 20th centuries, policymakers developed this unique form of governance in response to crises related to modernization. Lawyers and policymakers who interpret precaution by subjecting it to the politics of scientific verification and the goal of Sustainable Development (as is the case with readings of the Precautionary Principle) ignore this history to our shared detriment, because they utilize an inert form of precautionary thinking incapable of facilitating public decisions or investigating how modern risks are generated and distributed. The result is that precaution no longer articulates anything. To this extent, when we describe precaution as "vague" or "democracy deficient," we are also acknowledging that our contemporary interpretations of precaution, hinging on scientific proof, do not adequately facilitate our desire to live sustainably. We are saying that industrialization and techno-scientific advancement continue to remain the shibboleth by which we measure and know a

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involves some uncertainties, which must be bridged by precaution in making any decision to reduce risk . . . few if any regulatory decisions could be taken in the absence of precaution." Gary E. Marchant, *From General Policy to Legal Rule: Aspirations and Limitations of the Precautionary Principle*, 111 ENVTL. HEALTH PERSP. 1799, 1799 (2003).

23. *See* ULRICH BECK, RISK SOCIETY: TOWARDS A NEW MODERNITY 27 (Mark Ritter trans., 1992) ("While such things as income and education are consumable goods that can be experienced by the individual, the existence of and distribution of risks and hazards are *mediated on principle through argument*.") (emphasis in original).

24. *See* Stephen R. Dovers & John W. Handmer, *Ignorance, the Precautionary Principle, and Sustainability*, 24 AMBIO 92, 94 (1995), *available at* http://www.jstor.org/stable/4314302.

25. *See, e.g.*, JEAN-FRANÇOIS LYOTARD, THE DIFFEREND: PHRASES IN DISPUTE 32, ¶ 47 (Georges Van Den Abbeele trans., 1989) ("Nothing can be said about reality that does not presuppose it.").

26. Dovers & Handmer, *supra* note 24, at 94.

political order to be democratic and progressive.[27] This status quo cannot be altered until precaution is mobilized not merely to stall specific projects, but to inquire into the causes of modern risks and bring into question a particular way of life that denies the iniquitous side of economic and techno-scientific advancement. I am concerned, therefore, not only with legal and political history, but also with social perceptions of environmental risk, all of which underscore human choice as the dominant factor in determining ecological health.

Part I emphasizes how sustainability and precaution are not just static concepts or determinative rules, but rather articulations of a certain kind of relationship between "nature" and "culture." Part II outlines the contemporary understanding of precaution as a part of Sustainable Development, and sketches the implications of this arrangement for precautionary action. Part III supplies a thicker history of exemplary instances of precautionary management (from Victorian England to post-war Germany, and 20th century international disputes) to show that by relying exclusively on positive, scientific knowledge, and "objective" expertise, decision-makers have eroded their own ability to integrate precautionary thinking into political decisions. Finally, in Part IV, I argue that by denying the ethical underpinnings of precautionary governance, environmental law not only fails to counter environmental degradation, but also foregoes the possibility of interrogating economic growth initiatives and complex technologies to determine how risks are actually being created and distributed.

I. SUSTAINABILITY AND PRECAUTION AS RELATIONAL ARTICULATIONS

Being "human" has long been understood in relation to animals,[28] including regarding "behaving like an animal" as a pejorative.[29] With

27. Contrast the insecurity surrounding the Precautionary Principle in environmental law to the confidence with which states favor anticipatory strategies against terrorism and similar, conventional threats to life. *See, e.g.*, Trouwborst, *supra* note 7, at 113 (providing a brief survey of literature on anticipatory self-defense).

28. *See* Aaron Gross, *Introduction and Overview: Animal Others and Animal Studies*, *in* ANIMALS AND HUMAN IMAGINATION: A COMPANION TO ANIMAL STUDIES 1 (Aaron Gross & Anne Vallely eds., 2012) ("Animals . . . are so deeply

the Descartian mind/body dichotomy, however, this excision of human society (or culture) from nature, and the ascendance of the former over the latter, has been globalized as the ubiquitous frame for Enlightenment-inspired knowledge of reality.[30] But not all societies accepted this modern dichotomy equally[31] or uncritically,[32] and the variance in attitudes has often coincided with how people relate to their environment.[33] Moreover, a wealth of research has repeatedly challenged the Descartian distinction[34] showing this taxonomy to be based on purifications that are themselves historical artifacts with no innate value[35] that can be compared and objectively privileged as transcendental theorizing requires.[36] The value shift toward precautionary and sustainable practices, on the other hand, interprets human intervention as a process that is internal to the natural

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enmeshed in human self-conception that if they did not exist we would need to invent them."); *see also* JOHN BERGER, ABOUT LOOKING (1980).

29. *See, e.g.*, JOSEPH CONRAD, HEART OF DARKNESS, *in* HEART OF DARKNESS AND OTHER TALES (Cedric Watts ed., Oxford 2002) (1902); J. M. COETZEE, WAITING FOR THE BARBARIANS (Penguin 1999) (1982).

30. *See* LATOUR, *supra* note 14.

31. *See, e.g.*, Sheila Jasanoff, *In a Constitutional Moment: Science and Social Order at the Millennium*, *in* SOCIAL STUDIES OF SCIENCE AND TECHNOLOGY: LOOKING BACK, AHEAD 155, 163 (Bernward Joerges & Helga Nowotny eds., 2003).

32. *See* BHIKHU PAREKH, GANDHI'S POLITICAL PHILOSOPHY: A CRITICAL EXAMINATION 86 (1989).

33. *See generally* P. Wesley Schultz, *Environmental Attitudes and Behaviors across Cultures*, *in* ONLINE READINGS IN PSYCHOLOGY AND CULTURE (2002), http://scholarworks.gvsu.edu/cgi/viewcontent.cgi?article=1070&context=orpc.

34. *See* CLAUDE LÉVI-STRAUSS, *The Science of the Concrete*, *in* THE SAVAGE MIND 9 (1966); LATOUR, *supra* note 14, at 1–5.

35. Of course claiming that the environment should be protected for its own sake may be seen as perpetuating the nature/culture divide. But this purification "while of no acceptable historical significance, does contain a logic, fully justifying its use . . . as a methodological tool." LÉVI-STRAUSS, *supra* note 14, at 3. In addition, maintaining this explicit position is important because human interests are already well spoken for, and refusing to use categories like human or environment would make for a confusing read. Needless to say, I do not expect that all readers will accept such an opening position, nor should they. Nevertheless, the inability to convince everyone is not a reason to adopt some "neutral" posture on such a significant issue. *See, e.g.*, MILLER, *supra* note 17, at 34–35.

36. *See* Jacques Derrida, *Writing and Difference*: '*Structure, Sign and Play in the Discourse of the Human Sciences'*, *in* JACQUES DERRIDA: BASIC WRITINGS 222–25 (Barry Stocker ed., 2007).

environment (not as an external agent acting on a stable *thing* called "the environment"). To this extent, precaution and sustainability are cultural practices that reflect the continued muddling of a purified context.[37]

Historically, such muddling becomes prominent in moments of crisis. For instance, in West Germany, the conservative and modernization-obsessed bent of post-WWII policies notwithstanding, the recognition of "unprecedented threats to nature and human health that accompanied 'economic miracles,'"[38] ushered in an era of environmental conservation and activism. Environmental protection groups and policymakers moved away from the impression that "nature conservation was primarily a cultural affair involving the protection natural monuments and scenic parts of the countryside—a luxury concern suited for a future time of stability."[39] This attitudinal shift spurred the subsequent disaggregation, in the 1970s, of *Natur*,[40] to sieve out a special category, *Umwelt*, that specifically referenced the physical aspects of nature (e.g., air and water). *Umwelt*, however, was not a mere formal distillation. It denoted something stressed and already facing irretrievable degradation[41] and, therefore, in need of the ethic of *Vorsorge*[42] (widely held as the precursor to the contemporary Precautionary Principle). Accordingly, German policies refer not to the environment, but to *Umweltschutz*, integrating the thing in danger with *schutz*, presenting the *Umwelt* as

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37. O'Riordan & Jordan, *supra* note 10, at 208 ("[T]he once clear distinction between environment, economy and society is becoming increasingly blurred."); *see also* HARALD HOHMANN, PRECAUTIONARY LEGAL DUTIES AND PRINCIPLES OF MODERN INTERNATIONAL ENVIRONMENTAL LAW 4–5 (1994); World Charter for Nature, *supra* note 7, at pmbl. to Annex.

38. Sandra Chaney, *Protecting Nature in a Divided Nation: Conservation in the Two Germanys, 1945–1972*, *in* GERMANY'S NATURE: CULTURAL LANDSCAPES AND ENVIRONMENTAL HISTORY 207 (Thomas Lekan & Thomas Zeller eds., 2005).

39. *Id.* at 209.

40. *See* Boehmer-Christiansen, *supra* note 7, at 32.

41. *See* Andrew Jordan, *Integrated Pollution Control and the Evolving Style and Structure of Environmental Regulation in the UK*, 2 ENVTL. POLITICS 405 (1993) (outlining the continuity between pro-active, precautionary measures and the evolving culture of damage minimization in the United States and the United Kingdom).

42. This is a complex concept that does not lend itself to a precise translation in English. It may roughly be described as a caution that is mindful of the need to care about the future. In Germany, it had strong ties to state regulations and planning. *See* Boehmer-Christiansen, *supra* note 7, at 38–39.

something always already under the state's protection. The resulting approach to environmental governance was qualitatively different and intervened prior to questions of liability or insurance because, while these approaches represent the possibility of monetary restitution,[43] they come into effect only after the damage has been done. Environmental governance emphasized intuition, assumed the impossibility of absolute certainty, and importantly, recognized that risks are inextricably tied to experience and anticipation.[44] The forward looking[45] character of precautionary action was identified as the source of this strategy's positive power, and the resulting law, *Vorsorgeprinzip*, was believed to supply "moral legitimation and legal justification for activism."[46] In Germany, the *Umweltschutz* embodied an evolving identification between human society and its natural environment.

To be sincere to this identification between society and its environment, sustainability and precaution should not be understood as static things, laws, or even goals that can be quantified, bundled, compared, and traded off against others. Rather, precaution and sustainability should be understood as articulations of the ever-evolving relations between nature and culture—relations that are as experiential[47] as they may go on to be jural.[48] It is no coincidence that articulations like sustainability and precaution have developed at

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43. *See* BECK, *supra* note 23, at 22 (arguing that nuclear power plants cannot be privately insured because their risk is incalculable).

44. *See, e.g.*, *Official References to and Acknowledgements of the Precautionary Principle*, SCI. & UNCERTAINTY, *available at* http://www.uow.edu.au/~sharonb/STS300/science/regulation/articles/artprinciple2.html (last visited Mar. 30, 2014) (quoting the Bergan Declaration) ("In order to achieve sustainable development, policies must be based on the Precautionary Principle. Environmental measures must anticipate, prevent and attack the causes of environmental degradation. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.").

45. O'Riordan & Jordan, *supra* note 10, at 196.

46. Boehmer-Christiansen, *supra* note 7, at 56; *accord* Sonja Boehmer-Christiansen, *Anglo-German Contrasts in Environmental Policy-Making and Their Impacts in the Case of Acid Rain Abatement*, 4 INT'L ENVTL. AFF. 295 (1992); *see also infra* Part III.

47. *See generally* Ingold, *supra* note 16.

48. For the classic exposition on such distinctions, see WESLEY NEWCOMB HOHFELD, FUNDAMENTAL LEGAL CONCEPTIONS AS APPLIED IN JUDICIAL REASONING (Walter Wheeler Cook ed., 1964).

moments in history when societies have, through experiences[49] of species-annihilation level stress,[50] doubted not only the integrity of their separation from nature, but also the legacy of industrialization,[51] colonization,[52] and subsequent structural inequities that have shaped

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49. Ian Wills, *The Environment, Information and the Precautionary Principle*, 4 AGENDA 51, 52 (1997) (attesting "faced with the possibility of environmental changes that threaten humanity's life-support systems, a risk-averse society needs to institutionalize caution by placing the burden of proof on those who wish to change the environmental status quo . . . ."). Along similar lines, Tribe wagered that "most of the crucial environmental choices confronting industrialized nations in the last third of the 20th century will be choices that significantly shape and do not merely implement those nations' values with respect to nature and wilderness." Tribe, *supra* note 18, at 1324. A wealth of contemporary research appears to be on his side.

50. *See, e.g.*, CARSON, *supra* note 2, at 225. Much has already been written affirming this proposition. By the 1990s, scholars had already catalogued the development of a global consciousness acknowledging the vulnerability of global eco-systems and displaying pessimism about the survival of humankind as a primary amongst other species. *See* Riley E. Dunlap et al., *Of Global Concern: Results of the Health of the Planet Survey*, ENV'T, Nov. 1993, at 7 [hereinafter *Gallup Poll*] (providing an opinion poll conducted in the aftermath of the Rio Conference on Environment and Development). A similar thesis may be found in the graphical representation prepared by Norton, transposing "uncertainty," "vulnerability," and "resilience" in the context of Precaution. *See* Bryan Norton, *Sustainability, Human Welfare, and Ecosystem Health*, 1 ENVTL. VALUES 97, 102 (1992).

51. Gilbert Rist describes the entry of ecological considerations into the international plane as part of an ongoing "critique of industrial society." Gilbert Rist, *The Triumph of Third-Worldism*, *in* THE HISTORY OF DEVELOPMENT: FROM WESTERN ORIGINS TO GLOBAL FAITH 140, 141 (Patrick Camiller trans., 1997); *see also* WHAT NOW: THE 1975 DAG HAMMARSKJÖLD FOUNDATION REPORT 35–54 (1975), http://www.dhf.uu.se/pdffiler/75_what_now.pdf.

52. *See* Rist, *supra* note 51, at 140–41, outlining a trajectory marked by the Chinese Revolution (1967), the movement of May 1968 (in Paris), decolonization, and first world solidarity with what were traditionally viewed as third world concerns (including "the South African apartheid system, Portuguese colonialism and White rule in Rhodesia, or the military dictatorships in Latin America"), the dominance of Dependency theories of development, the unmasking of imperial power in Vietnam, the development of different metrics for understanding the environment (such as "limits to growth"), and finally the enactment of international environmental protection treaties like the Declaration of the U.N. Conference on the Human Environment. United Nations Conference on the Human Environment, Stockholm, Swed., June 5–16, 1972, *Declaration of the United Nations Conference on the Human Environment*, U.N. Doc. A/CONF.48/14/Rev.1 [hereinafter *Stockholm Declaration*].

global economic relations.[53] Some commentators have attributed this contemporary value shift to an anti-modern turn[54] in social relations. But while the anti-modern turn is often marginalized as radical, there is little doubt that, globally, citizens have become interested in precautionary approaches to governance because of a growing cultural awareness[55] spurred by exposure to the reflexive nature of modern risks.[56] Ellen Hey describes this mainstreaming of an entirely new set of values[57] as involving

> [A] shift away from the primacy of scientific proof and traditional economic analyses that do not account for environmental degradation. Instead, emphasis is placed on: 1) the vulnerability of the environment; 2) the limitations of science to accurately predict threats to the environment, and the measures required to prevent such threats; 3) the availability of alternatives (both methods of production and products) which permit the termination or minimization of inputs into the environment; and 4) the need for long-term, holistic economic considerations, accounting for, among other things, environmental degradation and the costs of waste treatment.[58]

It seems peculiar, then, to regard precautionary thinking as value-neutral and empty[59] concepts accessible to all manner of interests.[60]

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53. *See* Rist, *supra* note 51, at 143–44; *infra* note 74 and accompanying text.

54. *See* Jürgen Habermas, *New Social Movements*, TELOS, Sept. 21, 1981, at 33, 33.

55. *See* Klaus Eder, *The Rise of Counter-Culture Movements against Modernity: Nature as a New Field of Class Struggle*, THEORY, CULTURE & SOC'Y, Nov. 1990, at 21, 40–42.

56. *See* BECK, *supra* note 23, at 56 (describing how modern technologies produce risks and the mechanisms to hedge against such risks, which in turn affect the technology itself, spinning off into new risks and uncertainties that threaten the environment, including humans); *see also* CHARLES PERROW, NORMAL ACCIDENTS: LIVING WITH HIGH-RISK TECHNOLOGIES 304–53 (1999).

57. *See* Hey, *supra* note 8, at 305 (explaining how the "[a]doption of the precautionary concept is part of a wider development in international environmental law and policy.").

58. *Id.* at 308.

59. *See* Bodansky, *Scientific Uncertainty*, *supra* note 19, at 5.

60. *See, e.g.*, *Stockholm Declaration*, *supra* note 52, ¶¶ 4, 6–7.

Freestone recognizes this political partiality as a shift "*in favour of a bias* towards safety and caution."[61] Of course, erasing the nature/culture dichotomy and the accompanying lifestyles is not simple nor an on/off position; moving toward sustainability requires sacrifices, and what sacrifices a society deems worthwhile are variable and speak to society's ambivalence about the value of nature. Environmental groups appear to recognize this flux and display a greater tolerance for heterogeneous beliefs and commitments, both within and between various perspectives, than other in-groups, like religious sects.[62]

How is it, then, that international treaties and judicial decisions present the Precautionary Principle as a moral response attuned to uncertainty, but routinely require that the actual application of precautionary actions pre-qualify as universal, objective, and otherwise scientifically confirmed? In surveying scholarship on Sustainable Development and precautionary action, three impressions are telling: first, the goal of environmental protection is generalized within the larger ambit of economic governance; second, attempts at incorporating a precautionary analysis of a situation hinge on the character and acceptability of pre-existing scientific knowledge, even though normative and doctrinal descriptions of the Precautionary Principle, consistently accept precaution as applicable beyond the reach of scientific certainty;[63] and third, how the Precautionary

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61. David Freestone, *The Road from Rio: International Environmental Law after the Earth Summit*, 6 J. ENVTL. L. 193, 211 (1994) (emphasis added).

62. Robert A. Stallings, *Patterns of Belief in Social Movements: Clarifications from an Analysis of Environmental Groups*, 14 SOC. Q. 465, 477 (1973).

63. O'Riordan & Jordan present a standard rendering of this position, writing:

> The rules of thumb [in deciding when/how to apply precaution], however, are to err on the side of caution, and the challenge is to provide reasoned scientific evidence to justify a higher than expected cost. This is by no means straightforward, as the legal profession tends to look for the 'certainties' of science as a guide, and may become exasperated when the evidence is uncertain via either ignorance or interdeterminacy.

O'Riordan & Jordan, *supra* note 10, at 206.

Principle influences our interest in inquiring into the production of risk.[64] Parts II, III, and IV elaborate on these impressions.

II. ENVIRONMENTAL PROTECTION WITHIN THE LARGER AMBIT OF ECONOMIC GOVERNANCE

Since the 1980s, the concept of Sustainable Development has been integrated into myriad legal instruments[65] and has become a touchstone for environmental interventions. But despite Sustainable Development's grounding in protective, environmentally-conscious thinking, as Andrew Jordan and Timothy O'Riordan note, this concept has been "dangerously successful" because of the "uncritical accumulation of meanings, often contradictory and impractical, that have characterised [sic]" its globalization.[66] There is little doubt that sustainability is the way forward, but as a policy framework Sustainable Development should not be understood as self-justifying nor accountable only to its own internal logic. While a thorough discussion is certainly beyond the scope of my argument,[67] a modest exploration of the Sustainable Development is necessary to describe how an uncritical acceptance of this concept deadens precautionary thinking (expressed as the Precautionary Principle).

A. A Critical Introduction to Sustainable Development

The crux of Sustainable Development is that while socio-economic development cannot be ceased, it must be curtailed to allow long-term growth and prosperity. Scholars have also acknowledged that "a buzzword such as 'sustainability' has a long history of power and

64. *See* Bodansky, *Deconstructing*, *supra* note 8, at 381–91; Marchant, *supra* note 22, at 1800.

65. *See, e.g.*, *Rio Declaration*, *supra* note 3; BRUNDTLAND COMMISSION REPORT, *supra* note 20; *Communication*, *supra* note 5.

66. O'Riordan & Jordan, *supra* note 10, at 192. For an account of the confusing ways in which the Indian Supreme Court has adopted Sustainable Development, see Saptarishi Bandopadhyay, *Because the Cart Situates the Horse*: *Unrecognized Movements Underlying the Indian Supreme Court's Internalization of International Environmental Law*, 50 INDIAN J. INT'L. L. 204, 226–27, 241–46 (2010), *available at* http://works.bepress.com/saptarishi_bandopadhyay/2.

67. Works deconstructing sustainability in greater detail may be found in the footnotes that follow.

exclusion"[68] In keeping with the themes thus far explored, we might begin by asking: what kinds of sacrifices does Sustainable Development foresee?

In 1987 the Brundtland Commission Report proposed that:

> Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs. The concept of sustainable development does imply limits—not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities. But technology and social organization can be both managed and improved to make way for a new era of economic growth.[69]

From this introduction into international environmental law, "sustainable" has remained a qualifier on the actual subject of Sustainable Development: development understood as economic growth. A narrow but plausible reading of this definition could conclude that it is acceptable for humans to destroy life forms and entire ecosystems globally,[70] so long as they do not irreversibly endanger the fulfillment of human needs as they may be determined in the future.[71] To paraphrase roughly: humans can do more to help

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68. *The Nature of German Environmental History*, 27 GERMAN HIST. 113 (2009).

69. BRUNDTLAND COMMISSION REPORT, *supra* note 20, at 15, § 3: ¶ 27.

70. *See* LESTER R. BROWN, ECO-ECONOMY 77 (2001) (noting that environmental impact assessments are largely about ameliorating environmental damage rather than preventing it because such assessments are only performed *after* economists and policymakers have decided what investments to make).

71. By 1992 when the Rio Declaration came into being, the focus of negotiations had shifted from the "Human Environment" (at the 1972 Stockholm Declaration) to "Environment and Development," (at the Rio Declaration). Principle 1 of the Rio Declaration explicitly places human concerns at the center or environmental issues, while Principle 4 reads, "In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it." *Rio Declaration*, *supra* note 3; *see also* ARNE NAESS, ECOLOGY OF WISDOM 297 (Alan Drengson & Bill Devall eds., 2008).

keep the planet sustainable for humans which means making sure humans get what they need today without risking what humans may need tomorrow. "Limits," on the other hand, the Brundtland Commission Report clarifies, are not absolute but constructed by the interaction of the "present state of technology and social organization on environmental resources" and "the ability of the biosphere to absorb the effects of human activities."[72] The report continues by affirming the goal of achieving economic growth through technological innovation, but leaves ambiguous the relationship between these future technologies and the environment. Similarly, the Rio Declaration requires that environmental protection be an "integral component of sustainable development,"[73] and not the other way around. Over time, the frame called Sustainable Development absorbs all environmental concerns into its calculus of economic growth, thereby making ecological choices dependant on the economic ones.[74] For this reason, we can only ever understand a government's ability to take precautionary action in terms of its effect on economic growth internationally.[75]

72. BRUNDTLAND COMMISSION REPORT, *supra* note 20, at 15, § 3: ¶ 27

73. *Rio Declaration*, *supra* note 3, § 16.20.

74. A rough parallel is found in the history of international economic development with respect to the New International Economic Order, an economic arrangement whose aim, Rist writes, "*was to realize a long-standing dream of world capitalism . . . to ensure continuing growth of the system as a whole by better integrating the peripheral countries* . . . the countries of the North were asked to make concessions . . . but this also meant that the key to the South's 'development' lay in the North." Rist, *supra* note 51, at 150 (emphasis in original).

75. *See, e.g.*, Boyle & Freestone, *supra* note 20, at 9. The Australian National Strategy for Ecologically Sustainable Development has adopted the precaution as a "guiding principle" of sustainable development. *See* Ecologically Sustainable Dev. Steering Comm., *National Strategy for Ecologically Sustainable Development*, AUSTRALIAN GOV'T DEPT. OF THE ENV'T (1992), http://www.environment.gov.au/resource/national-strategy-ecologically-sustainable-development. A similar posture is maintained by the Indian Supreme Court. *See* Bandopadhyay, *supra* note 66.

B. Precautionary Relations within the Narrative of Sustainable Development

"In its more tempered versions, the [Precautionary] principle is indistinguishable from cost-benefit analysis with risk aversion assumed."[76]

Throughout the 20th century, with the rising popularity of eco-governance, monikers such as "integrated outcome"[77] have conveyed the faith in a natural compatibility between environmental protection and economic growth. This rubric, in turn, affirmed the trend of organizing biologicals (with the human body as a primary focus) in relation to their compatibility with economic goals and standardized techno-scientific practices.[78] For Luke, this critical moment is marked by the ability and willingness of human societies to "consciously . . . wager their life as a species on the products of their biopolitical strategies and technological systems . . . ."[79] But because organizing the world as the "Global Environment"[80] was inextricably tied to economic growth and technological advancement, human societies realized that they were "also wagering the lives of other, or all, species."[81] These parallel realizations make up the tense narrative that has globalized as Sustainable Development.

Initially, to affirm the presumed natural harmony between human economic goals and ecological health, it was the earth's carrying

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76. RICHARD A. POSNER, CATASTROPHE: RISK AND RESPONSE 138 (2004).

77. *See* Michael Kerr & Marie-Claire Cordonier Segger, *Corporate Social Responsibility: International Strategies and Regimes*, *in* SUSTAINABLE JUSTICE: RECONCILING ECONOMIC, SOCIAL AND ENVIRONMENTAL LAW 134, 134–35 (Marie-Claire Cordonier Segger & C. G. Weeramantry eds., 2005).

78. *See* Timothy W. Luke, *Sustainable Development as a Power/Knowledge System: The Problem of 'Governmentality'*, *in* GREENING ENVIRONMENTAL POLICY: THE POLITICS OF A SUSTAINABLE FUTURE 26 (Frank Fischer & Michael Black eds., 1995) ("Once human power/knowledge formations become the foundation of industrial society's economic development, they also become a major factor in all terrestrial life-forms' continued physical survival."); *see also infra* Part III.

79. *Id.* at 26.

80. *See* Isabelle Lanthier & Lawrence Olivier, *The Construction of Environmental 'Awareness'*, *in* DISCOURSES OF THE ENVIRONMENT 63 (Éric Darier ed., 1999); *see also* Miller, *supra* note 13, at 66.

81. Luke, *supra* note 78, at 26.

capacity (Assimilative Capacity)[82] that was deemed reconcilable. Later, eco-management was characterized by Prevention.[83] More recently, however, environmental degradation and the multiplication of risks have forced a reckoning with historic assumptions about the nature/culture relationship—nurturing an emphasis on precautionary action. For this reason, any meaningful use of precautionary thinking requires that Sustainable Development be interpreted to prioritize commitment and self-sacrifice, instead of settling for the assumption that environmental protection and economic growth are objectively reconcilable.[84] Otherwise, Sustainable Development continues to mirror the status quo in environmental governance before that term was coined.

The compatibility assumption views a precautionary approach as an exception and not the norm—precautionary challenges are deemed unnecessary or even irrelevant until scientific evidence confirms otherwise. Through this reconciliatory methodology human interventions into the environment can be "scientifically" ordered to the point where potentially unsustainable activities can be *made* (i.e., deemed) sustainable.[85] For obvious reasons, the have-your-cake-and-eat-it-too draw of Sustainable Development (promoting forms of sustainability and precaution that don't get in the way of existing human lifestyles) is so strong that even O'Riordan and Jordan, sophisticated advocates of precautionary management,[86] have come to view the possibilities thus:

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82. *See, e.g.*, *Stockholm Declaration*, *supra* note 52, at Principle 6 (prescribing that only when pollution was such as to overwhelm the restorative or assimilative capabilities of the environment can action be taken in opposition to a given activity).

83. *See* SANDS, *supra* note 3, at 246–49; *see also* MAURICE SUNKIN ET AL., SOURCEBOOK ON ENVIRONMENTAL LAW 73 (2nd ed., 2001) (providing a different reading from Sands, on whether the prominent language of Principle 21 of the Stockholm Declaration is indeed preventative in character).

84. *See Rio Declaration*, *supra* note 3, Principle 12 ("States should cooperate to promote a supportive and open international economic system that would lead to economic growth and sustainable development in all countries, to better address the problems of environmental degradation.").

85. *See infra* Part III; *see, e.g.*, O'Riordan & Jordan, *supra* note 10, at 193.

86. Norton has called for "a set of principles, derived from a plausible core idea of sustainability, but sufficiently specific to provide significant guidance in day-to-day decisions . . . ." Norton, *supra* note 50, at 98. In response, Timothy O'Riordan and Andrew Jordan nominate "[p]recaution." *See* O'Riordan & Jordan, *supra* note 10, at 193.

> This [precautionary principle] is still a vague notion, but it suggests a compatibility between the evolution of a post-industrialist value drift, and the opportunities afforded by information technology and increasingly flexible industrial culture towards a more inherent compatibility of high environmental quality with economic growth.[87]

By contrast, I would suggest that any such "compatibility" be understood as a policy-of-finding-compatibility,[88] or a cultural rationalization.[89] Whether something is sustainable is not a matter of pure discovery; it involves a series of moral and political choices that certify resulting policies as being sustainable.[90] Accordingly, if policy-makers have already determined an activity as being unsustainable, say, a chemical disposal facility in the middle of a petting zoo (endangering both animals and humans), there is little need to classify the resulting prohibition as precautionary. In this scheme, therefore, precaution becomes a serious part of the conversation only after we are scientifically self-aware of uncertainty and acknowledge the same. On the other hand, if, as O'Riordan and Jordan describe it, precaution does not exist as suspicious of economic growth and but instead represents some naturally conciliatory possibility, then, because things can always be found to be sustainable, precaution is meaningless. Already, precautionary

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87. O'Riordan & Jordan, *supra* note 10, at 193.

88. Luke, *supra* note 78, at 22–23 (arguing that even though Sustainable Development has emerged as a "response to the globalistic perspectives of the 'limits to growth' phenomenon . . . Sustainable Development often does little more than assume that the limits to growth might be far more flexible.").

89. *See also* Duncan Kennedy, *The Role of Law in Economic Thought: Essays on the Fetishism of Commodities*, 34 AM. U. L. REV. 939, 969–70 (1985) ("People understand much that is really the product of social decision to flow ineluctably from the physical [i.e., natural] properties of objects.").

90. A parallel strategy can be identified in the field of "development," where the second generation of national reforms recommended by the World Bank and the IMF appear to incorporate "social" objectives but without any significant re-evaluation. Instead social objectives are without friction *assumed*, or otherwise *made* compatible with Washington–Consensus style concerns. *See, e.g.*, Kerry Rittich, *The Future of Law and Development: Second-Generation Reforms and the Incorporation of the Social*, *in* THE NEW LAW AND ECONOMIC DEVELOPMENT: A CRITICAL APPRAISAL 203, 205–06, 218 (David M. Trubek & Alvaro Santos eds., 2006).

action is excluded from investigations of sustainability unless and until such challenges are accompanied by quantifiable scientific evidence proving either present ignorance or future risk—effectively a rebuttable presumption against precautionary actions.

Precautionary thinking, while prominently featured within the rhetoric of Sustainable Development,[91] is not recognized as an ethical relation that can test sustainability claims. Instead, the idea of a precautionary relationship is depoliticized and upheld as a value-neutral, rhetorical trope that, in the absence of objective scientific evidence, affords virtually endless possibilities of *natural* coherence between the need for environmental protection, and economic growth and techno-scientific advancement.[92] The underlying illusion, of course, is that sustainability choices are somehow indeterminate and *do not always* involve winners and losers. However, as we will see, the uneasy truce falls apart when precautionary regulations are pressed against claims of sustainability—precautionary actions that get in the way of economic development are often automatically held to symbolize the freezing of human advancement and freedom, promising a future full of losers.

My conclusions here are not without precedent in the history of environmental regulation. Sandra Chaney, for instance, describes how in 1960s Germany, environmental protection groups "adapted their discourse to larger public debates of the postwar period, promising to aid in economic revival and democratic renewal."[93] Even a cursory review of strategies undertaken by environmental movements in the recent past will bear out how this ordering of activism continues to repeat. The productive power of law can be seen in *how* a particular strategy or nomenclature (and the resulting self-perception) may be developed in order for a stakeholder or

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91. *See* Daniel Dobos, Note, *The Necessity of Precaution: The Future of Ecological Necessity and the Precautionary Principle*, 13 FORDHAM INT'L. L.J. 375, 394 (2002).

92. SHEILA JASANOFF, DESIGNS ON NATURE: SCIENCE AND DEMOCRACY IN EUROPE AND THE UNITED STATES 265–66 (2005) ("As risk assessment became the preferred method for making regulatory judgments appear objective, so too it gradually took on the mantle of science . . . . U.S. National Research Council . . . [defined] . . . risk assessment as a largely scientific component of regulatory decision making that should precede, and be separated from, value judgments . . . considered appropriate only at the later stage of 'risk management.'").

93. *See* Chaney, *supra* note 38, at 210.

activist to be taken seriously; concessions made under situations of long-term constraint may re-make the activist himself as well as public perception of the activity at large.[94] Consider how a conservationist's mandate differs from that of a humane society:[95] while the latter may be accused of humanizing beings considered "non-human" (which, anti-slavery efforts show to be crucial), the conservationist conserves things for society to consume or otherwise enjoy. The "greatest number" within the utilitarian formula of "greatest good for the greatest number" rarely includes non-humans.

Aside from labeling precautionary arguments as bad for the economy, neutering the precautionary relationship allows for an endless deferring of political decision in favor of scientific certainty. And until this unlikely frontier is reached, Sustainable Development is pursued through a balancing mechanism called "proportionality analysis."[96] Precaution becomes one trope amongst many, no more capable of realizing sustainability relations than the probabilistic scientific data to which precautionary actions are now obliged.

One further conclusion, then, may be carried forward: when environmental activists convey environmental interests in economic terms so that they may be favorably received by policy/decision-makers, their efforts are strategic, practical and ultimately political in nature. Be it aggressive ideological struggle, capitulation or compromise, so long as values differ and ambivalence remains, strategies and decisions surrounding the nature/culture divide remain inextricably political.

I am not advocating that work toward sustainability be abandoned; I am only pointing out that claims to objective or scientific truth cannot by themselves absolve decision-makers of the need to decide in ways that actually respond to people's experiences of the world around them. Sustainable Development is no more self-correcting than, say, the market or the economy, and therefore must be tested by

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94. As Christopher Stone has noted, in hearing traditional conservationist arguments, "[o]ne feels that the arguments lack even their proponent's convictions. I expect they want to say something less egotistic and more emphatic but the prevailing and sanctioned modes of explanation in our society are not quite ready for it." Stone, *supra* note 18, at 490.

95. *See, e.g.*, Stone, *supra* note 8, at 463. For a critical overview of the development of humane societies, see IAN HACKING, REWRITING THE SOUL 55–68 (1995).

96. *See infra* Part II.C.

a reckoning for which it cannot itself set the terms. Precautionary relations presuppose a society that acknowledges the need for decisive action that is part scientific knowledge, part an instinct for safety, and part a leap of faith guided by equity, and the desire to preserve aspects of reality that science does not find necessarily useful. Precautionary decision is a radicalization of humdrum, seemingly automatic environmental choices, and tests the goal of Sustainable Development instead of being absorbed by it.

In Parts II.C, III and IV, I review: the rationalizing tendency at the heart of Sustainable Development claims (deemed to reflect some natural characteristic of environmental resilience);[97] the notion that the "right answer" on sustainability can be determined through scientific rigor (a flawed assumption previously applied through "assimilative capacity" identifications);[98] and finally, that such

97. Proponents of Sustainable Development are prone to falling into arguments based on "naturalistic fallacy," that asks humans to "adopt new values and new sets of conduct" by conflating nature (i.e., the natural) with morality (i.e., the social), and reading them both as "natural." *See* Éric Darier, *Foucault against Environmental Ethics*, *in* DISCOURSES OF THE ENVIRONMENT, *supra* note 80, at 215. This objection is not an abdication of the independent interests of non-humans, but a rejection of nature as a storehouse of indicators that can be read as life-determining truths.

98. Consider how the shift in scientific standards of environmental assessment from the "assimilative capacity principle" to the "preventive" or "preventative" principle, down to "precaution." Explaining this shift, Trouwborst (referencing Bodansky's comparable conception) writes, "It is to a great extent the failure of the assimilative capacity approach—with the absence of predictions by science of certain major impacts and scientific proof of detrimental effects coming too late—that led, on a sector-by-sector basis, to the adoption of the precautionary principle in international law . . . ." TROUWBORST, *supra* note 8, at 19. Other commentators provide a similar explanation: that the Precautionary Principle "has arisen from the realization that the old permissive approach based on the *assumed* assimilative capacity of the environment has failed . . . ." *Id.* (quoting Stairs & Taylor) (emphasis added). Such descriptions incorporate a few commonly held notions: First, we find the move from the "Assimilative Capacity" principle, to the "Prevention" or "Preventative" principle to the contemporary Precautionary Principle, depicted as progressive and increasingly sophisticated. Second, the acceptance assumption is seen as evidence of this "philosophical shift," Trouwborst references Article 3(f) of the Convention on the Ban of Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes Within Africa, Jan. 30, 1991, 30 I.L.M. 775, which reads: "The Parties shall cooperate with each other in taking the appropriate measures to implement the precautionary principle to pollution prevention through the application of clean

rationalistic, cost-benefit evaluations can nurture a democratic culture that values the environment as more than a bundle of resources.

C. Running with Proportionality Scissors

Popularly understood as the balancing of competing interests, proportionality analysis requires the decision-maker to weigh conflicting interests and rationally prioritize them by appealing to some superseding norm. With a standard such as reasonableness, the jurist's strategy would involve comparing the actions of one party and the expectations of another against a fictitious reasonable man. In proportionality analysis, by contrast, the jurist appears to arrive at an

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production methods, rather than the pursuit of a permissible emissions approach based on assimilative capacity assumptions." So is it really true that the science of yesterday (held to be objective and rational in its time) has since been found to be mere assumption? The value of standardized scientific evidence grows even more doubtful when we encounter O' Riordan & Jordan arguing: "[H]umans must learn to widen the assimilative capacity of natural systems by deliberately 'holding back' from unnecessary and environmentally unsustainable resource use on the grounds that exploitation may prove to be counterproductive, excessively costly or unfair to future generations." O'Riordan and Jordan, *supra* note 10, at 194. On this occasion, an assumption has been transformed into something that can be shaped (widened) through planning. O'Riordan and Jordan's description also displays another maneuver—in expressing precaution in terms of avoiding future problems, the authors also simultaneously fold into this calculus the distant future usually described through the rhetoric of intergenerational equity. Ironically, such descriptions themselves take a lot of the uncertainty out of the unknown, i.e., science, rationality, and governance are shown as heavily stable and growing progressively sophisticated. This process of owning the knowledge-bases that shape environmental policy, however, is not new and works as a double-edged sword given its tendency to essentialize and stabilize that which is inessential and unstable. Urlich Beck addresses this downside, writing: "The observable consequence is that critics [i.e., environmentalism] frequently argue more scientifically than the natural scientists they dispute against . . . [but] fall prey to a naïve realism about definitions of the dangers one consumes. On the one hand, this naïve realism of hazards is (apparently) necessary as an expression of outrage and a motor of protest; on the other it is its Achilles' heel." ULRICH BECK, ECOLOGICAL POLITICS IN AN AGE OF RISK 60 (1995). Finally, such descriptions describe a trend where a party interested in using the Precautionary Principle must first prove the uncertainty of risk with scientific sophistication—as O'Riordan and Jordan put it: "This [erring on the side of caution] is by no means straightforward, as the legal profession tends to look for the 'certainties' of science as a guide, and may become exasperated when the evidence is uncertain via either ignorance or interdeterminacy." O'Riordan & Jordan, *supra* note 10, at 206.

appropriate norm that supersedes the arguments marshaled by the litigants (like finding the right pair of glasses to view the dispute) by weighing the opposing interests[99] and underlying claims. However, in order for the balancing process to appear to reflect some rational coherence, there can be no sharp edges, no fundamental disagreements between the competing interests, only a number of differences awaiting a logical reconciliation by the jurist.[100] In addition, balancing involves "choosing a norm (not choosing a winning party) among a number of permissible alternatives on the ground that it best balances or combines conflicting normative considerations . . . ."; accordingly, each alternative is surveyed until the jurist finds its limit, "beyond which we enter the domain of an exception, or of another norm."[101]

But underlying any such process of testing is an implied acceptance of a particular set of moral choices over possible others. This is clearly found to be the case, for instance, when security against asbestos exposure is balanced away in favor of economic advantages (including those involving securing livelihoods).[102] At this level of analysis, proportionality appears not very different from an exercise in preferring one interest to another. Pierre Schlag explains the underlying logic:

> The fact that we have thought about these particular preferences [i.e., the conflicting choices] a lot, and that they matter to us even more, does not suffice to transform them into something else.

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99. Duncan Kennedy, *A Transnational Genealogy of Proportionality in Private Law*, *in* THE FOUNDATIONS OF EUROPEAN PRIVATE LAW 185, 193 (Roger Brownsword et al. eds., 2011) (In proportionality, "the jurist chooses a norm by balancing, in [reasonableness]; . . . it is the norm itself whose application requires balancing.").

100. *See, e.g.*, *Communication*, *supra* note 5, § 6.3.1; *see also* David P. Currie, *Air Pollution Control in West Germany*, 49 U. CHI. L. REV. 355, 359 nn.30–35 (1982).

101. Kennedy, *supra* note 99, at 190.

102. *See, e.g.*, Research Found. for Sci. Tech. Nat'l Res. Policy v. Union of India (Blue Lady), 2007 S.C.A.L.E. 75 (India) (using proportionality analysis to allow the dismantling of a ship laden with asbestos in order to sustain the local ship-breaking economy); *see also* Florent Pelsy, Comment, *The Blue Lady Case and the International Issue of Ship Dismantling*, 4 L. ENV'T & DEV. J. 135 (2008), *available at* http://www.lead-journal.org/content/08135.pdf.

> Not only is it always possible to give reasons, but it is always possible to affirm that the reasons given are (really) good ones. This only pushes reason giving back another level: Why are these reasons (really) good ones? One can imagine here the unfolding of an infinite regress . . . .
> . . .
> The fields of American law are constituted by doctrine regulating doctrine regulating doctrine (and so on) . . . . Many legal thinkers and actors give up way before that point is reached. They check out . . . .
> Still, if one pursues the grounds of a balancing decision with sufficient Socratic persistence, one will . . . reach a point where reason seems to run out . . . [for instance,] one can acknowledge that freedom of speech is central to constitutional democracy, yet continue to wonder why and how it is more central than equal protection.
> And so if one pursues the grounds of a balancing decision with sufficient Socratic persistence, one will reach a declarative affirmation that is proffered as the authoritative and self-evident truth.[103]

Proportionality is applied when other more discreet (or normal) modes of resolution prove unsuccessful. In portraying economic growth as compatible with environmental protection, the frame of Sustainable Development preemptively dulls the impact of existing dialectics (e.g., humanism v. capitalism, fairness v. efficiency, emotional value v. utilitarianism),[104] and lowers their significance by replacing them with demure, limited technical oppositions[105] (say, job-creation/economic growth v. community healthcare concerns).[106]

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103. PIERRE SCHLAG, THE ENCHANTMENT OF REASON 32–33 (1998).

104. O'Riordan & Jordan, *supra* note 10, at 209.

105. This move is certainly not novel and has been identified by others, including Claude Lévi-Strauss in his observation that two abjectly divided positions can sometimes be mediated between by replacing them with a pair that represents more reconcilable terms. *See* Claude Lévi-Strauss, *The Structural Study of Myth*, *in* STRUCTURAL ANTHROPOLOGY 206, 224 (Claire Jacobson & Brooke Shoepf trans., 1963). For a discussion of how such a move is performed within legal argument, see Duncan Kennedy, *A Semiotics of Legal Argument*, 42 SYRACUSE L. REV. 75, 105–16 (1991).

106. *See* Pelsy, *supra* note 102, at 140–45.

But even such oppositions are not suspended in the ether. They arise from within the dialectics that proportionality analysis avoids. Jim Dratwa substantiates this observation when, in describing the constitutionalizing function of precaution within the European Union, he writes:

> [T]o constitutionalize is to strive for a distribution of competences, as exemplified in the EU by debates over the desirability of a clear catalogue of competences. Such a division of labour requires the balancing of competing values, or the hierarchical ordering of competing organizing principles. This can mean placing law, or the rule of law, above politics. It can mean, in the case of constitutionalism at the WTO for example, placing free trade above social and environmental concerns. And it can mean, in the context of the EU, placing some concerns about human health, safety, and the environment above trade, albeit not above the single market.[107]

Such a constructed sense of equity and mutuality is not new to the law,[108] and in addition to the implied socialization, the decision-maker can readily rationalize away their choice of frame. For instance, critics of the Indian Supreme Court's decision in the *Research Found. for Sci. Tech. Nat'l Res. Policy v. Union of India (Blue Lady)* have argued that Sustainable Development has a rational narrative reflected in a "genuine" definition that the Court "distorted"

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107. Jim Dratwa, *Representing Europe with the Precautionary Principle*, *in* REFRAMING RIGHTS: BIO CONSTITUTIONALISM IN THE GENETIC AGE 263, 272–73 (Sheila Jasanoff ed., 2011).

108. *See* David Delaney, *Making Nature/Marking Humans: Law as a Site of (Cultural) Production*, 91 ANNALS ASS'N AM. GEOGRAPHERS 487, 500 (2001), *available at* http://www.jstor.org/stable/3651284 ("The arts of argument include, of course, the drawing of lines and distinctions, but they also include the making of connections by analogy, metaphor, and recategorization. The arts of persuasion create connections in the service of both reinforcing dominant visions of reality and crafting alternative visions. In the language of law, this art is practiced with the malleable tools inherited from liberalism. Among the more significant of these tools is the notion of rights: rights as shield, rights as sword, rights as signifier of mutuality. Not for nothing is so much of the politics of nature cast in arguments about rights: prisoners' rights, women's rights, animal rights, children's rights, even the rights of nature.").

and "diluted."[109] Accepting the norm of Sustainable Development, but rejecting the result when the decision-maker's interpretations conflicts with one's own,[110] is ultimately an unconvincing kind of "internal skepticism."[111] One could conceivably inquire as to why the judges chose to proceed with a proportionality-based interpretation with respect to the *Blue Lady*, when in previous decisions the Court has used principles like reasonableness,[112] or "equity,"[113] amongst others,[114] to read precaution and sustainability. But even such a critique would likely be thwarted, because proportionality analysis traditionally internalizes criticisms leveled against itself; so, for instance, judicial use of proportionality often frames doubts about the decision-maker's approach (e.g., whether or not proportionality analysis is the correct approach in a given dispute), as questions that themselves need to be balanced.[115] Ultimately, only a pair of weak strategies emerge to test sustainability findings: norm acceptance followed by internal skepticism, or inquiring into the consistency of norm-finding—a tact that judges and decision-makers expect and are prepared to parry.[116] The resulting status quo is exemplified in post-

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109. *See* Pelsy, *supra* note 102, at 141–42, 147.

110. *See* Shiv Visvanathan, *Supreme Court Constructs a Dam*, ECON. & POL. WKLY., Nov. 25, 2000, at 4176.

111. *See* RONALD DWORKIN, LAW'S EMPIRE 78–79 (1986).

112. *See* A.P. Pollution Control Bd. v. Prof. M.V. Nayudu (Retd.) and Ors., A.I.R. 1999 S.C. 812 (India) (relying on a municipal decision in New Zealand in reasoning that the Precautionary Principle should only be applied in the public interest "according to a 'reasonable persons' test.").

113. *See, e.g.*, Karnataka Indus. Areas Dev. Bd. v. Sri. C. Kenchappa & Ors., A.I.R. 2006 S.C. 2038, ¶ 23 (India) ("The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.") (citing *Rio Declaration*, *supra* note 3, Principle 3); *see also* Bombay Dyeing & Mfg. Co. Ltd. v. Bombay Envtl. Action Grp. & Ors., A.I.R. 2006 S.C. 1489, ¶¶ 48–49; S. Jagannath v. Union of India & Ors., A.I.R. 1997 S.C. 811, ¶ 14 ("Sustainable development of shrimp aquaculture should be guided by the principles of social equity, nutritional security, environmental protection and economic development with a holistic approach to achieve long-term benefits.").

114. *See Karnataka*, A.I.R. 2006 S.C. ¶ 28.

115. *See* Kennedy, *supra* note 99, at 190 ("An important moment in the history of balancing . . . occurred when the procedure was reformulated to include considerations of administrability . . . that judicial usurpation is a danger [that should itself be balanced] . . . balancers engulf their critics by incorporating their objections into the calculus.").

116. *See* Duncan Kennedy, *Freedom and Constraint in Adjudication: A Critical Phenomenology*, 36 J. LEGAL EDUC. 518 (1986).

WWII West Germany, where successive governments, upon accepting a natural coherence between sustainability and industrial modernization (thereby placing their modernization policies beyond challenge), strategically opted in and out of precautionary strategies, eventually producing laws that, far from being precautionary, represented the interests of groups holding surplus political influence.[117] More generally, courts using proportionality analysis have reached starkly similar political ends without risking their legitimacy.[118] As a consequence, however successful a challenge to Sustainable Development (usually the appropriate superseding norm) may be, such oppositions always serve to strengthen and normalize the myth of proportionality[119] as the only rational and reasonable way toward sustainable environmental solutions.

The idea of Sustainable Development thrives under the assumption that political decisions need not be hard, win-lose choices. And such a construct robs Sustainable Development of its ethical basis. Instead, we labor under the belief that if we weigh the issues hard enough and for long enough, we can arrive at a meaningful reconciliatory norm. This is where the image of "sustainable," as conveyed by Sustainable Development, differs from that assumed under a precautionary-relationship. Given fundamental value conflicts, at the moment of decision, precaution allows for a non-rational commitment in favor of environmental protection premised on the acceptance of uncertainty. On the other hand, because Sustainable Development is presented as evidence-based, the legitimacy of political decisions must hinge on the provision of adequate proof of harm. Consequently, instead of understanding the precautionary-relation as promoting a cooperative and decisionist ethic, conflicting interest-groups become obliged to compete to produce more and better scientific evidence to tilt the

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117. This need not result from political strategizing. For instance, as Ronnie Harding and Liz Fisher argue, when precaution becomes ubiquitous, further instances of precautionary action mean little since the existing measures and operations are deemed to already be "precautionary." *See* Ronnie Harding & Liz Fisher, *The Precautionary Principle in Australia*, *in* INTERPRETING THE PRECAUTIONARY PRINCIPLE, *supra* note 7, at 259.

118. *See* Kennedy, *supra* note 99, at 187 (describing proportionality analysis as representing "the simultaneous de-rationalisation [sic] and politicisation [sic] of legal technique.").

119. Against this mythologization, Kennedy suggests that we "interpret it [proportionality] in a Weberian way, as disenchantment, as the belated attainment of legal maturity." *Id.* at 187.

balance in their favor. And this process is certified by the assumption that the moment of decision can be stayed until an objective reconciliation can settle the contest.

But aside from the immediate repercussions of a particular dispute, the idea of Sustainable Development, when mythologized, encourages a political culture that trusts scientific knowledge as amoral and apolitical. Uncritical acceptance of expert-led decision-making, in turn, diminishes civic responsibility, especially since precautionary analyses address only post risk-confirmation concerns, erasing the possibility of deeper inquiries into how risks are created.[120]

III. PRECAUTIONARY DECISIONS AND THE CHARACTER OF SCIENTIFIC KNOWLEDGE

Three instances of precautionary (environmental) governance are studied below. In the first, a political decision is understood as precautionary specifically because it runs counter to prevailing scientific knowledge. In the second instance, precaution is conveyed as a holistic ethic in response to widespread environmental degradation. However, this interpretation is quickly eroded as precautionary choices are limited to industry best practices and best available standards of scientific evidence that obfuscate links between environmental crisis and modernization. Finally, in the late 20th century, international dispute resolution bodies make precautionary practices contingent on scientific evidence, overruling decisions of political sovereigns.

A. In the Shadow of King Cholera

Cholera was once more at large. It spread, Dr. John Snow opined in his pamphlet of 1849,[121] through the consumption of sewage-contaminated water. Based on his theory, Snow studied the commonalities between eighty-three deaths in the Golden Square area of London, and proposed that the water-pump on Broad Street

120. *See* BECK, *supra* note 23, at 24–33.

121. *See* JOHN SNOW, ON THE MODE OF COMMUNICATION OF CHOLERA (1849), *available at* http://www.ph.ucla.edu/epi/snow/snowbook.html (last updated May 3, 2014); *see also John Snow Facts*, JOHN SNOW SOC., http://www.johnsnowsociety.org/johnsnow/facts.html (last updated May 23, 2008).

be quarantined because there was "no particular outbreak or prevalence of cholera in this part of London except among the persons who were in the habit of drinking the water of the above-mentioned [Broad Street] pump-well."[122] However, the Royal College of Physicians had previously rejected Snow's thesis, believing the contaminant to be airborne,[123] and did not change its position.[124] Still, out of desperation, Snow's recommendation was acceded to and the water-pump's handle removed. The move, publicly depicted as no more than precautionary, proved successful in curbing the spread of infection in the area.[125]

The continued rejection of Snow's thesis and the depiction of the government's action as precautionary were not happenstance. They were, rather, the opening gambits of a specific strategy of governance that Urlich Beck outlines when he tells us that in the "risk-society," the conflict over control of means of production is replaced by conflict over the means of production of knowledge.[126] Specifically, the government in Snow's London understood that taking precautionary action did not mean accepting the knowledge from which the justification for the recommended action emerged. To the contrary, the governmental machinery worked harder to emphasize the precautionary nature of the move by continually marginalizing Snow as a scientific expert. Given that only a year before the Cholera outbreak in question, the Committee on Scientific Inquiries of the General Board of Health had attested that it had "no reason to

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122. John Snow, Letter to the Editor, *The Cholera Near Golden-Square, and at Deptford*, MED. TIMES & GAZETTE, Sept. 23, 1854, at 321, 321, *available at* http://www.ph.ucla.edu/epi/snow/choleragoldensquare.html.

123. EUROPEAN ENV'T AGENCY, ENVTL. ISSUE REPORT NO. 22/2001, LATE LESSONS FROM EARLY WARNINGS: THE PRECAUTIONARY PRINCIPLE 1896–2000, at 14–15 (Poul Harremoës et al. eds., 2001) [hereinafter LATE LESSONS].

124. *See* Ralph R. Frerichs, *Removal of the Pump Handle*, UCLA DEP'T OF EPIDEMIOLOGY, http://www.ph.ucla.edu/epi/snow/removal.html (last visited Apr. 13, 2014) ("'The Board of Guardians [of the St. James Parish] met to consult as to what ought to be done. Of that meeting, the late Dr. Snow demanded an audience . . . . He was not believed—not a member of his own profession, not an individual in the parish believed that Snow was right. But the pump was closed nevertheless and the plague was stayed.'").

125. *See* Snow, *supra* note 122; LATE LESSONS, *supra* note 123, at 14; *see also* PERROW, *supra* note 56, at 29 (illustrating similar actions preceding the Three Mile Island nuclear plant meltdown in 1979).

126. *See* BECK, *supra* note 23, at 52–54.

adopt . . . [Snow's] belief," coupled with the fact that it would be another thirty-years before the pathophysiology of Cholera would be proven to the satisfaction of prevailing scientific standards, it bears emphasizing that Snow's 1949 pamphlet was rejected by scientific publications at large, leading him to self-publish at great personal expense with next to no pecuniary returns.[127]

1. Corralling Knowledge in Victorian England

That Snow has been described as one who "always spoke to the point but found it difficult to obtain a favourable notice,"[128] seems to mirror his stature as a scientific expert.[129] Despite the diminished rate of local infections following the removal of the water-pump-handle, the Committee on Scientific Inquiries rejected Snow's thesis, and continued to insist that the Golden Square outbreak was the result of some miasma (toxic atmospheric influences).[130] But this was not simply an egotistical maneuver; it was also an act in advancement of the centralization of scientific knowledge. Through their public disposition, governmental authorities aligned themselves firmly in the noxious miasma theory's camp alongside the likes of another contemporary Cholera expert, Edmund Parkes,[131] amongst others[132] who, intentionally or otherwise, misunderstood Snow's methodology.

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127. Snow spent £200 to publish the pamphlet. It earned about £3.12. *Facts*, *supra* note 121. One reviewer of his theory wrote, "'There is, in our view, an entire failure of proof that the occurrence of any one case could be clearly and unambiguously assigned to water.'" *Id.* He concluded, "Notwithstanding our opinion that Dr [sic] Snow has failed in proving that cholera is communicated in the mode in which he supposes it to be, he deserves the thanks of the profession for endeavouring to solve the mystery. It is only by close analysis of facts and the publication of new views, that we can hope to arrive at the truth." *Id.*

128. *Facts*, *supra* note 121.

129. Reverend Henry Whitehead's defense of Snow begins as follows: "'Dr. Snow's views on Cholera,' said a medical friend to me in 1855, 'are generally regarded in the profession as very unsound.'" SANDRA HEMPEL, THE STRANGE CASE OF THE BROAD STREET PUMP: JOHN SNOW AND THE MYSTERY OF CHOLERA 223 (2007).

130. Nigel Paneth et al., *A Rivalry of Foulness: Official and Unofficial Investigations of the London Cholera Epidemic of 1854*, 88 AM. J. PUB. HEALTH 1545 (1998).

131. Parkes' critique asked, "[W]hy should not the cholera have prevailed equally everywhere where the water was drunk? . . . There are, indeed, so many pumps in this district, that wherever the outbreak had taken place, it would most probably have had one pump or another in its vicinity." Howard Brody et al., *Map-*

Another instance of such a maneuver is found in how post-mortem spot-maps were utilized to confirm the legitimacy of the Government's position (while showing Snow's method to be simplistic). Snow's first report on the 1854 outbreak of Cholera was delivered on behalf of St. James Parish, which had seen over 500 people die within ten days.[133] While part of Snow's conceptualization (of deaths in relation to local water access points) was topographic, his report to the committee made no reference to map reading. Instead, his insightful recommendation was actually based on an extensive survey of the deaths in the area including "remarkable and striking cases," the consumption habits of the locality, as well as a study of the different sources of water servicing the area.[134]

When the Committee at St. James's Parish published the government map (included as part of Cooper's Report)[135] alongside Snow's findings, its members hoped the two reports would bolster Snow's conclusions (which the Parish supported, with the exception of his oral-fecal transmission theory).[136] The government, however, interpreted this publication as evidence that Snow's conclusions were based solely on a simplistic, rational-reading of the spot-maps identifying localized deaths.[137] In Snow's London, the introduction of an expansive, centralized sewer system capable of creating and multiplying public-health risks bound together the interests of the

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Making and Myth-Making in Broad Street: The London Cholera Epidemic, 1854, 356 LANCET 64, 67 (2000), *available at* http://www.uio.no/studier/emner/matnat/ifi/INF5761/v12/undervisningsmateriale/map_making_myth_making.pdf.

132. *See, e.g.*, *id.* at n.3.

133. *See* CHOLERA INQUIRY COMMITTEE, REPORT ON THE CHOLERA OUTBREAK IN THE PARISH OF ST. JAMES, WESTMINSTER, DURING THE AUTUMN OF 1854 (1855), *reprinted in* WILLIAM T. SEDGWICK, PRINCIPLES OF SANITARY SCIENCE AND THE PUBLIC HEALTH 172 (1925).

134. *Id.* at 174–78.

135. *See* Brody et al., *supra* note 131, at n.12.

136. *Id.* at 66 (discussing the later "government" map).

137. *See id.* at 64 (arguing that such "apocryphal" theories assume "that any reasonable person, looking at such a spot map, would have drawn the same conclusion . . . other observers looked at even more detailed and accurate maps than Snow's, yet came to different conclusions about the cause of the cholera outbreak. Moreover, Snow developed and tested his hypothesis will [sic] before he drew his map. The map did not give rise to the insight, but rather it tended to confirm theories already held . . . ."). It must also be noted that since Cooper's Report did not observe any specific locus of deaths near the water-pump, it is unlikely that a simple reading of the map could have led Snow to his suspicions.

Board of Health and the Sewer Commission (in seeing gully holes and sewer excavations cleared of suspicion). In keeping with cartography's reputation for being susceptible to political goals,[138] Cooper's Report (including the Government map) cleared the sewers of blame while drawing attention to the deaths around Broad Street.[139] Accordingly, the government's actions remained purely precautionary.

Ultimately, the farcical nature of the governmental machinations is captured by the turncoat visible in the research and reportage of John Simon, whose report on behalf of the Committee for Scientific Inquiry of the Board of Health had been influential in rejecting Snow's theory:[140] within a year following the rejection of Snow's theory, Simon published a study that was a "virtual replica" of Snow's water-supply-contamination thesis but made no reference to the doctor or his antecedent works.[141] By way of explaining the delay in supplying these results, Simon blamed a clerical failure to "collate the results in time" for his earlier 1854 study criticizing Snow.[142]

But if the government essentially agreed with Snow's conclusions, why enact such an elaborate exercise in stifling his work? Perhaps because acknowledging Snow's conclusions would provide for his original theory regarding the mode of transmission of Cholera—that it spread through fecal matter in the water supply being orally consumed by humans.[143] In appreciating the politics of *eating-shit*, as it were, there is also an element of collective avoidance that Beck describes when he explains that, "[r]isks can be legitimated by the

138. *See* SCOTT, *supra* note 9 at 87–88.

139. *See* Brody et al., *supra* note 131, at 66 ("[T]he sewers were not the cause of the cholera; that they were not in any way connected with the disease; but that the real cause of the calamitous occurrences in the locality . . . was the filthy and undrained state of the houses."). Of significant importance in this move, was the need to "allay public fears." *Id.*; *see also* SCOTT, *supra* note 9, at 87 (explaining that the transformative power, "resides not in the map, of course, but rather in the power possessed by those who deploy the perspective of that particular map.").

140. JOHN SIMON, REPORT ON THE CHOLERA EPIDEMIC OF 1854, AS IT PREVAILED IN THE CITY OF LONDON 11 (1854), *available at* http://pds.lib.harvard.edu/pds/view/7245326?n=17&printThumbnails=no.

141. HEMPEL, *supra* note 129, at 244. John Snow did not complain.

142. *Id*.

143. *See generally* CHARLES E. ROSENBERG, THE CHOLERA YEARS: THE UNITED STATES IN 1832, 1849, AND 1866 (1987).

fact that one neither *saw nor wanted their consequences*."[144] Giving credence to Snow's method would elevate his underlying theory to one deserving the state's endorsement, to say nothing of the British Royal family. Instead, by centralizing scientific knowledge, ordering the role of discourse in shaping authority and public perceptions, and ultimately managing the life of its citizens, worked as a circling of the wagons.

Studying Snow's case allows for a number of inferences: First, Snow's case weakens the assumption that precautionary decisions are natural, rational or obvious: the decision in Snow's London, was structured by an ambivalent mixture of concerns addressing a large scale public health dilemma, upholding prevailing morals, meeting the needs of political authority, while also consolidating the power of technical expertise. Second, the case shows that since marginalized knowledges are, by definition, not acceptable as adequate evidence of risk, it is doubtful that liberal public discussions of risk built around standardized scientific knowledge can reach beyond injunctive actions to inquire into how modern risks are created and distributed. Finally, the case highlights that the decision to remove the pump handle was precautionary because it erred on the side of safety, against the established scientific wisdom of the times, while still hastening the need for refined knowledge.[145]

B. Privileging Scientific Knowledge

In the sections to follow I will show how, in post-war Germany and before international dispute resolution tribunals, precaution was depoliticized in favor of calls for more and better scientific evidence.

1. *Vorsorge* and the Globalization of Best-Available Knowledge

In post-WWII Germany, the ethic of *Vorsorge* conveyed a commitment to care for the future.[146] But citizens remained heavily

144. BECK, *supra* note 23, at 34.

145. *See* LATE LESSONS, *supra* note 123, at 14 (describing the Snow interface as a "classic case of precautionary prevention," because of its foregrounding of "key elements of . . . scientific uncertainty, ignorance and policy-making.").

146. See Boehmer-Christiansen, *supra* note 7, at 55–56, writing:

> While vague, the idea of precaution has played a powerful role in the German environmental policy process . . . The concept of

influenced by recent memories of urban rubble and ruined infrastructure. Blackbourn summarizes the schizophrenic ethos, writing:

> Memories of being exposed to the elements drove postwar reconstruction and help to explain the importance attached to satisfying material needs, at whatever cost to the natural world. But the abjectness of defeat and destruction also pulled people . . . to seek solace, and one of the places where they found it was in nature . . . . After German cities had been reduced to rubble . . . identification with the landscape and "healing earth" . . . allowed Germans to see themselves as victims.[147]

Unsurprisingly, policies based on *Vorsorge were* justified based on the widely touted belief that environmental protection and economic development (then considered modernization) were *actually* naturally compatible.[148] Accordingly, in Germany and, later on, across the

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> Vorsorge as a duty of "good" government predicated on the belief that economic development and environmental protection are mutually supportive, helps to explain why the German State may adopt a proactive stance in environmental matters in order to establish its constitutional authority. Vorsorge therefore provides a philosophical principle and tool of persuasion to justify the setting of ambitious environmental targets. There is no legal or institutional requirement to "prove" damage scientifically or to cost it accurately, before action is legitimate. The promulgation of these targets may therefore become the responsibility of every citizen, industrialist and administrator . . .Vorsorge gives little guidance as to what instruments are to be adopted, for its aim it primarily to overcome the political and legal opposition of vested interest to public policies. The precautionary principle therefore helped to lay the conceptual and legal basis for a proactive environmental policy which, once spread into Europe, was also directed at ensuring 'burden sharing' in order that German industry would not lose its competitive edge, but rather gain new markets for its environment-friendly technology and products.

147. DAVID BLACKBOURN, THE CONQUEST OF NATURE: WATER, LANDSCAPE, AND THE MAKING OF MODERN GERMANY 323 (2007).

148. *See* O'Riordan & Jordan, *supra* note 10, at 193. Two implications are emphasized in this essay: that assessments based on Sustainable Development

Europe Community, *Vorsorge* was understood as synonymous with the creation of cleaner technologies;[149] a little like the contemporary obsession with the label "green." As Sonja Boehmer-Christiansen describes, Germany's understanding of *Vorsorge* globalized because it "suited the political and economic ambitions of the [European] Commission."[150] During this expansion, the popular understanding of precaution was standardized as "best available technology." Germany, in turn, used *Vorsorge* in tandem with the principle of common-burden sharing to subsidize and develop its domestic industries without running afoul of the larger economic framework of the developing European Community.[151] To the contrary, *Vorsorge* stimulated the development of a distinct, novel and profitable eco-industrial sector. Unsurprisingly, over the years, this ethic has come to be identified as "ecological modernization."[152]

As precaution came to be seen as synonymous with the development and application of clean technologies, the emphasis across Europe, shifted to developing a generalized body of standardized rules and conditions that would facilitate and encourage the rapid dissemination of such technologies.[153] In being woven around the politics of "best available technology" and related legal standardized rules, the *Vorsorge* acted as a hinge around which a diversity of political, economic, and technical institutions and experts negotiated for power.[154]

With increased dependence on seemingly politically-neutral technologies and technical rules/standards, the *Vorsorge* was upheld stripped of all eco-centric (*Natur*/*Umwelt*) imperatives and treated as openly appropriable for all manner of marketing campaigns. The consequent loss of eco-centric decisionism is highlighted by Boehmer-Christiansen's observation that later attempts to anoint the

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reflect some natural coherence, and that existing environmental degradation cannot be blamed on government policies. *See* Boehmer-Christiansen, *supra* note 7, at 40–49.

149. *See* Boehmer-Christiansen, *supra* note 7, at 50.

150. *Id.*

151. *Id.* at 34.

152. *See id.* at 32 (describing how, in the 1970s and 1980s, *Vorsorge* was put to work in favor of a "much broader effort to initiate and justify a period of 'industrial restructuring and modernisation [sic].'").

153. *Id.* at 52.

154. *Id.* at 51.

Vorsorgeprinzip as a *Staatsziel* (a legally binding objective of the German Federation as opposed to its earlier status as a constitutional aspiration in a number of German states) was defeated by "the major conservative parties," and "political forces in charge of the German state in the early 1990s seemed afraid to accept the responsibilities they had so eagerly sought during the 1980s."[155] Even the accounting restraints of cost-benefit analysis, it appears, didn't hamper the enthusiasm cultured by the *Vorsorge*, because while civic negotiations included reckoning with economic-feasibility issues, discussions of what the *Vorsorge* actually required of the state (mobilized under the rubric of the aforementioned naturalized coherence between economic development/environmental protection) merely called for all concerned stakeholders to act.[156] Precautionary thinking was not the basis for decisionist governance, but rather an instrument mobilized for endless review, debate, and negotiation. As such, no matter how grand or perpendicular the political promises, as long as they were promoted as based on the *Vorsorge*, they could not be countered as irrational or false.[157] Unsurprisingly, the resulting law, the *Vorsorgeprinzip*, proved equally unreliable when it came to representing any one "side," be it in a specific dispute or a larger dialectical opposition.[158] Accordingly, when German governments' of the late 1980s and early 1990s sought to raise the price of energy, the resulting carbon/energy tax was justified using the *Vorsorge*; but the major opposition to such a tax, curiously enough, also drew its authority from the *Vorsorge*, going so far as being christened, the "Initiative for German Business for World-Wide Precautionary Action to Protect Climate Change."[159] Overall, civic-negotiations

155. *Id.* at 32–33.

156. *Id.* at 38.

157. With respect to a similar move involving the rise of precaution within the European Union, see Dratwa, *supra* note 107, at 282, which lists a number of advantages offered by the precautionary principle: "as a representative of the citizens' demands, as a symbol of European difference, as a linchpin of biopolitics and, by appealing to public values, as placing legitimacy beyond mere legality.").

158. O'Riordan & Jordan, *supra* note 10, at 209 (proclaiming "humanism and capitalism, between fairness and efficiency, emotional value and utilitarianism.").

159. With respect to such "*resistance*" (by delaying or direct opposition) tactics employed by the *Bund Deutscher Industrie* "BDI" (Federation of German Industry) against the German air-pollution law. *See, e.g.*, CAROL J. HAGER, TECHNOLOGICAL DEMOCRACY: BUREAUCRACY AND CITIZENRY IN THE GERMAN ENERGY DEBATE 62–63 (1995).

between various interest groups, accounting for the polluter-pays principle, the principle of economic feasibility, the Common burden principle, led to a form of governance that was not deliberately precautionary, but consisted of agreements that often contradicted each other, ultimately reflecting "the balance of political powers and motivations at work in individual cases,"[160] a situation that sounds suspiciously like the power-dynamics of Sustainable Development.

The mere engagement in civic-negotiations does not, of course, imply a victory of political democracy over techno-scientific expertise. In post-war Germany, *Vorsorge* was not interpreted as an actual challenge to the modernizing, techno-scientific status quo, but rather as ushering in an era of globalizing, techno-science coded, legal rules and standards.

a. The Mainstreaming of Best-Available Knowledge

The resulting attitude is attested to by Ireland in the 2003 *MOX Plant Case* arbitration proceedings:[161] "This case is not a dispute about science. It is in essence a dispute over the failure of the United Kingdom to fulfill three categories of legal obligation under UNCLOS [United Nations Convention on the Land of the Sea]."[162]

On the one hand, Ireland's elaboration of the specific obligations conveys the understanding of precaution globalizing out of Germany (i.e., *Vorsorge* as: politicized ethic → "natural" ethic → techno-scientific policy → technical legal obligation):

> The obligation placed directly upon the United Kingdom itself to take all the steps necessary to protect and preserve the marine environment of the Irish Sea. Ireland considers that the United Kingdom has violated various provisions of

160. Boehmer-Christiansen, *supra* note 7, at 35.

161. *See* The MOX Plant Case (Ir. v. U.K.) (Perm. Ct. Arb. 2003), http://www.pca-cpa.org/showpage.asp?pag_id=1148 [hereinafter *MOX Plant*]. The dispute arose around the Irish charge that a British nuclear fuel processing facility at Sellafield was discharging radioactive wastes into the surrounding Irish Sea and, thereby, the government of the United Kingdom was in violation of the United Nations Convention on the Land of the Sea (UNCLOS) and other international treaties. *See* United Nations Convention on the Law of the Sea, *opened for signature* Dec. 10, 1982, 1833 U.N.T.S. 397 (entered into force Nov. 16, 1994).

162. *See* Memorial of Ireland, Vol. I ¶ 1.3, MOX Plant, http://www.pca-cpa.org/upload/files/Ireland%20Memorial%20Part%20I.pdf.

> UNCLOS . . . as well as obligations to apply a precautionary approach and make use of "best available technologies" and "best environmental practices."[163]

On the other hand, the arbitral tribunal's decision on Ireland's *Request for Provisions Measures*, is an instructive primer on how such standardizations are understood over the course of actual controversies: in that case, the tribunal did not directly address the precautionary character of Ireland's claim, nor did it consider that the OSPAR convention being interpreted, arguably *lex specialis* between the disputing parties,[164] explicitly requires contracting parties to "apply the precautionary principle."[165] Instead, the majority opinion outright rejected Ireland's assertion that the United Kingdom should bear the burden of proof (for showing, *prima facie*, that there would be no adverse affect on the marine life in the Irish Sea),[166] as is generally deemed consistent with precautionary claims.[167] Instead, the tribunal interpreted the UNCLOS narrowly, explaining: "Under article 290, paragraph 1, any harm caused, or likely to be caused, to

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163. *Id.*

164. *See* Final Award ¶¶ 84, 100, Dispute Concerning Access to Information under Article 9 of the OSPAR Convention (OSPAR Dispute) (Ir. v. U.K.) (Perm. Ct. Arb. 2003) (July 2, 2003), http://www.pca-cpa.org/upload/files/OSPAR%20Award.pdf.

165. Convention for the Protection of the Marine Environment of the North-East Atlantic art. 2(2)(a), *opened for signature* Sept. 22, 1992, 2354 U.N.T.S. 67 [hereinafter OSPAR Convention], stating:

> The Contracting Parties shall apply: (a) the precautionary principle, by virtue of which preventive measures are to be taken when there are reasonable grounds for concern that substances or energy introduced, directly or indirectly, into the marine environment may bring about hazards to human health, harm living resources and marine ecosystems, damage amenities or interfere with other legitimate uses of the sea, even when there is no conclusive evidence of a causal relationship between the inputs and the effects.

166. *See* Order No. 3, ¶ 41, *MOX Plant* (June 24, 2003), http://www.pca-cpa.org/showfile.asp?fil_id=81; OSPAR Dispute, ¶ 179; *see also* OSPAR Dispute, ¶ 72, (Griffith, Q.C., dissenting), http://www.pca-cpa.org/upload/files/OSPAR%20Award.pdf.

167. *See Communication*, *supra* note 5, § 6.4.

the marine environment must be 'serious' *before* the Tribunal's power to prescribe provisional measures on that basis arises."[168] The majority then bolstered its reasoning by drawing on "international judicial practice" to confirm:

> [T]hat a general requirement for the prescription of provisional measures to protect the rights of the Parties is that there needs to be a showing both of urgency and of irreparable harm to the claimed rights (see, e.g.[,] the Order of 17 June 2003 of the International Court of Justice in the *Case concerning Certain Criminal Proceedings in France (Republic of the Congo v. France)*, paragraphs 34–35).[169]

In this instance, the tribunal not only ignored precautionary language in the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention) and the corresponding shift in the burden of proof, but also avoided a wealth of state-practice supporting Ireland's claim.[170] Instead, the tribunal relied on the United Kingdom's assertion that the MOX Plant facility had no ongoing contracts, to reason that no immediate or future threat existed.[171] This course of reasoning was particularly surprising because the International Tribunal on the Law of the Sea (ITLOS) had yet to decide on a parallel, extensively argued suit regarding the MOX plant's potential for adverse (future) environmental affects.[172]

Nevertheless the arbitral tribunal followed the ITLOS[173] by primarily focusing on procedural issues, i.e., the need for continued and "improved cooperation between the Parties and the provision of information."[174] At length, the tribunal insisted on a joint review of the entire intergovernmental system of notification and cooperation in effect at the time,[175] holding fast to the popular liberal notion that fundamental differences in values and concerns may actually be little

168. Order No. 3, ¶ 55, *MOX Plant* (emphasis added).
169. *Id.* ¶ 58 (emphasis in original).
170. *See* OSPAR Dispute, ¶¶ 20–33 (Griffith, Q.C., dissenting).
171. Order No. 3, ¶¶ 61–62, *MOX Plant*.
172. *See* OSPAR Dispute, ¶¶ 84–89 (Griffith, Q.C., dissenting).
173. The International Tribunal for the Law of the Sea (ITLOS) has previously rejected Ireland's initial request that the MOX Plant not be commissioned.
174. Order No. 3, ¶ 59, *MOX Plant*.
175. *Id.* ¶ 66.

more than differences in information. Yet, despite this emphasis on cooperation and consultation, the Tribunal's interpretation of the nature of relevant knowledge (i.e., what kinds of information Ireland could demand of the United Kingdom under Article 9(2) of the OSPAR Convention[176]) severely restricted both Ireland's ability to make its case,[177] and the Tribunal's own ability to determine the extent or possibility of environmental harm.[178] Ignoring the fact that Ireland's arguments were directed against specific claims made by the United Kingdom (and not as general proof of environmental harm), the tribunal rules against Ireland[179] as having failed to meet its burden of proof,[180] ignoring, as previously mentioned, the altered burden of proof in precautionary claims.

For our purposes, the relevant insight is not that Ireland was correct or the United Kingdom wrong. What is important is that regardless of how the dispute was ultimately resolved, the disputing parties and the tribunal all shared an attitude that can be traced back to the post-war globalization of *Vorsorge*: we might recall the initial Irish claim (that the dispute was not about science but about whether the UK had violated technical legal obligations) and compare the same to the United Kingdom's subsequent technical rebuttal (on the issue of access to information), "The relevant question, however, is not whether MOX production will affect the maritime area. It is whether the *information requested* is information on activities or

176. OSPAR Convention, *supra* note 165, art. 9(2) ("The information referred to in paragraph 1 of this Article is any available information in written, visual, aural or data-base form on the state of the maritime area, on activities or measures adversely affecting or likely to affect it and on activities or measures introduced in accordance with the Convention.").

177. For a detailed critique, see OSPAR Dispute, ¶¶ 35–71 (Griffith, Q.C., dissenting).

178. *Id.* ¶¶ 40–48 (arguing that, in determining whether certain information redacted by the United Kingdom (on the ground that they relate to commerce) should indeed be shared with Ireland, the Tribunal is being asked to interpret the "extent and inclusiveness" of the definition of Article 9(2) of the OSPAR Convention. The Tribunal, however, explicitly refuses to engage this larger issue, viewing each piece of information in the shared reports as independent of others, and thus capable of being judged in isolation to ensure it is included under the meaning of Article 9(2)).

179. *See id.* ¶ 75.

180. *Id.* ¶¶ 77–78.

measures adversely affecting or likely to affect the maritime area."[181] Similarly, the majority wrote:

> It is true that the 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic ("the OSPAR Convention") is relevant to some at least of the questions in issue between the Parties, but the Tribunal does not consider that this alters the character of the dispute as one essentially involving the interpretation and application of the Convention.[182]

Once the precautionary basis for the claim is ignored, then, within and with respect to the terms of the dispute, the disputants and the tribunal all agree about what is at stake and the scope of acceptable arguments.[183] Consequently, what began as a precautionary claim concerned with *actual pollution* of the marine environment becomes a dispute that can be disposed of by a meditation on the appropriate

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181. Counter Memorial of the United Kingdom, ¶ 4.3, MOX Plant (Ir. v. U.K.) (Perm. Ct. Arb. 2003), http://www.pca-cpa.org/showfile.asp?fil_id=227 (emphasis in original).

182. Order No. 3, ¶ 18, *Mox Plant*.

183. Redacting mention of the Precautionary Principle from Article 2 of the OSPAR Convention, we would be left with Article 2(3) which reads:

> (a) In implementing the Convention, Contracting Parties shall adopt programmes and measures which contain, where appropriate, time limits for their completion and which take full account of the use of the latest technological developments and practices designed to prevent and eliminate pollution fully.
> (b) To this end they shall:
> (i) taking into account the criteria set forth in Appendix 1, define with respect to programmes and measures the application of, *inter alia*,
> - best available techniques
> - best environmental practice
> including, where appropriate, clean technology;
> (ii) in carrying out such programmes and measures, ensure the application of best available techniques and best environmental practice as so defined, including, where appropriate, clean technology.

standard of cooperation, legal consultation, and the technicalities of information sharing.

But, this conclusion notwithstanding, the MOX Plant proceedings also show that the globalization of best-available legal standards, technologies, and knowledge, still remains unstable. For instance, Ireland's initial claim charged that the United Kingdom had "violated various provisions of UNCLOS, including . . . Articles 192, 193, 194, 207, 211, 212, 213, 217 and 222, as well as obligations to apply a precautionary approach and make use of 'best available technologies' and 'best environmental practices,'"[184] indicating that for the Irish there was more to the ethic of precaution than the routine application of codified rules and best-practices. It would appear, then, that the rhetoric of international legal discourse does not completely negate the ethical mandate underlying the precautionary relationship.

2. International Dispute Resolution and the Continuing Globalization of More, Better Science

Decisions of 20th century international dispute resolution tribunals show the continuing legalistic standardization of *right*-knowledge and expertise through strategies that may be stereotyped as *silence* and *avowal*.

a. Silence Observed at the International Court of Justice

The Gabčíkovo-Nagymaros Project,[185] heard by the International Court of Justice (ICJ), involved a 1977 treaty between Hungary and Slovakia for the construction and joint management of two sets of locks and the corresponding hydroelectric-power stations on the Danube River (one each at Gabčíkovo then in Czechoslovakia, and Nagymaros in Hungary). In 1989, over a decade into construction, Hungary suspended operations and then, in 1992, proceeded to terminate the treaty on the grounds that the project threatened the local environment. Czechoslovakia retaliated by diverting the section of the river within its territory leading to reduced water through Hungary.

184. Memorial of Ireland, Vol. I, ¶ 1.3(3), *MOX Plant*.

185. Gabčíkovo-Nagymaros Project (Hung. v. Slovk.), 1997 I.C.J. 7 (Sept. 25).

A straightforward reading of the decision gives the impression that the ICJ resolutely avoided reviewing scientific evidence altogether,[186] a position for which it has been heavily criticized.[187] But this impression, though factually accurate, is of limited value in analyzing how the decision reflects on environmental law more generally. Two implications of the Court's maneuver are worth noting: first, through its avoidance, the ICJ used the parties' foregrounding of Sustainable Development to flip the responsibility back onto them.[188] This move parallels one understanding of precaution that generalizes the responsibility for decision-making by calling for a negotiated-consensus amongst interest groups as to how real threats actually are.[189] But, reading the ICJ's reasoning in the wider context of dispute, we find this avoidance of scientific evidence to be delicately coded with meaning and significance. For instance, in responding to Hungary's claim, that it had terminated its treaty with Slovakia as part of a precautionary plan of action, the court decided that Hungary's scientific evidence had failed to sufficiently establish a serious threat of ecological peril.[190] While acknowledging the natural

186. Upon giving "most careful attention" to the scientific evidence in the case, the ICJ concluded that it was "not necessary . . . for [the Court] to determine which of those [the parties'] points of view is scientifically better founded." *Id.* ¶ 54.

187. *See, e.g.*, Dobos, *supra* note 91, at 394–99 (discussing how, despite visiting the site of the dam, the Court's decision lacks transparency as to the judges' reasoning). Dobos points out that the Court declined to utilize the services of its specialized chamber for Environmental Matters. It is curious, however, that despite the accurate observation that "the I.C.J. was worried that the mere recognition of scientific uncertainty would have undermined the sanctity of legal certainty," Dobos proceeds to argue that outsourcing scientific analysis or the use of the abovementioned Environmental Chamber, would allow the Precautionary Principle to add "certainty to the defense of ecological necessity." *Id*. at 397–98; *see also* Erika L. Preiss, Note, *The International Obligation to Conduct an Environmental Impact Assessment: The ICJ Case Concerning the Gabčíkovo-Nagymaros Project*, 7 N.Y.U. ENVTL. L.J. 307, 344 (1999).

188. *See Gabčíkovo-Nagymaros*, 1997 I.C.J. ¶ 140 ("This need to reconcile economic development with protection of the environment is aptly expressed in the concept of sustainable development. For the purposes of the present case, this means that the Parties together should look afresh at the effects on the environment of the operation of the Gabčíkovo power plant. In particular they must find a satisfactory solution . . . .").

189. *See infra* Part I (discussing the works of Hey, and O'Riordan and Jordan).

190. See *Gabčíkovo-Nagymaros*, 1997 I.C.J. ¶ 54 stating:

environment as being an "essential interest,"[191] the judges adopted a high activation-threshold for precautionary measures, requiring that the threat being responded to, be a "'grave' and 'imminent' 'peril.'"[192] At this point in the decision, the ICJ made a clear but unarticulated choice—i.e. the stringency with which it decided *what constituted credible scientific evidence* (in that case, evidence going beyond "mere apprehension of a possible peril . . . ."[193]). Through this move, the ICJ no longer sought to equip decision-makers to make a political decision under conditions of uncertainty (as represented in the final order). Rather, the judges actually made a decision in favor of one party in the absence of more and better scientific evidence. The ICJ's refusal to review scientific evidence about sustainability claims, and its turn to science when reviewing precautionary measures, coalesce to deepen globalizing standards of veracity, rather than facilitating cooperative environmental decisions under conditions of scientific uncertainty in a particular country.

Unsurprisingly, the ICJ's avoidance, its silence, turns out to be powerful speech. Viewed as the first major opportunity for an international tribunal to comment on Sustainable Development,[194] the

> The Court considers, however, that, serious though these uncertainties might have been they could not, alone, establish the objective existence of a "peril" in the sense of a component element of a state of necessity. The word "peril" certainly evokes the idea of "risk"; that is precisely what distinguishes "peril" from material damage. But a state of necessity could not exist without a 'peril' duly established at the relevant point in time; the mere apprehension of a possible "peril" could not suffice in that respect. It could moreover hardly be otherwise, when the "peril" constituting the state of necessity has at the same time to be "grave" and "imminent". [stet] "Imminence" is synonymous with "immediacy" or "proximity" and goes far beyond the concept of "possibility". [stet]

191. *Id.* ¶ 53 (internal quotations omitted).

192. *Id.* ¶ 54 ("The Hungarian argument on the state of necessity could not convince the Court unless it was at least proven that a real, 'grave' and 'imminent' 'peril' existed in 1989 and that the measures taken by Hungary were the only possible response to it.").

193. *Id.* ¶ 54.

194. I will mention only a few notable comments here, such as, Paulo Canelas de Castro, *The Judgment in the* Case Concerning the Gabčíkovo-Nagymaros Project*: Positive Signs for the Evolution of International Water Law*, 8 Y.B. INT'L ENVTL.

Gabčíkovo-Nagymaros decision has been criticized as underwhelming, and the ICJ judged as less than competent to assess transboundary environmental disputes.[195] In the wake of the judgment, most international tribunals relied on the ICJ's reluctance, to themselves refuse customary status to both Sustainable Development and the Precautionary Principle.[196] Nevertheless, these institutions accepted the procedural concept of sustainability[197] where environmental protection interests and economic growth are no longer opposed or even distinct.[198] Consequently, legal experts who have passionately disagreed about whether or not Sustainable Development or the Precautionary Principle are part of customary international law,[199] presume the stakes to be higher than they actually are.

Before the World Trade Organization (WTO), however, the mediation between contrasting understandings of precaution (either as a contextualizing of scientific evidence in the face of uncertainty, or as a call for more and better standardized science) plays out differently, but with eerily similar results.

L. 21 (1997); Daniel Reichert-Facilides, *Down the Danube: The Vienna Convention on the Law of Treaties and the* Case Concerning the Gabčíkovo-Nagymaros Project, 47 INT'L & COMP. L.Q. 837 (1998).

195. *See* Dobos, *supra* note 91, at 396–98.

196. *See, e.g.*, Appellate Body Report, *European Communities—EC Measures Concerning Meat and Meat Products (Hormones)*, ¶ 123, n.93, WT/DS26/AB/R, WT/DS48/AB/R (Jan. 16, 1998) [hereinafter *Beef Hormones*] (referencing the International Court of Justice's decision in *Gabčíkovo-Nagymaros*).

197. *See* Jessica Howley, *The* Gabčíkovo-Nagymaros *Case: The Influence of the International Court of Justice on the Law of Sustainable Development*, 2 QUEENSLAND L. STUDENT REV. 1, 8–11 (2009) (describing the results of a survey of commentary and case law that shows the widespread acceptance of the "concept" of Sustainable Development). In terms of the globalization of the logic sustainability, therefore, we find that the ICJ's majority decision (which barely outlines the logic of Sustainable Development), read together with Judge Weeramantry's Separate Opinion (that heavily endorses the "concept"), have been understood as an active endorsement of Sustainable Development sans particulars.

198. *See Gabčíkovo-Nagymaros*, 1997 I.C.J. ¶ 140.

199. For a summary of this debate, see generally McIntyre & Mosedale, *supra* note 8.

b. Avowal: Open Mic at the World Trade Organization

Case law repeatedly presents two interpretations of precaution: one that is explicit, involving high rhetoric where with respect to decisions, scientific certainty is not an expectation;[200] the other implicit, found in the actual interpretation of precaution by decision-makers (whereby the legality of decisions hinges on scientific verifiability).[201] The tension between these two portrayals, deftly navigated by the ICJ in the dispute over the Gabčíkovo-Nagymaros dam, comes to the fore again, when the World Trade Organization Dispute Settlement Body (WTO-DSB) demands greater scientific certainty[202] before a state party may breach trade obligations by precautionarily quarantining imports. But far from the muted juggling of the ICJ, the WTO-DSB actively affirms the positive telling of international law as trellised around a rhetoric of progress; a rhetoric that I have suggested stands in direct opposition to the moral, political, and counter-modern understanding of the precautionary relationship of precaution. Nevertheless, to appreciate how this conflict develops, we might begin by noting how the call for "more science" is legitimated within the WTO's adjudication process.

Article 5.7 of the Agreement on the Application of Sanitary and Phytosanitary Measures[203] allows state parties to impose provisional, risk-regulation measures provided they "seek to obtain the additional information necessary for a more objective assessment of risk . . . ."[204] The WTO-DSB, in its *Beef Hormones* decision, interpreted this provision as reflecting the Precautionary Principle,[205]

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200. *See* Memorial of Ireland, Vol. I, ¶ 3.52, MOX Plant Case (Ir. v. U.K.) (Perm. Ct. Arb. 2003), http://www.pca-cpa.org/upload/files/Ireland%20Memorial%20Part%20I.pdf.

201. *See* discussion of the ICJ and WTO-DSB decisions in this Part.

202. *See Beef Hormones*, *supra* note 196, ¶ 123.

203. Agreement on the Application of Sanitary and Phytosanitary Measures, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1A, 1867 U.N.T.S. 493 [hereinafter SPS].

204. *Id.* art. 5.7.

205. *Beef Hormones*, *supra* note 196, ¶ 124 ("[T]he precautionary principle indeed finds reflection in Article 5.7 of the SPS Agreement . . . that there is no need to assume that Article 5.7 exhausts the relevance of a precautionary principle.") (emphasis removed); *see also* SPS, *supra* note 203, art. 3.3.

which the WTO-DSB has regarded as a strategy based on prudence[206] and more recently as a general principle of international law.[207]

In the *Japan—Apples* dispute,[208] the appellant, Japan, challenged the panel's description of Article 5.7[209] as accommodating only situations of "new uncertainty," and leaving no room for "unresolved uncertainty."[210] The appellate body disagreed, stating:

> The Panel's statement that Article 5.7 is intended to address 'situations where little, or no, **reliable** evidence was available on the subject matter at issue', refers to the availability of reliable evidence. We do not read the Panel's interpretation as excluding cases where the available evidence is more than minimal in quantity, but has not led to reliable or conclusive results.[211]

The value of this clarification lies in its identification of "reliability" and "conclusiveness" as the sought-after features of scientific evidence that the SPS Agreement attempts to harness (in the context of a state's ability to unilaterally impose provisional measures preceding adequate risk assessment). However, such a reading of Article 5.7 of the SPS Agreement ignores the insight that characteristics like reliability and conclusiveness do not belong to, or automatically emanate from scientific evidence itself, but reference the relation of such evidence "to the values of a particular community in a particular regulatory context."[212] To proceed otherwise would be to internalize the fallacy, reiterated by the United States' claim in the

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206. *See Beef Hormones*, *supra* note 196, ¶ 124; *see also* discussion in Part I.

207. *See* Panel Report, *European Communities—Measures Affecting the Approval and Marketing of Biotech Products*, ¶ 4.523, WT/DS291/R, WT/DS292/R, WT/DS293/R (Sept. 29, 2006) (*adopted* Nov. 21, 2006) [hereinafter *Biotech Products*].

208. *See* Appellate Body Report, *Japan—Measures Affecting the Importation of Apples*, WT/DS245/AB/R (Nov. 26, 2003) [hereinafter *Japan—Apples*].

209. The WTO-DSB Panel described this as involving "situations where little, or no, reliable evidence was available . . . ." *Id.* ¶ 183.

210. *Id.* Japan argues that both "new uncertainty" and "unresolved uncertainty" fall under Article 5.7 of the SPS, and that the Panel, in excluding the latter, erred as a matter of law.

211. *Id.* ¶ 185 (emphasis in original).

212. David Winickoff et al., *Adjudicating the GM Food Wars: Science, Risk, and Democracy in World Trade Law*, 30 YALE J. INT'L L. 81, 113 (2005).

Japan—Apples case,[213] that some science is based on objective standards while others are purely socially determined.[214]

The application of precautionary measures, however, is only allowed upon a successful showing that the existing scientific evidence is insufficient to allow for an appropriate assessment of the potential risks,[215] and not on a more general basis.[216] Accordingly, whether or not a precautionary approach is mandated as part of customary international law is of little consequence given that SPS binds the legality of this approach to a state party's ability to show insufficiency of scientific evidence or otherwise proceed towards conducting an adequate risk assessment.[217] The WTO-DSB and the ICJ (in the *Gabčíkovo-Nagymaros* dispute) are aligned on this issue.

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213. *Japan—Apples*, *supra* note 208, ¶ 64:

> With respect to the concept of "unresolved uncertainty," the United States claims that the examples of "unresolved uncertainty" cited by Japan "do not even constitute relevant scientific evidence." The statements of caution by the experts, according to the United States, were based on policy judgments rather than scientific considerations, as the experts themselves acknowledged.

214. Specifically with respect to the SPS Agreement, see Winickoff et al., *supra* note 212, at 91–92, 96–97 (describing how "regulatory systems are characterized by particular 'cultures of rationality.'"). More generally on the issue of objectivity and value orientation in scientific research, see THOMAS S. KUHN, THE STRUCTURE OF SCIENTIFIC REVOLUTIONS (3rd ed. 1996) arguing that only problems for which solutions can be anticipated within pre-set paradigms constitute "normal" research problems.

215. *See Japan—Apples*, *supra* note 208, ¶¶ 143–168, 175–185; SPS, *supra* note 203, art. 5.7, elaborated on in *WTO Analytical Index: Sanitary and Phytosanitary Measures*, WORLD TRADE ORG. ¶ 185, http://www.wto.org/english/res_e/booksp_e/analytic_index_e/sps_01_e.htm (last visited May 31, 2014) [hereinafter *WTO Analytical Index*].

216. As was the outcome in *Beef Hormones*, where the WTO-DSB rejected the European Commission's claim to apply precautionary measures under Article 5.1 of the SPS expressly requiring a risk assessment. *See Beef Hormones*, *supra* note 196, ¶ 125; *see also* Panel Report, *Australia—Measures Affecting Importation of Salmon*, at 154, ¶ 8.57, WT/DS18/AB/R (Feb. 13, 1988) [hereinafter *Australia—Salmon*]:

> [T]he reference contained in Article 5.1 to base sanitary measures on an assessment 'as appropriate to the circumstances' cannot, in our view, annul or supersede the substantive obligation resting on

But where the ICJ's decision influenced through implication, the WTO-DSB's approach to risk assessment, sets into motion a global process of standardization[218] drawing on the methodologies, assumptions, and practices of a variety of international institutions[219] and related mechanisms[220] to demand precise and comprehensive scientific risk assessments even when a state's actions are clearly

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> Australia to base the sanitary measure in dispute…on a risk assessment. We consider that the reference 'as appropriate to the circumstances' relates, rather, to the way in which such risk assessment has to be carried out. Only Article 5.7 allows for an exception to the obligation to base sanitary measures on a risk assessment.

217. *See WTO Analytical Index*, *supra* note 215, ¶¶ 287–302. The SPS requires state parties to self-determine their respective upper ("appropriate") threshold of protection preceding any actual "SPS measure" being imposed. *See Australia—Salmon*, *supra* note 216, ¶ 202; *see also* SPS, *supra* note 203, arts. 4.1, 5.4, 5.6 (which function under the belief that a state has already chosen an appropriate level of protection); *Australia—Salmon*, *supra*, ¶ 205; *Beef Hormones*, *supra* note 196, ¶ 124 ("[T]he precautionary principle does not, by itself, and without a clear textual directive to that effect, relieve a Panel from the duty of applying the normal (i.e., customary international law) principles of treaty interpretation in reading the provisions of the SPS Agreement.") (emphasis removed); *Biotech Products*, *supra* note 207, ¶ 7.3065; *see also* Laurent A. Ruessmann, *Putting the Precautionary Principle in Its Place: Parameters for the Proper Application of a Precautionary Approach and the Implications for Developing States in the Light of the Doha WTO Ministerial*, 17 AM. U. INT'L L. REV. 905, 935–37 (2002).

218. For example, the International Standards for Phytosanitary Measures, No. 11 developed under the PEST RISK ANALYSIS FOR QUARANTINE PESTS INCLUDING ANALYSIS OF ENVIRONMENTAL RISKS AND LIVING MODIFIED ORGANISMS (2004) (prepared by the Secretariat of the International Plant Protection Convention, 2006) requiring that every potential invasive species of pests be identified and detailed as part of risk assessment efforts. *See also* AQUATIC ANIMAL HEALTH CODE 2010, ch. 2.2 (developed by the World Organization for Animal Health, Paris, 2010) ("Import Risk Analysis"). With respect to the WTO-DSB's endorsement of similar standards, see *Japan—Apples*, *supra* note 208, ¶ 196.

219. *See, e.g.*, The International Plant Protection Convention, Annex A, art. 3(c), Nov. 17 1997, [2005] A.T.S. 23; SPS, *supra* note 203, Annex A, art. 3(b); International Agreement for the Creation at Paris of an International Office for Dealing with Contagious Diseases of Animals, and Annex, Jan. 25, 1924, [1925] A.T.S. 15.

220. *See, e.g.*, SPS, *supra* note 203, arts. 2.2, 3.2, 5.1.

motivated by precautionary thinking.[221] But, in this context, the search for reliability and conclusiveness of available scientific evidence does not animate risk assessment efforts. Rather, in *Japan—Apples*, the WTO-DSB categorically rejected Japan's argument (that its evaluation of scientific evidence be considered in the context of that country's historic attitude and methodology regarding issues of risk), with respect to Article 2.2 of the SPS,[222] by reasoning that the Panel (from whose decision Japan had appealed) correctly interpreted "sufficient" in Article 2.2 as implying a "rational or objective relationship between the measure [being applied] and the relevant scientific evidence [used to justify the measure]."[223] As such, the WTO-DSB appears to be philosophically bound to the presumption that a state can necessarily find and supply scientific evidence that is sufficiently certain to justify precautionary measures.[224] This counterintuitive interpretation formally reconciles what I have described as the "explicit" (rhetorical) and "implicit" (actual) interpretations of precaution.[225]

A high-risk assessment threshold is designed to prevent states from unilaterally applying environmental measures to thwart preexisting trade commitments.[226] Reasoning backwards we might conclude that how certainly and sufficiency are understood is structured by a world-view that views trade inspired economic growth, and environmental protection, as complementary goals up to the point

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221. *See Australia—Salmon*, *supra* note 216, ¶¶ 112–115; *see also* Steve Charnovitz, *The Supervision of Health and Biosafety Regulation by World Trade Rules*, 13 TULANE ENVTL. L.J. 271, 290 (2000).

222. See SPS, *supra* note 203, art. 2.2, which states: "Members shall ensure that [every SPS] measure is . . . based on scientific principles and is not maintained without sufficient scientific evidence, except as provided for in paragraph 7 of Article 5." *See also Japan—Apples*, *supra* note 208, ¶¶ 175–185.

223. *See Japan—Apples*, *supra* note 208, ¶¶ 162–163.

224. For a detailed critique, see Amicus Curiae Brief of Center for International Environmental Law et al., European Communities—Measures Affecting the Approval and Marketing of Biotech Products ¶ 37 (WT/DS/291, 292, 293) (June 1, 2004), http://www.ciel.org/Publications/ECBiotech_AmicusBrief_2June04.pdf; *see also* Winickoff et al., *supra* note 212, at 81–123.

225. *See* Jacqueline Peel, *Precaution—A Matter of Principle, Approach or Process?*, 5 MELBOURNE J. INT'L. L. 483, 489 (2004); *see also* Marchant, *supra* note 22, at 1799, 1800.

226. *See* SPS, *supra* note 203, art. 2.3; *see also* Charnovitz, *supra* note 221, at 271–72.

where the former interests may be jeopardized.[227] Given the wide contemporary acceptance of the ethos of Sustainable Development, such an alliance of interests is reminiscent of post-WWII Germany's use of precaution and situates the WTO as the new motor globalizing a depoliticized interpretation precaution.

But if the precautionary relationship continues to be interpreted through the lens of Sustainable Development, it is uncertain what will become of treaties like the Convention on Biological Diversity,[228] widely held to be a revolutionary advancement in environmental protection for its foregrounding of precaution as a first principle.[229]

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227. In its Report on *Japan—Apples*, *supra* note 208, the WTO-DSB Appellate Body discussed and affirmed its reasoning in the earlier *Beef Hormones*, *supra* note 196, ¶¶ 123–125, reiterating:

> In EC-Hormones, the Appellate Body noted that the "precautionary principle" had not yet attained "authoritative formulation" outside the field of international environmental law, but that it remained relevant in the context of the SPS Agreement, particularly as recognized in certain provisions of that Agreement. However, the Appellate Body found that the 'precautionary principle' did not release Members from their WTO obligations and, as such, did not 'override the provisions of Articles 5.1 and 5.2 of the SPS Agreement . . . .

Japan—Apples, *supra* note 208, ¶ 233.

228. *See* Convention on Biological Diversity, art. 6, June 5, 1992, 1760 U.N.T.S. 79 (entered into force Dec. 29, 1993) [hereinafter *CBD*]. Over 190 countries are party to this convention.

229. See Guiding Principle 1 ("Precautionary Approach") in Conference of the Parties to the Convention on Biological Diversity, Sixth Meeting, The Hague, Neth., April 7–19, 2002, *Report of the Sixth Meeting of the Conference of the Parties to the Convention on Biological Diversity, Guiding Principles for the Prevention, Introduction and Mitigation of Impacts of Alien Species that Threaten Ecosystems, Habitats or Species*, 249, U.N. Doc. UNEP/CBD/COP/6/20 (Sept. 23, 2002), referencing Principle 15 of the *Rio Declaration*, *supra* note 3. Even though the precautionary language found in the Rio Declaration differs from the CBD, the wider interpretation of precautionary action pervades both treaties. *See, e.g.*, *CBD*, *supra* note 228, art. 8(h) (foregrounding obstruction/eradication of alien biological species that threaten local biodiversity).

C. Structured Confusion and the Displacement of Decision

Despite its reputation as a union at the forefront of global environmental consciousness, the European Commission's Communication of February 2000[230] (Communication) is a telling document for the ways in which it structures confusing rationales and contradictory strategies into a single positive, even identity-forming,[231] position.[232] The European Commission (Commission) understands precaution as applying to situations where scientific evaluation has indicated the presence of risks worth fearing. Accordingly, the Communication states:

> When decision-makers become aware of a risk to the environment or human, animal or plant health that in the event of non-action may have serious consequences, the question of appropriate protective measures arise. Decisionmakers have to obtain, through a structured approach, a scientific evaluation, as complete as possible, of the risk to the environment, or health, in order to select the most appropriate course of action . . .
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> . . .
>
> The decision to wait or not to wait for new scientific data before considering possible measures should be taken by the decision-makers with a maximum of transparency. The absence of scientific proof of the existence of a cause-effect relationship, a quantifiable dose/response relationship or a quantitative evaluation of the probability of the emergence of adverse effects following exposure should not be used to justify inaction. Even if scientific advice is supported only by a minority fraction of the scientific community, due account should be taken of their views, provided the credibility and reputation of this fraction are recognized . . . .[233]

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230. *See Communication*, *supra* note 5.

231. Dratwa, *supra* note 107, at 281–83.

232. For a similar story in the context of national courts internalizing Sustainable Development, see Bandopadhyay, *supra* note 66.

233. *Id.* §§ 6.1, 6.2 (citing *Beef Hormones*, *supra* note 196, ¶ 124: "In some cases, the very existence of divergent views presented by qualified scientists who

Given the earlier analysis, I would suggest that the Commission's position and confidence in the WTO Appellate Body's decision in *Beef Hormones* are overly optimistic. Further, the Commission's formal elevation of minority knowledges and diverse opinions notwithstanding, the Communication commences by emphasizing that "[a]ny assessment of risk that is made should be based on the existing body of scientific and statistical data."[234] This delayed caveat must, in turn, be read together with the affirmation that:

> [R]eliance on the precautionary principle is no excuse for derogating from the general principles of risk management. These general principles include: proportionality, non-discrimination, consistency, examination of the benefits and costs of action or lack of action, examination of scientific developments.[235]

Despite the wealth of lessons that may be drawn from the brief but significant reign of neo-liberalism, such general principles continue to stack standardized knowledges and de-contextualized best practices against the experiential knowledge and desiderata of local, potentially affected, communities.[236] For this reason, ten of the twelve lessons drawn by the authors of a seminal anthology on unsuccessful precautionary governance, call for decision-makers to reexamine what kinds of information they consider valuable when making risk assessments. In particular, the authors recommend paying attention to "the assumptions and values of different social groups."[237] The Commission responds to such concerns by stressing formal transparency of decision-making, and early and reasonable public participation and consultation.[238] But formal transparency, public participation and consultation, while once fashionable, have been shown to be unequal to the task of guiding political and

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have investigated the particular issue at hand, may indicate a state of scientific uncertainty . . . .").

234. *Communication*, *supra* note 5, § 1 (emphasis added).

235. *Id.* § 6.3 ("The general principles of application").

236. *See, e.g.*, Gobind Nankani, *Foreword* to ROBERTO ZAGHA ET AL., WORLD BANK, ECONOMIC GROWTH IN THE 1990S: LEARNING FROM A DECADE OF REFORM, at xiii (2005).

237. *See* LATE LESSONS, *supra* note 123, at 186, 187–215, 548.

238. *Communication*, *supra* note 5, § 5.

economic inertia.[239] Additionally, buzzwords like transparency, participation, and openness often inspire less comprehensive accounts of risks that merely emphasize positive, standardized knowledge.

Claude Levi-Strauss describes the background conditions leading up to simplified positive knowledge by explaining that while scientific thought can tolerate uncertainty and frustration, it cannot abide disorder and chaos. Modern taxonomy supplies simplifications, painting a structure onto reality complete with horizons and frontiers, without acknowledging that the entire purpose of such ordering is to allow us to make decisions despite uncertainty chaos.[240] Similarly, contemporary interpretations of precaution that emphasize knowledge pre-qualifications, accept such horizons as *real* and implement legal presumptions against precautionary governance in anticipation of assurances that may never arrive.

Asking for diversification of knowledge bases should not, however, be viewed as a call to relativism. As Robert Sack has noted, "truth, justice, and the natural are contextual, but not relative."[241] Cultural understandings of risk not only have a politics but also a history[242] that is passed down, often orally, as a kind of institutional memory. So, for instance, with respect to their study of ocean policy, David Gee et al. note that "the views of local interest groups are not necessarily identical to their national or international equivalents, be these, for example, environmental non-governmental organizations or industry."[243] Similarly, Robert Stallings has stressed the continued existence of heterogeneity of beliefs within social movements by showing that internal structures underlying such movements do more to motivate participants, than pre-existing or initial consensus as is often assumed.[244] Sheila Jasanoff renders such complex interactions

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239. *See* Brian Wynne, *Sheep Farming after Chernobyl*, 31 ENV'T 10 (1989), *available at* http://engl.iastate.edu/prog rams/rhetoric/areas/rst/readinggroup/pdf/wynne1989.pdf.

240. LÉVI-STRAUSS, *supra* note 34, at 9.

241. Robert D. Sack, *A Sketch of a Geographic Theory of Morality*, 89 ANNALS ASS'N AM. GEOGRAPHERS 26, 26 (1999).

242. *See* Wynne, *supra* note 239; JASANOFF, *supra* note 92, at 258.

243. LATE LESSONS, *supra* note 123, at 188.

244. *See* Stallings, *supra* note 62, at 475–77. For a classic description of intra-group heterogeneity, see, e.g., MAX WEBER, THE THEORY OF SOCIAL AND ECONOMIC ORGANIZATION (A. M. Henderson & Talcott Parsons trans., Talcott Parsons ed., 2012) (1947).

discernible under the heading of "civic epistemology," which she defines as "the institutionalized practices by which members of a given society test and deploy knowledge claims used as a basis for making collective choices."[245] For the purposes of this discussion, it is enough that public understandings of risk can be broadly sketched for the consideration of, say, municipal policy-makers and more often, dispute resolution bodies.[246] Methodologies like civic epistemology and "thick description"[247] provide a rich matrix of considerations within which policy-makers may test their rationale. Such methodologies also run against generalized knowledge-claims that consider emphasis on the local to be primitive,[248] and often blame the public for not understanding the science involved.[249]

The decentralization inherent in Jasanoff and Clifford Geertz's methodologies is compatible with the Commission's assertion that "[t]he appropriate response in a given situation is thus the result of an eminently political decision, a function of the risk level that is 'acceptable' to the society on which the risk is imposed."[250] This is not to say that municipal political decisionism is easily achieved; the World Bank, for instance, has noted that "National governments may be reluctant to challenge those who cause environmental damage; they are likely to be rich and influential, while those who suffer most are often the poor and powerless."[251] Ironically, one of the greatest threats to political decision in favor of precautionary governance comes from the "general principles of risk management"[252] imposed by supranational bodies like the Commission, the World Bank and the WTO. While a detailed discussion of these principles is more

245. *See* JASANOFF, *supra* note 92, at 255.

246. *Id.* at 258–71.

247. *See* CLIFFORD GEERTZ, THE INTERPRETATION OF CULTURES 15–16 (1973).

248. *See* LÉVI-STRAUSS, *supra* note 34, at 1–30.

249. *See* JASANOFF, *supra* note 92, at 270 (arguing that dismissing public opinion as ignorant of relevant science "diminishes civic agency, erases history, neglects culture, and privileges people's knowledge of isolated facts (or their ignorance of such facts) over their mastery of more complex frames of meaning . . . [such justification] make[s] no room for the multivalency of interpretation.").

250. *Communication*, *supra* note 5, § 5.2.1 ("The decision whether or not act").

251. *See* JAMES M. CYPHER & JAMES L. DIETZ, THE PROCESS OF ECONOMIC DEVELOPMENT 62 (3rd ed. 2009) (citing WORLD BANK, WORLD DEVELOPMENT REPORT 1992: DEVELOPMENT AND THE ENVIRONMENT (1992)).

252. *Communication*, *supra* note 5, § 6.3 ("The general principles of application").

than can be accommodated here, it will suffice to note that because these "general principles" exist to prevent protectionist trade between WTO members, they already draw power away from local communities and their national leaders into an undemocratic and increasingly centralized international economic system.[253] For instance, if the WTO-DSB insists that environmental concerns are distinct from and should be independent of economic concerns, and that this distinction is to be objectively determined by an unaccountable supranational adjudicatory institutions based on standardized expertise bearing no relation to the people affected, then what remains of the Community's assurance that an "appropriate response . . . is . . . a function of the risk level that is 'acceptable' to the society on which the risk is imposed"?[254]

The endlessly interconnected and unbounded nature of environmental impacts implies that while obtaining a sense of local, public understandings of risk is important, it is not sufficient. Within this preference for privileging locally sourced precautionary decisions, priority must be given to measures that favor environmental protection. What this means will, of course, vary from case to case, but in the event of conflict between the two (say, for a society that has never really cared for local ecological health, and doesn't appear to be changing its mind), decisions in favor of environmental protection should hold sway. While such an approach may at first seem oppressive, even a cursory review of the development of state responsibility in international law shows a marked shift in this direction, from statist values (e.g., The Convention on Permanent Sovereignty Over Natural Resources)[255] toward the globalization of liability for adverse transboundary impact.[256] Again, my argument asks only that we privilege precautionary decisions and then test such decisions against the

253. *See, e.g.*, B. S. Chimni, *International Institutions Today: An Imperial Global State in the Making*, 15 EUR. J. INT'L. L. 1 (2004). For an ethnographic, experiential critique, see HELENA NORBERG-HODGE, ANCIENT FUTURES: LEARNING FROM LADAKH FOR A GLOBALIZING WORLD 2, 50–51, 115–32 (1991).

254. *Communication*, *supra* note 5, § 5.2.1 ("The decision whether or not to act").

255. *See* Resolution on Permanent Sovereignty Over Natural Resources, G.A. Res. 1803 (XVII), U.N. GAOR, 7th Sess., Supp. No. 17, U.N. Doc. A/5217, at 15 (Dec. 14, 1962).

256. PATRICIA BIRNIE ET AL., INTERNATIONAL LAW AND THE ENVIRONMENT 128–90 (3rd ed. 2009).

bedrock of an emerging culture favoring ecological health for its own sake; where "own sake" includes, but is not limited to, human sustenance interests. Even in a situation where a new technology is the cause of concern, "new," must be construed in terms of a dynamic relationship between a particular society and its environs.

Political decisionism is, in turn, itself structured by experience and perspective. How we perceive the world and value ourselves in relation, determines what we deem worth deciding and therefore, how we decide. This lesson is eloquently captured by Gee et al. when, in insisting that institutions learn to recognize not only uncertainty but also ignorance, they explain that:

> [E]thical boundaries of acknowledged responsibility about the consequences of human innovative commitments have been drawn by scientific knowledge. Any possible consequence which lies beyond existing scientific knowledge and predictability is deemed by definition to be beyond responsibility. This is defined as such even though it is known that such surprises will occur as a result of choices and commitments. The precautionary principle implies the needs, as a matter of cultural change, for society's institutions to enlarge existing notions of ethical responsibility to encompass these unknowns, which are predictable in principle even though not in specifics.[257]

A moral commitment to a precautionary relationship with the natural environment, is mostly ether unless supported by humility and a curative psychology that encourages a self-critical sense of responsibility.

IV. PUBLIC UNDERSTANDINGS OF MODERN RISK AND THE ETHICAL OBLIGATION TO INQUIRE INTO THEIR CREATION

In order to consider how such a curative ethic may organically take hold in a modern society, it is important to appreciate that ecological movements often manifest as culturally attuned experiential responses to reflexive risks. Risk is not a "thing" with some independent existence outside of culture. Rather, risk is

257. LATE LESSONS, *supra* note 123, at 189.

fundamentally an existential and moral concern, and its creation and distribution presuppose value choices. Consequently, all conversations about risk are also non-conversations about the existing distributions of power, or, as Charles Perrow pointedly states, "the power to impose risks on the many for the benefit of the few."[258]

A. Public Understandings of Risk

The displacement of decision is visible in the struggles of sovereign nations before international institutions like the WTO, but also in the everyday lives of citizens. With local decision-making and mutual aid being continually replaced by dependence on international institutions with globalizing "best practice" norms, citizens feel powerless to make decisions or even pose difficult questions about issues that directly impact their lives. Consequently, "at all levels, passivity, even apathy, is setting in; people are abdicating personal responsibility."[259]

In order to retain an interest in participating in political decisions, people must see themselves as responsible moral actors rather than mere consumers with freedom, where freedom is understood as the rapid satisfaction of wants, and responsibility is merely "a paradigm of insurance [that] assumes the logic of loss compensation."[260] This trend applies both within the context of institutions and with respect to individuals at large. For instance, if we simply rewarded government officials for performing honestly in activities that can be monitored (instead of emphasizing the pride involved in public service as part of their training), they may feel no intrinsic urge to carry such behavior to other responsibilities that are difficult to monitor. Such opportunism is inevitable because the reward strategy makes officials "feel that they are not trusted as 'moral' agents anymore and therefore that they are under no moral obligation to behave morally unless they are forced to do so."[261] Similarly, the

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258. PERROW, *supra* note 56, at 306.

259. *See* NORBERG-HODGE, *supra* note 253, at 123.

260. François Ewald, *The Return of Descartes's Malicious Demon: An Outline of a Philosophy of Precaution* (Stephen Utz trans.), *in* EMBRACING RISK 273, 274 (Tom Baker & Jonathon Simon eds., 2002).

261. *See* Ha-Joon Chang, *Breaking the Mould: An Institutional Political Economy Alternative to the Neo-Liberal Theory of the Market and the State*, 26 CAMBRIDGE J. ECON. 539, 555 (2002).

pursuit of moral responsibility cannot merely be limited to institutions because in a socio-economic context that treats individual preferences as the ultimate markers, while institutions may have some success in shaping observable behavior, they can rarely alter motivations and perceptions more generally.[262] Accordingly, it may be possible, subtly[263] or by decree, to get people to buy product A and not B, *but not reconsider whether they should be buying at all*.[264] To the contrary, treating citizens as consumers favors a centralization of culture and contributes to insecurity and passivity on the part of people everywhere.[265] Freedom cannot only refer to the satisfaction of personal needs and wants. It must include the ability to take responsibility or as *Tribe* put it: "to choose what we shall value . . . to feel coherence over time and community."[266] Contemporary interpretations of precaution, actively hamper such consciousness formation because the overriding goal of Sustainable Development cannot be used to question where and how modern risks are created and distributed. Precaution understood as a moral relational-articulation counters such passivity by bringing crucial decisions back into a locally comprehensible, existentially grounded context.

Even now, when a deep-sea oilrig ruptures, the focus is on damage control, some form of insurance-funded restitution (though this is rarely possible), and much regulatory commotion. Yet, this charge has rarely led to a comprehensive interrogation of the presence of oilrigs themselves—a charge still dismissed as impractical. At the other extreme, in many countries the conversation has long shifted to nuclear power as the only practical way toward clean, eco-friendly energy. This choice, of course, downplays the incommensurable risks involved and continues to rely on techno-scientific modernization as the only practical way forward. For this reason, conversations about technical aspects of nuclear power often draw focus from considering what the shift to nuclear says about the role of industrial production, consumption, and waste in advancing an ecological downturn. My concern, that this shift handicaps the individual's need to take stock

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262. *Id.*

263. RICHARD H. THALER & CASS R. SUNSTEIN, NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH, AND HAPPINESS 185–200 (2008).

264. For an extensive critique of the money economy, see, e.g., DAVID GRAEBER, DEBT: THE FIRST 5,000 YEARS (2011).

265. *See* NORBERG-HODGE, *supra* note 253, at 123.

266. *See* Tribe, *supra* note 18, at 1326–27, 1337–38.

of his role in relation to the environment, is captured by Langdon Winner when he explains that, by far:

> By far the greatest latitude of choice exists the very first time a particular instrument, system, or technique is introduced. Because choices tend to become strongly fixed in material equipment, economic investment, and social habit, the original flexibility vanishes for all practical purposes once the initial commitments are made.[267]

Closely aligned with such a spirit of denial is an emphasis on technological innovation as a universal salve that Jared Diamond astutely counts as a popular "one-liner objection."[268] The technology-as-savior attitude closely mimics the reliance on positive scientific knowledge as the way out of uncertainty. The resulting claims often proceed as if future innovations will bear no relation to the history of modernization that precaution has responded to;[269] they forget that technological innovation does not develop along a linear progress narrative directed toward problem-solving, but does generate social costs[270] and new risks.[271] Parallel to technology-as-savior objections are generalizations of the kind reflected in the "Environmental Kuznets Curve."[272] The central claim of this graphic is that poorer

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267. *See* LANGDON WINNER, *Do Artifacts Have Politics?*, *in* THE WHALE AND THE REACTOR: A SEARCH FOR LIMITS IN AN AGE OF HIGH TECHNOLOGY 19, 29 (1986).

268. JARED DIAMOND, COLLAPSE: HOW SOCIETIES CHOOSE TO FAIL OR SURVIVE 504–05 (2005).

269. *Id.* at 505 ("All our current problems are unintended negative consequences of our existing technology. The rapid advances in technology during the 20th century have been creating difficult new problems faster than they have been solving old problems . . . .").

270. *See, e.g.*, Lewis Mumford, *Authoritarian and Democratic Technics*, 5 TECH. & CULTURE 1 (1964); Friedrich Engels, *On Authority*, *in* THE MARX-ENGELS READER 731 (Robert C. Tucker ed., Samuel Moore trans., 3rd ed., 1978); Shiv Visvanathan, *On the Annals of the Laboratory State in Science*, *in* HEGEMONY AND VIOLENCE: A REQUIEM FOR MODERNITY 257 (Ashis Nandy ed., 1988).

271. *See* BECK, *supra* note 23; DIAMOND, *supra* note 268, at 504 (pointing to the destructive history of chlorofluorocarbons and automobiles, the latter being an instance of technology which we have chosen to retain and make near-indispensable despite being aware of their underlying costs).

272. *See* CYPHER & DIETZ, *supra* note 251, at 57–58.

societies value a clean environment less than wealthier societies and environmental pollution is therefore a temporary (but necessary) cost of development which plateaus at a threshold level of per capita income (before dipping).[273] The underlying assumption, however, is based on culturally biased notions of rationality and value that are simply not applicable to poor, but arguably eco-friendly cultures all over the world.[274] Further, Simon Kuznets's thesis remains severely limited in its appeal because it cannot, for instance, cover the unbounded intra/inter-connected repercussions of adverse environmental impact,[275] nor speak to an expanding body of pollutants (for instance, while a wealthier society may reject industrial sulphur dioxide but embrace consumerism, thereby incurring additional waste). Finally, the curve cannot conceive of the cultural and psycho-social implications of its claim: a generalized abdication of responsibility by citizens accompanied by the privatization of clean-up efforts funded by an elite, which returns us to the insight that risk is never equally distributed in a society. However, faith in such generic models of progress have inspired third-world nations to demand that they too receive the *same* opportunities for industrial development as the northern nations enjoyed in the past.[276] The hard truth, however, is that the near-endless time and resource horizons, necessary to achieve such catch-up development, do not exist.[277]

In failing to recognize precaution as an ethical reckoning, citizens ignore important questions about the world and consequently pursue a far less demanding quest for their place in it. Merely by calling a project "sustainable" or "best practices compliant" begins to imply that such activities have passed through some thoughtful, context-specific, and democratized form of consideration, and this

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273. *See id.* at 62.

274. *See Gallup Poll*, *supra* note 50, at 7–15, 33–39. Analysis of the Gallup Poll indicates that even the poor and underprivileged see the protection of life supporting environmental attributes/processes as crucial. For a graphical analysis of the Gallup Poll, see O'Riordan & Jordan, *supra* note 10, at 203–04.

275. *See* CYPHER & DIETZ, *supra* note 251, at 57–62.

276. Economic development theories of every ideological shade shares the vision of development through expansive industrialization and "growth." *See* CYPHER & DIETZ, *supra* note 251, chs. 3–9; *see also* GERALD M. MEIER, BIOGRAPHY OF A SUBJECT: AN EVOLUTION OF DEVELOPMENT ECONOMICS chs. 7, 8. (2005).

277. BROWN, *supra* note 70, at 3–72; NORBERG-HODGE, *supra* note 253, at 141–56.

assumption in turn inspires a positive emotional response.[278] Emotional highs, in turn, stimulate complacency, the abdication of personal responsibility, and draw attention away from the need for close scrutiny of hazards underlying lifestyles that have been taken for granted. When, on the other hand, such challenges arise as vague, old-hat contestations about transparency and consultation, public scrutiny is primed to be satisfied by little more than a vague, standard-format *mea culpa*, and technologies are found, transplanted as boilerplate, and quickly turn a *fait accompli*.[279] Perrow notes how, in response to queries about the intergenerational risks of nuclear power plants, a United States' governmental report on "safety goals" acknowledged the unavoidability of said risks, but then explained that such risks could be avoided by guarding against accidents—thereby answering an inquiry about the consequences of possible accidents by urging calm on the grounds that accidents will be prevented.[280]

Finally, endemic "organized irresponsibility"[281] has other insidious long-term implications that are so diffuse as to make allocating blame on an after-the-fact polluter pays basis virtually impossible. Attesting to such enormous but often unobserved implications, John Walden writes:

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278. The same objection could, of course, be made with respect to a rigid enforcement of formal precaution. *See infra* CONCLUSION.

279. Accordingly, Winner insists:

> Consciously or unconsciously, deliberately or inadvertently, societies choose structures for technologies that influence how people are going to work, communicate, travel, consume, and so forth over a very long time. In the processes by which structuring decisions are made, different people are situated differently and possess unequal degrees of power as well as unequal levels of awareness . . . In that sense technological innovations are similar to legislative acts or political foundings that establish a framework for public order that will endure over many generations.

WINNER, *supra* note 267, at 28–29.

280. PERROW, *supra* note 56, at 69.

281. ULRICH BECK, WORLD AT RISK 194 (2009); *see also* BECK, supra note 23, at 50.

> Every generation takes the natural environment it encounters during childhood as the norm against which it measures environmental decline later in life. With each ensuing generation, environmental degradation generally increases, but each generation takes that degraded condition as the new normal. Scientists call this phenomenon "shifting baselines" or "inter-generational amnesia," and it is part of a larger and more nebulous reality—the insidious ebbing of the ecological and social relevancy of declining and disappearing species.
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> My colleague, Karin E. Limburg, and I have come up with another term for the broader context of this phenomenon: "eco-social anomie." Anomie is defined as a state or condition of individuals or society characterized by a breakdown of social priorities and values. Eco-social anomie describes a biological and cultural feedback loop that spirals toward this breakdown: As species disappear, they lose relevance to a society and a constituency to champion their revival.[282]

B. Asking after Risk

In order to develop a self-critical sense of how people decide what to value, decision-makers must begin by reconsidering what they know of, and how they feel about, existing innovations. From this vantage, it is counterproductive to think of precautionary governance as functioning in service of Sustainable Development because then environmental problems are always already framed in one particular manner[283] resulting in policies that can claim to resolve problems without challenging the lifestyles within which such risks are created and recur. The decisions of the ICJ and the WTO-DSB that exemplify such framing have been used by commentators and policymakers to propose that since precautionary governance is

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282. John Waldman, *The Natural World Vanishes: How Species Cease to Matter*, YALE ENV'T 360 (Apr. 8, 2010), http://e360.yale.edu/content/feature.msp?id=2258.

283. *See, e.g.*, ERVING GOFFMAN, FRAME ANALYSIS 21 (1974); *see also* Sheila Jasanoff, *The Idiom of Co-production*, *in* STATES OF KNOWLEDGE 1 (Sheila Jasanoff ed., 2004); LATOUR, *supra* note 14, at 1–5; Delaney, *supra* note 108, at 488.

defined by uncertainty, precautionary measures need be considered only when uncertainties continue to persist.[284] While intended as a defense of precautionary governance, this claim is severely dependant on a linear reading of how dangers come about or are discovered,[285] why they may be ignored as incomprehensible or merely noise.[286] Summarizing this concern in one of his sparkling analogies, Arne Naess writes, "any article of *docta ignorantia*, or agnosticism is embedded in Gnosticism or dogmatism . . . . As soon as it [ignorance etc.] is *about* something, a piece of ignorance is like a hole in a Swiss cheese—it is only there because of the cheese around it."[287]

A greater weakness of limiting precaution to instances of known-uncertainty is that even after being delimited from prevention (i.e., when the risk is known), precautionary governance only seeks to guard against future risks while uncritically accepting existing, increasingly complex technologies and the corresponding psycho-social attitudes, from which said risks emanate. Recall, the efforts of the Board of Health and the Sewer Commission, in John Snow's London, to acquit the interconnected sewer system of all blame[288]—a move that Howard Brody et al. was essential to "allay public fears."[289] Similarly, when environmental governance in post-war Germany was operationalized on the platform that economic development and environmental protection are naturally harmonious,

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284. *See* Trouwborst, *supra* note 7, at 117 (quoting N. Haigh, *The Introduction of the Precautionary Principle into the UK*, *in* INTERPRETING THE PRECAUTIONARY PRINCIPLE (Timothy O' Riordan & James Cameron eds., 1994): "[O]nce all uncertainty has been removed, 'precaution is no longer the right word.'").

285. For a discussion of ignorance and uncertainty, and how the Precautionary Principle "leaves us bound by present knowledge," see Marchant, *supra* note 22, at 1800.

286. See PERROW, *supra* note 56, at 23–31, describing "incomprehensibility" as an common ingredient behind the failure of interactively complex systems.

287. *See* NAESS, *supra* note 71, at 147. The block of cheese may be called perspective, viewpoint, worldview, frames, system etc., but all discourse (or silence) needs some larger, at least somewhat understood, body of beliefs/knowledge within which to exist and find meaning.

288. See Brody et al., *supra* note 131, quoting the Chairmen of the Sewers Commission statement to *The Times of London* as saying, "[T]he sewers were not the cause of the cholera; that they were not in any way connected with the disease; but that the real cause of the calamitous occurrences in the locality . . . was the filthy and undrained state of the houses."

289. *Id.*

not only did the government shore up constitutional authority, but it also negated the ontological basis for scrutiny along the lines proposed by Beck when he writes:

> Risk may be defined as a systematic way of dealing with hazards and insecurities induced and introduced by modernization itself. Risks, as opposed to older dangers, are consequences which relate to the threatening force of modernization and to its globalization of doubt. They are politically reflexive.[290]

In post-WWII Germany, political parties of varied ideological shades were able to preempt challenges to modernization precisely because they publicly assumed a natural and positive mutuality between the modernization policies and environmental health. This strategy allowed politicians to argue that while many risks existed and damage had been done, the pursuit of modernization was not to blame. Similarly, in pursuing Sustainable Development uncritically, decision-makers neglect the causes of dangers, the politics of ignorance,[291] while buying into the idea that economic growth and environmental protection are naturally harmonious.[292] The resulting image portrays a world filled with mysterious, and unforeseeable, i.e., pre-legitimated dangers.[293] As in Snow's London and postwar Germany, publics remain in the dark, governments arrogate authority, and precaution becomes a vacant shell bandied about by all manner of interests,[294] viewed as fatalistic, a catch-all,[295] or, at best, a safety valve.[296]

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290. BECK, *supra* note 23, at 21 (emphasis removed).

291. *See* Dovers & Handmer, *supra* note 24, at 95.

292. BRUNDTLAND COMMISSION REPORT, *supra* note 20. An even finer point is placed on this sustainable identity, when, in the Report's Foreword, Brundtland writes, "the 'environment' is where we all live; and 'development' is what we all do in attempting to improve our lot within that abode. The two are inseparable." *Id.* at xi.

293. BECK, *supra* note 23, at 34 ("Risks can be legitimated by the fact that one neither *saw nor wanted to see their consequences*.").

294. *See, e.g.*, Jonathan Simon, *Risk and Reflexivity: What Socio-Legal Studies Add to the Study of Risk and the Law*, 57 ALA. L. REV. 119, 135–36 (2005) ("[T]he increasing attention to [catastrophic/environmental] risks is correlated with declining confidence in the very institutions that the culture of solidarity depended on: government, large markets, large corporation, and unions.").

A precautionary approach, as understood in this paper, is an approach that inquires into the causes of modern risks; demands introspection about what people consider safe, and how the goal of Sustainable Development shapes public perception on these issues. I am, of course, not alone in seeing this potential; O'Riordan and Jordan, for instance, have written:

> But at its core, the precautionary principle provides a direct challenge to many of the unstated assumptions and . . . "prior commitments" of modern (and particularly "Western") societies . . . . In a nutshell, precaution challenges the established scientific method; it tests the application of cost benefit analysis in the those [sic] areas where it is undoubtedly weakest (i.e. situations where environmental damage may be irreversible or potentially catastrophic); . . . it challenges politicians to begin thinking through longer time frames than the next election or economic recession . . . .[297]

CONCLUSION: CRISES, COOPERATION, AND SOME CAUTION ABOUT PRECAUTION

The understanding that environmental hazards will make the world worse for one and all is perhaps *the* enduring insight of our times.[298]

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295. *See* O'Riordan & Jordan, *supra* note 10, at 202 (noting that an increasing bias toward vulnerability will mean more frequent, expansive invocations of the Precautionary Principle).

296. *See* Simon, *supra* note 294, at 135 (arguing, with respect to development of workers compensation in early 20th century United States: "to make the work accident a tolerable loss, insurance and the solidarity culture valorized the industrial society in which the accidents were embedded. If the accidents were tolerable, it was because industrial methods were profoundly good for society . . . cancers caused by industrial production (or consumption) did not lend themselves to the same kind of balancing.").

297. O'Riordan & Jordan, *supra* note 10, at 192–93.

298. *See Stockholm Declaration*, *supra* note 52, pmbl. ¶ 2; *see also Gallup Poll*, *supra* note 50, at 6–15, 33–39; BECK, *supra* note 23, at 23 (describing the "boomerang effect" of modernization-born risk which "breaks up the pattern of class and national society. Ecological disaster and atomic fallout," for instance, "ignore the borders of nations."); *Id.* at 36, 37–38 ("poverty is hierarchic, smog is democratic"); *see also* V. Havel, President of the Czech Republic, Address at the Opening Ceremony of the Meetings of the International Monetary Fund and the

But within this frame of reference, research has shown that environmental hazards disproportionately affect lower classes and poverty-stricken groups much more immediately and acutely than they do the wealthy.[299] These insights imply that risk must be investigated at the most decentralized and experiential level possible because for all practical purposes there is no given distinction between nature and peoples' culturally-influenced perceptions of nature.[300] Precautionary thinking when viewed as a moral reckoning calling for direct, even prefigurative political action, does not only enhance governmental accountability[301] but also precipitates an honest accounting of how everyday choices influence the production and distribution of risk. This position finds support in David Winickoff's argument that in situations when certainty based on gathered knowledge is low, a variety of stakeholders who may otherwise have been excluded from the debate (in deference to experts and centralized knowledges) find it easier to have a say and be considered in advance of interventionist decisions.[302] Similarly, Ellen Hey describes precaution as a decision-making tool integrating environmental protection with the insufficiency of scientific knowledge to encourage decision-makers to find less impactful lifestyles,[303] she is automatically also outlining precaution's decentralized, democratic, and prefigurative possibilities. In formally dulling the primacy of scientific evidence, precautionary governance revises the nature/culture relationship into one that does not disregard scientific knowledge, but by embracing its shortcomings, allows technical knowledge to be weighed within the wider field of democratic-civilian judgment resulting in what has been called "civic science."[304] O'Riordan and Jordan affirm this position, writing:

World Bank Group (Sept. 26, 2000), *available at* http://old.hrad.cz/ president/ Havel/speeches/index_uk.html.

299. BECK, *supra* note 23, at 35 ("The history of risk distribution shows that, like wealth, risks adhere to class pattern, only inversely: wealth accumulates at the top, risks collect at the bottom . . . risks seem to strengthen, not to abolish, the class society.").

300. *See* LATOUR, *supra* note 14, at 10–11.

301. *See* Simon, *supra* note 294, at 135–36 (describing the sense of "rage" and "betrayal" felt by victims of environmental hazards, towards their governments).

302. Winickoff et al., *supra* note 212, at 105.

303. *See* Hey, *supra* note 8, at 308.

304. *See* O'Riordan & Jordan, *supra* note 10, at 207.

> This [scientists' realization that their findings cannot be generalized] suggests that the burden of proof of vulnerability or resilience in natural processes has to fall on groups outside the science community, such as lawyers, politicians, active citizens and special interest groups.[305]

The reversed burden of proof implied by a precautionary approach is indeed an inspired and politically charged innovation,[306] but unpacking the precautionary relationship is equally if not more significant as a threat to the complacency of authoritative decision-making even when democratically established. The decentralized, prefigurative power of precaution is by now obvious to conservationists.[307] But, in suggesting that precaution may be valuable for more than interrogating economic growth initiatives, I am also suggesting that precautionary governance should not be brandished with a rigidity that would forbid loss of biological life altogether. Jacqueline Peel alludes to this counterintuitive moment, writing: "The presence of scientific uncertainty . . . becomes an indicator of the need for a 'precautionary approach' to decision-making, but not an automatic trigger for protective measures."[308] On the one hand, it is unreasonable to view human socio-economic development as some absurd evil, because not only do "all forms of life modify their contexts,"[309] but "life must be lived amidst that which was made before."[310] Moreover, if precaution were wielded as a kind of "disciplinary environmentality"[311] where citizens are

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305. *Id.* at 199.

306. *See, e.g.*, Sven Ove Hansson, *Can We Reverse the Burden of Proof?*, 90 TOXICOLOGY LETTERS 223, 227–28 (1997) (arguing that it is easier to prove the presence than the absence of risk).

307. That environmental conservation groups regard precaution with great respect is well acknowledged. *See, e.g.*, Boehmer-Christiansen, *supra* note 7, at 38; Myers, *supra* note 5, at 212.

308. Peel, *supra* note 225, at 491; *see also* Marchant, *supra* note 22, at 1799–1800.

309. Lynn White, Jr., *The Historical Roots of Our Ecological Crisis*, 155 SCI. MAG. 1203, 1203, *available at* http://www.uvm.edu/~gflomenh/ENV-NGO-PA395/articles/Lynn-White.pdf.

310. D. W. Meinig, *The Beholding Eye: Ten Versions of the Same Scene*, *in* THE INTERPRETATION OF ORDINARY LANDSCAPES 33, 44 (D. W. Meinig ed., 1979).

311. *See* Timothy W. Luke, *Environmentality as Green Governmentality*, *in* DISCOURSES OF THE ENVIRONMENT, *supra* note 80, at 121, 143.

constantly preoccupied with making human life safer, they would eventually legitimize governance measures and institutions[312] for no better reason than their claim to be "precautionary."[313]

On the other hand, while a future built around precautionary relations may seem suspect from an individual freedom standpoint, this objection takes a particularly narrow and static view of the future. Social life, after all, is dynamic and perpetually moving in small, incremental steps in an unimaginable number of directions. Prioritizing precaution does not mean that everything we know and everything we are, will be adjudged as wrong and be brought to a halt. Such a strategy will set a tone whereby the survival of the natural environment requires that humans, as dominant interveners within it, display humility while continuing to learn from their experiences. Precaution must be upheld in opposition to the rhetoric of Sustainable Development, and instead used to question the seemingly objective processes through which regulation-focused decision-makers understand and evaluate the creation of risk. No serious pursuit of sustainability is possible unless we acknowledge that the ability to undertake moral choices is crucial to whatever future we may desire. And if it is a sustainable future we want, then

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312. *See, e.g.*, Miller, *supra* note 13, at 50.

313. *See* Currie, *supra* note 100, at 357, n.20 (citing Bundesverwaltungsgericht [BVerwG] [Federal Administrative Court] Dec. 12 1975, 50 ENTSCHEIDUNGEN DES BUNDESVERWALTUNGSGERICHTS 49 (Ger.)). In the *Tunneofen* case, the owner of a brick factory in Germany wanted to replace an existing brick kiln. The dispute arose over whether this new structure was a modification of the existing factory as a whole (in which case permission was only necessary if the modification was *wesentlich* i.e., "fundamental"), or whether each kiln was itself a "facility" for which special authorization was required of the federal government. *Id.* at 357. Since the relevant statute didn't specifically define "facility," the Court interpreted legislative language in accordance with its preambular "protective purpose" and found that every new kiln required official scrutiny. *Id.* at 358. This is the kind of planned but seemingly inadvertent move towards securitization that Boehmer-Christiansen foresees when she describes the concept of *Vorsorge* as being closely associated with that of "*Gefahrenabwehr*" i.e., "defense against dangers and threats." *See* Boehmer-Christiansen, *supra* note 7, at 36–37. In the Tunnelofen case, of course, society was being defended from the blight of brick-baking kilns. So how is such a shift explained? While Article 5 of the West German air-pollution seems to impose an absolute duty to cause no environmental harm, Article 3 defines "harmful environmental effects" as "dangers, substantial detriments, or substantial burdens," where "substantial" ("*erheblich*") is interpreted through proportionality analysis (i.e., balancing between the costs and benefits).

precautionary governance of the environment is neither impractical nor merely altruistic,[314] it is perfectly selfish and thus uniquely human.

314. If the choice is between overregulation leading to wasteful spending (in terms of risks discovered to be "false-positives") and under regulation (in terms of underestimating risks, "false negatives"), it is not a stretch to say that humans may value securing lives to saving money. *See* Marchant, *supra* note 22, at 1800.