

Notes

1 Introduction: Responsibility and Reflexive Uncertainty

1. By 'immanent' here I therefore intend the kind of critique which, according to Antonio (1981) lies at the heart of Hegelian and Marxian critical theory, in which 'its critical standards are ones given in the historical process' (p. 332). This can be contrasted with an approach which attacks a given position from 'outside', that is from a perspective which brings its own historical, unquestioned presuppositions with it. In this instance, my argument in this book begins with the inability of disembodied, impersonal scientific knowledge to comprehend the uncertainties to which its practical application leads us, and the consequent inability of ethical positions (like act or rule consequentialism) that rely on such forms of knowledge in order to operate to cope with these uncertainties. I then proceed (principally, in Chapter 5) by developing an account of what Hegel would have called a 'position regarding objectivity' which may resolve the tensions that undermine such positions.
2. These features are ones which developed as a result both of economic (industrialisation) and political (the growth of the bureaucratic, social state) developments in the nations of the 'centre' (Scott 1998) and through the spread of colonialism to the periphery (Mitchell 2004). Practices and institutions for managing the future are inextricably entangled with practices and institutions that have evolved to manage acquired territory (Adam and Groves 2007).
3. Ives and Dunn (2010) call for such a sociologically informed critique of the assumptions of bioethics as a step nearer achieving the reflexivity towards established moral positions that is necessary for a 'clearing of the ground'.
4. Associated, sociologically speaking, with figures like Jean Baudrillard and the Centre for Contemporary Cultural Studies during the 1970s, this way of interpreting consumption has deeper roots in Marshall Sahlins' anthropological interpretation of value (1978).
5. Robert K. Merton (1936) offered one of the first explicit analyses of the roots of the unanticipated consequences of social action, in which he notes that social theory and its philosophical forerunners have generally been aware of the inevitability of such consequences. What makes an epochal difference, for Beck, is an emerging sense (of which Merton's essay might be considered an early example) that the causes of such consequences are themselves appropriate objects of management.
6. For a discussion of this theme in Arendt's work, see J.P. Dupuy (2007).
7. To reiterate, this is not to go so far as Jacques Ellul (1962) and ascribe 'autonomy' to technologies. Rather the concept of naturalisation finesses Arendt's two points about technology: that our dependence on it is exacerbated by our necessarily thin engagements with it, and that it increasingly achieves its effects by 'acting into' nature, rather than transforming it from outside.

8. On this relationship between the 'seclusion' of science and the translation of its results into 'research in the wild', see Callon et al. (2009).
9. A wide-ranging survey of other examples of what Hacking refers to as side-and interference effects is laid out by Edward Tenner (1997)
10. These points are already made *in nuce* by Merton (1936), who draws attention to the treatment by Henri Poincaré of the lack of homogeneity between past and future events (pp. 898–9), and the fact that, in line with Arendt's account of the human condition, predictions become part of the field of social action and thus may change the future (p. 904).
11. Beck's emphasis on technological risks leads him to argue that the key difference between what I have referred to as naturalised technologies and older hazards is the incalculable nature of the risks they create. This undermines the coherence of modern principles of risk management by creating uninsurable hazards with unlimited liabilities. As has been pointed out by analysts of insurance, however, this is not the case, even with terrorism (Ericson and Doyle 2004) or climate change risk (Johnson 2011): insurers use proprietary applications of scientific models to create a consensual interpretation of uncertainty across the industry within certain limits, with the overall goal being to construct a working market in insurance. Nonetheless, even though Beck overstates the case in trying to define an epochal distinction between the risks of the 'risk society' and those of previous ages, he spots the key vulnerability that arises from the constructions of uncertainty produced by the insurance industry, namely that the limitations of models may themselves increase vulnerability (Johnson 2011, p. 195) – by, for example, encouraging false confidence in predictions that, as we have explored above, may become outdated as the future they were supposed to model itself changes.
12. This situation is not merely one of ignorance, but one of finitude, as we have underlined in this chapter. This emphasis tends not to feature in work by advocates of 'post-normality', who see it as a radical epistemological break with a previous epoch (e.g. Funtowicz and Strand, 2011) rather than a continuation and deepening of fundamental existential features of what Arendt calls the human condition.

2 The Limits of Intergenerational Justice

1. This distinction is taken from Hudson (1989). These concepts are used by Peter Railton (1984) to convey a different distinction.
2. Essentially, this is a variation on the 'cheap tastes' problem, versions of which have been discussed by Richard Arneson and Brian Barry, and which is summarised by Page (2006, pp. 57–9).
3. The necessity of growth in order to achieve justice is affirmed by Rawls in *Theory of Justice* (1999, pp. 252–3, n. 20).
4. Consequentialism tries to restrict itself to foreseeable consequences only. However, as Chapter 1 indicates, this kind of self-limitation carries, in the face of technological innovation and Hacking's analysis of 'culpable ignorance', the suspicion of a kind of moral corruption. Compare the arguments on geoengineering and corruption in Gardiner (2010).
5. See, for example, Martinez-Alier (2003).

6. This also provides an objection to, in principle, extending Rawls' original position to include everyone who will live throughout human history: we cannot both include everyone *and* decide how to advantage the least well off in time, as our decision will change who is born (Attfield 2012, p. 117). An alternative position set out by Parfit (1984), based on the affirmation of impersonal duties, is not treated here due to reasons of space. The argument I present in Chapters 5, 6 and 7 is, however, an argument for non-person-affecting responsibilities 'with regard to' future generations, refracted through our relationships to individual 'objects of care' now.
7. As we shall see in Chapters 5, 6 and 7, employing a different conception of the moral agent to that assumed by the positions surveyed in this chapter, along with the concept of flourishing that follows from it, enables us to be more sceptical about the possibility of extreme 'variation' in needs.

3 The Limits of Precaution

1. In Chapters 7 and 8, I return to precaution as a way of applying the specific virtues associated with care.
2. *Vorsorge* actually means 'precaution', and not directly 'foresight', but also means 'Providence', in the sense of the care exercised by God, who one might reasonably expect to have perfect foresight. For finite human beings, however, the root noun *Sorge* (care, worry, anxiety) is closer to the heart of the meaning.
3. This distinction between system and lifeworld, the one dominated by Weberian strategic and instrumental rationality, the other being composed of practices, and attitudes that are constitutive of everyday meaning, derives from Jürgen Habermas (e.g. 1987).
4. It would therefore be premature to assign the image of nature presented within Beck's theory to one of the four (or five) worldviews developed by exponents of the cultural theory of risk, such as Thompson, Ellis and Wildavsky (1990). This ambiguity may, for example, lead to what cultural theory identifies as either hierarchical or egalitarian worldviews, as we shall see in the next section of this chapter in the discussion of precaution, precaution and pre-emption.

4 Administrative Imaginaries and Intergenerational Ethics

1. For an analysis of how 'conceptual metaphors' both enable and constrain patterns of thought and representation, and thus help 'make up' both world and subject, see Lakoff and Johnson (1980).
2. Not only is this assumed to be the case with respect to, say, fossil fuels but it is also the case with the risk of present activities that harm either instrumental goods (e.g. a stable climate) or intrinsic ones (e.g. a beautiful landscape).

5 Care and Uncertain Futures

1. I take up this point below in the section on 'objects of care'.

2. One can imagine here something like a temporal sequence mirroring, say, Abraham Maslow's hierarchy of needs (1943). This only represents temporality in an abstract form, however. Developmental psychology in the objects-relation tradition as elaborated in Daniel Stern's (1985) work reconstructs the specific experiential dimensions of temporality in the infant's encounters with others.
3. This is why Nussbaum's (2001) inclusion of attachment as one among her list of ten 'capabilities' necessary for human flourishing is problematic. Attachment is a necessary ingredient in how other capabilities (running arguably the full gamut from bodily health to political participation) are fulfilled, if flourishing is to be possible.
4. Anthony Giddens (1991) gives a broadly similar account of the significance of attachment as the condition of the self's 'ontological security'. However, his emphasis on cognition pushes the element of affect, creativity and play encountered in Winnicott's work, for example, to one side. Attachment, for Giddens, is necessary to support a reflexive, narrative self. This does not recognise, however, that the secure space, internalised, is a space in which the boundaries of the self can be tested and reconfigured. On this aesthetic sense of reflexivity, see Lash and Urry (1994)
5. A similar concept, that of 'images of nature', is a key part of the cultural theory of risk developed by Thompson, Ellis and Wildavsky (1990), in which the style(s) of relationship characteristic of a given group are seen to lead to different stances towards nature, different ways of living with uncertainty, and divergent concepts of goodness.
6. Although as we shall see in Chapter 7, 'indirect' care is an activity that is necessary to support direct care for attachments.

6 Normative Implications of Care

1. Developmental psychology itself distinguishes between styles of attachment that are 'good enough' to promote flourishing, and others that undermine it in various ways.
2. A number of authors have explored this theme in recent years. Martha Nussbaum's (2001) treatment of it details the links between emotion and meaning, the constitutive value of attachment relationships and the significance of loss and mourning.
3. The account of constitutive values given here finds, as does the account of care given in Chapter 5, theoretical and empirical support in the work of object-relations psychology, and in particular in the idea that the self is, genealogically speaking, produced through the active internalisation of relationships with external objects, beginning with those to caregivers.
4. My gratitude is due to Dr Clea Rees for encouraging me to clarify this point in this paragraph and the next.
5. We return to this theme in the second half of Chapter 7.
6. An exploration of the illusory nature of this present-focused sense of invulnerability is one of the themes at the heart of the film adaptation of P.D. James' *Children of Men*.
7. A similar 'chain of love' account appears to be at the centre of Rupert Read's defence of an obligation to care for future people. Read argues that the 'kind

of care that in our families we take towards our children needs to be extended en masse to cover our children and their children (and so on), on a society-wide level' (2012, p. 19). We must, Read insists, treat future people as our children. They are not, however, our children, except metaphorically – we do not, pace Read, give birth to them. The world that they inhabit is a product of *techné* (including both its intended and unintended consequences) and our care (good enough or faulty) for the full range of things that matter to us. As such, it is a mediated product, and those who inhabit it, as Parfit recognises, are those whom the world (not those who act within it) selects to be born.

8. As we shall see in the next chapter, failure to look after practices, institutions and infrastructures required to support attachments, from people to ideals, constitutes a similar failure to take responsibility.

7 Towards a Political Morality of Uncertainty

1. The challenge 'why should I be moral?' is typically presented by the philosopher's traditional sparring partner, the moral nihilist. The precise version of this challenge more appropriate for the position I am developing here would be represented by an individual who is bereft of any and all commitment to attachment objects of the classes explored in Chapter 5. The question is whether such individuals genuinely exist. For instance, 'George' in Daniel Miller's *The Comfort of Things* (2009, pp. 8–17) approaches a degree-zero condition of non-attachment, but still retains an identification with the State embodied in the monarchy, with its 'unbearable but unrefusable beauty' (p. 16).
2. Even here, it is questionable whether this is all there is. The act of eating anything at hand can mark a descent, a loss of self-respect as much as it is witness to a will to survive. Conversely, the search for food in such conditions remains bound up with visions of identity and self-efficacy, of a future that beckons us onward – as is perhaps evident even in the limit case of bare survival exemplified by the post-apocalyptic world of Cormac McCarthy's *The Road* (2006), where a key moral distinction is preserved by the adult protagonist between himself and his son, on the one hand, and those survivors who have accepted cannibalism, and with it, the degree-zero exploitation of women as incubators of children to be used as food.

8 Horizons of Care

1. Eva Feder Kittay argues that dependency is a necessary component of any realistic definition of the circumstances of justice anyway 2013, 84–5).
2. See, e.g., <http://www.metoffice.gov.uk/climate-change/guide/science/explained/feedbacks>.
3. There is a link here between Alvin Weinberg's concept of the necessity of a 'nuclear priesthood' to look after the multigenerational legacy of nuclear power stations (1995, p. 4) and the commitments implicit in SRM-based CE. On the fragility of Weinberg's vision, see Ball (2001, pp. 101–2).

4. The IPCC WGIII report suggests that carbon capture and storage (CCS) technologies in conjunction with biomass-derived energy will be necessary in order to achieve needed reductions in CO₂ emissions throughout the 21st century (IPCC 2014). Electricity generation will need to be a key area of focus for these kinds of mitigation efforts; otherwise, much more burdensome targets will need to be imposed on other sectors, such as agriculture. Without going here in depth into the assumptions behind these proposals, it should be noted that CCS is itself a form of climate engineering, but belongs to the carbon dioxide removal (CDR) family of technologies, which, it has been argued, have a very different 'moral profile' than do SRM technologies (Betz 2011).
5. The installation is archived online at <http://greenhousebritain.greenmuseum.org/>.
6. This way of putting the matter was suggested to me by John Barry.
7. Imagery of forest paths immediately invokes Martin Heidegger's depiction of philosophical thought as a *Holzweg*, the meandering woodsman's way – and does so appropriately to the extent that Heidegger meant to evoke with his imagery a sensuous connection to the world that is radically different to the mountain-top view claimed by the metaphysician or traditional moral philosopher.

Bibliography

- Abbinnett, R. 2000. "Science, Technology and Modernity: Beck and Derrida on the Politics of Risk." *Cultural Values* 4 (1): 101–26.
- Adam, B. 1998. *Timescapes of Modernity: The Environment and Invisible Hazards*. London: Routledge.
- Adam, B., and C. Groves. 2007. *Future Matters: Action, Knowledge, Ethics*. Leiden: Brill.
- Adams, J. (2007). "Risk Management: It's Not Rocket Science – It's Much More Complicated." *Public Risk Forum*, May 2007: 9–11.
- Adger, W. N., and S. Nicholson-Cole. 2011. "Ethical Dimensions of Adapting to Climate Change-Imposed Risks." In *The Ethics of Global Climate Change*, edited by Denis G. Arnold, 255–71. Cambridge: Cambridge University Press.
- Agyeman, J., P. Devine-Wright, and J. Prange. 2009. "Close to the Edge, Down by the River? Joining up Managed Retreat and Place Attachment in a Climate Changed World." *Environment and Planning A* 41: 509–13.
- Alexander, J. C. 1995. *Fin de Siècle Social Theory: Relativism, Reduction, and the Problem of Reason*. London: Verso.
- Allhoff, F. 2009. "Risk, Precaution, and Emerging Technologies." *Studies in Ethics, Law, and Technology* 3(2) [online].
- Anders, G. 2009. "The Pathology of Freedom: An Essay on Non-Identification." *Deleuze Studies* 3 (2): 278–310.
- Anderson, W. T. 1987. *To Govern Evolution: Further Adventures of the Political Animal*. Boston: Harcourt.
- Andorno, R. 2004. "The Precautionary Principle: A New Legal Standard for a Technological Age." *Journal of International Biotechnology Law* 1 (1): 11–19.
- Antonio, R. J. 1981. "Immanent Critique as the Core of Critical Theory: Its Origins and Developments in Hegel, Marx and Contemporary Thought." *The British Journal of Sociology* 32 (3): 330–45.
- Aquinas, T. 1942. *The "Summa theologiae" of St. Thomas Aquinas*. London: Burns, Oates and Washbourne.
- Aradau, C., and R. Van Munster. 2007. "Governing Terrorism through Risk: Taking Precautions, (un)Knowing the Future." *European Journal of International Relations* 13 (1): 89–115.
- Arendt, H. 1998. *The Human Condition*. Chicago: University of Chicago Press.
- Attfeld, R. 2001. "Postmodernism, Value and Objectivity." *Environmental Values* 10 (2): 145–62.
- Attfeld, R. 1995. *Value, Obligation, and Meta-Ethics*. Amsterdam: Rodopi.
- . 2012. *Ethics: An Overview*. London: Continuum.
- Bachelard, G. 1969. *The Poetics of Space*. Boston: Beacon Books.
- Bachram, H. 2004. "Climate Fraud and Carbon Colonialism: The New Trade in Greenhouse Gases." *Capitalism Nature Socialism* 15 (4): 5–20.
- Baer, P., G. Fieldman, T. Athanasiou, and S. Kartha. 2008. "Greenhouse Development Rights: Towards an Equitable Framework for Global Climate Policy." *Cambridge Review of International Affairs* 21(4): 649–69.

- Baier, A. 1995. *Moral Prejudices: Essays on Ethics*. Cambridge, MA: Harvard University Press.
- Ball, T. 2001. "New Ethics for Old? Or, How (Not) to Think about Future Generations." *Environmental Politics* 10 (1): 89–110.
- Barry, B. 1978. "Circumstances of Justice and Future Generations." In *Obligations to Future Generations*, edited by R. I. Sikora and Brian Barry, 204–48. Philadelphia: Temple University Press.
- . 1997. "Sustainability and Intergenerational Justice." *Theoria* 45: 43–63.
- Barry, J. 1999. *Rethinking Green Politics: Nature, Virtue and Progress*, London: SAGE Publications.
- . 2012. *The Politics of Actually Existing Unsustainability: Human Flourishing in a Climate-Changed, Carbon Constrained World*. Oxford: Oxford University Press.
- Bauman, Z. 1993. *Postmodern Ethics*. London: Blackwell.
- Beck, U. 1992. *Risk Society: Towards a New Modernity*. Theory, Culture and Society. London: Sage Publications.
- . 1994. "The Reinvention of Politics." In *Reflexive Modernization: Politics, Tradition and Aesthetics in the Modern Social Order*, edited by Ulrich Beck, Anthony Giddens, and Scott Lash. Redwood City, CA: Stanford University Press.
- . 1995. *Ecological Enlightenment: Essays on the Politics of the Risk Society*. Atlantic Highlands, NJ Humanities Press.
- . 2000. "Living Your Own Life in a Runaway World: Individualisation, Globalisation and Politics." In *On the Edge: Living with Global Capitalism*, edited by Anthony Giddens and Will Hutton, 164–74. London: Jonathan Cape.
- . 2005. *Power in the Global Age*. Cambridge: Polity Press.
- 2009. "Critical Theory of World Risk Society: A Cosmopolitan Vision." *Constellations* 16: 3–22.
- . 2011. "The Cosmopolitan Manifesto." In *The Cosmopolitanism Reader*, edited by David Held, David and Garrett Wallace Brown. London: Polity.
- Benhabib, S. 1992. *Situating the Self: Gender, Community, and Postmodernism in Contemporary Ethics*. New York: Routledge.
- Benjamin, J. 1990. *The Bonds of Love: Psychoanalysis, Feminism and the Problem of Domination*. London: Virago.
- Benjamin, W. 1968. "Theses on the Philosophy of History." In *Illuminations*. New York: Houghton Mifflin Harcourt.
- Bernstein, P. 1996. *Against the Gods: The Remarkable Story of Risk*. Chichester: Wiley.
- Bernstein, R. J. 1987. "One Step Forward, Two Steps Backward: Richard Rorty on Liberal Democracy and Philosophy." *Political Theory* 15 (4): 538–63.
- Berry, C. J. 1994. *The Idea of Luxury: A Conceptual and Historical Investigation*. Cambridge: Cambridge University Press.
- Beston, H. 2003. *The Outermost House: A Year of Life on the Great Beach of Cape Cod*. New York: Henry Holt and Company.
- Betz, G. 2011. "The Case for Climate Engineering Research: An Analysis of the 'Arm the Future' Argument." *Climatic Change* 111 (2): 473–485.
- Bewes, T. 1997. *Cynicism and Postmodernity*. London: Verso.
- Birnbacher, D. 2009. "What Motivates Us to Care for the (distant) Future?" In *Intergenerational Justice*, edited by Axel Gosseries and Lukas H. Meyer, 273–300. Oxford: Oxford University Press.

- Boehmer-Christiansen, S. 1994. "The Precautionary Principle in Germany—Enabling Government." In *Interpreting the Precautionary Principle*, edited by Tim O’Riordan and James Cameron, 31–61, London: Earthscan.
- Bodansky, D. 1991. "Scientific Uncertainty and the Precautionary Principle." *Environment: Science and Policy for Sustainable Development* 33 (7): 4–44.
- Bond, P.J. 2005. "Responsible Nanotechnology Development." In *Nanotechnology: Small Size – Large Impact?*, Swiss Re, 7–8. Zurich: Swiss Re.
- Bretherton, I. 1992. "The Origins of Attachment Theory: John Bowlby and Mary Ainsworth." *Developmental Psychology* 28 (5): 759–75.
- Broto, V. C., K. Burningham, C. Carter, and L. Elghali. 2010. "Stigma and Attachment: Performance of Identity in an Environmentally Degraded Place." *Society & Natural Resources* 23 (10): 952–68.
- Buchanan, J. M., and Tullock, G. 1962. *The calculus of consent*. Ann Arbor: University of Michigan Press.
- Burley, D., P. Jenkins, S. Laska, and T. Davis. 2007. "Place Attachment and Environmental Change in Coastal Louisiana." *Organization & Environment* 20 (3): 347–66.
- Callon, M., P. Lascoumes, and Y. Barthe. 2009. *Acting in an Uncertain World: An Essay on Technical Democracy*. Cambridge, MA: MIT Press.
- Carson, R. 2002. *Silent Spring*. Boston: Houghton Mifflin Harcourt.
- Cartledge, J. 2011. "Playing and Adults Learning." *ClioPsy* 6: 53–60.
- Clark, N. E., R. Lovell, B. W. Wheeler, S. L. Higgins, M. H. Depledge, and K. Norris. 2014. "Biodiversity, Cultural Pathways, and Human Health: A Framework." *Trends in Ecology & Evolution* 29 (4): 198–204.
- Council for Science and Technology (CST). 2007. "Nanosciences and Nanotechnologies: A Review of Government’s Progress on Its Policy Commitments". London: Council for Science and Technology. [internal-pdf://nano_review\[1\]-2573052160/nano_review\[1\].pdf](http://internal-pdf://nano_review[1]-2573052160/nano_review[1].pdf).
- Crawford, R. 2004. "Risk Ritual and the Management of Control and Anxiety in Medical Culture." *Health*: 8 (4): 505–28.
- Cripps, E. 2013. *Climate Change and the Moral Agent: Individual Duties in an Interdependent World*. Oxford: Oxford University Press.
- Crutzen, P. J. 2002. "Geology of Mankind." *Nature* 415 (6867): 23.
- De George, R. T. 1981. "The Environment, Rights and Future Generations." In *Responsibilities to Future Generations*, edited by Ernest Partridge, 157–66. Buffalo, NY: Prometheus Books.
- De Shalit, A. 1995. *Why Posterity Matters: Environmental Policies and Future Generations*. London: Routledge.
- DePrince, A.P., and J.J. Freyd. 2002. "The Harm of Trauma: Pathological Fear, Shattered Assumptions, or Betrayal." In *Loss of the Assumptive World: A Theory of Traumatic Loss*, edited by Jeffrey Kauffman, 71–82. New York: Brunner-Routledge.
- Devine-Wright, P. 2009. "Rethinking NIMBYism: The Role of Place Attachment and Place Identity in Explaining Place-Protective Action." *Journal of Community & Applied Social Psychology* 19 (6): 426–41.
- . 2013. "Think Global, Act Local? The Relevance of Place Attachments and Place Identities in a Climate Changed World." *Global Environmental Change* 23 (1): 61–9.
- Díaz, S., J. Fargione, F. S. Chapin III, and D. Tilman. 2006. "Biodiversity Loss Threatens Human Well-Being." *PLoS Biol* 4 (8): e277.

- Dobson, A. 1998. *Justice and the Environment: Conceptions of Environmental Sustainability and Theories of Distributive Justice*. Oxford: Oxford University Press.
- . 2004. "Ecological Citizenship." Presented at Annual Meeting of the Western Political Science Association, Portland, OR, 11 March 2004.
- Donzelot, J. 1988. "The Promotion of the Social." *Economy and Society* 17 (3): 395–427.
- Douglas, M., Gasper, D., Ney, S., and Thompson, M. 1998. "Human Needs and Wants." In *Human Choice and Climate Change*, edited by S. Rayner and E.L. Malone, 1:195–263. Columbus, OH: Batelle Press.
- Doyal, L. 1993. "Thinking about Human Need." *New Left Review* 201: 113–28.
- Doyal, L., and I. Gough. 1991. *A Theory of Human Need*. Basingstoke: Palgrave Macmillan.
- Dreyfus, H. L., and C. Spinosa. 2003. "Further Reflections on Heidegger, Technology, and the Everyday." *Bulletin of Science, Technology & Society* 23 (5): 339–49.
- Dupuy, J.P. 2007. "Some Pitfalls in the Philosophical Foundations of Nanoethics." *Journal of Medicine and Philosophy* 32: 237–61.
- Dupuy, J-P, and A. Grinbaum. 2004. "Living with Uncertainty: Toward the Ongoing Normative Assessment of Nanotechnology." *Techné* 8 (2): 4–25.
- Edwards, P. N. 2010. *A Vast Machine: Computer Models, Climate Data, and the Politics of Global Warming*. Cambridge, MA: MIT Press.
- Ehrlich, P. 1968. *The Population Bomb*. New York: Ballantine Books.
- Elliott, A. 2002. "Beck's Sociology of Risk: A Critical Assessment." *Sociology* 36 (2): 293–315.
- Ellul, J. 1962. "The Technological Order." *Technology and Culture* 3: 394–421.
- Engster, D. 2007. *The Heart of Justice: Care Ethics and Political Theory*. Oxford: Oxford University Press.
- Ericson, R., and A. Doyle. 2004. "Catastrophe Risk, Insurance and Terrorism." *Economy and Society* 33 (2): 135–73.
- Erikson, K. 1995. *A New Species of Trouble: The Human Experience of Modern Disasters*. New York: W. W. Norton.
- Feinberg, J. 1974. "The Rights of Animals and Unborn Generations." In *Philosophy and Environmental Crisis*, edited by William T. Blackstone, 43–68, Athens, GA: The University of Georgia Press.
- Feldstein, M. S. 1964. "The Social Time Preference Discount Rate in Cost Benefit Analysis." *The Economic Journal* 74 (294): 360–79.
- Fisher, E. 2001. "Is the Precautionary Principle Justiciable?" *Journal of Environmental Law*, 13 (3): 315–34.
- Flyvbjerg, B. 2003. "Rationality and Power." In *Readings in Planning Theory*, edited by Scott Cambell and Fainstein, Susan S., 318–29. Oxford: Blackwell.
- Foucault, M. 2002. *Archaeology of Knowledge*. Routledge.
- Fraser, I. 1998. *Hegel and Marx: The Concept of Need*. Edinburgh: University of Edinburgh Press.
- Friedman, M. 1993. *What Are Friends For?* Ithaca, NY: Cornell University Press.
- Fuller, S. 2012. "Precautionary and Proactionary as the New Right and the New Left of the Twenty-First Century Ideological Spectrum." *International Journal of Politics, Culture, and Society* 25 (4): 157–74.
- Funtowicz, S. O., and J. R. Ravetz. 1990. *Uncertainty and Quality in Science for Policy*. Dordrecht: Kluwer.
- Funtowicz, S. O., and R. Strand. 2011. "Change and Commitment: Beyond Risk and Responsibility." *Journal of Risk Research* 14 (8): 995–1003.

- Furedi, F. 2002. *Culture of Fear: Risk-Taking and the Morality of Low Expectation*. London; New York: Continuum.
- Gadow, S. A. 1990. "Truth-telling Revisited: Two Approaches to the Disclosure Dilemma." In *Ethical and Moral Dimensions of Care*, edited by Madeleine M. Leininger, 33–8. Detroit: Wayne State University Press.
- Galtung, J. 1990. "International Development in Human Perspective." In *Conflict: Human Needs Theory*, edited by J.W. Burton, 301–35. New York: St. Martin's Press.
- Gardiner, S. M. 2010. "Ethics and Climate Change: An Introduction." *Wiley Interdisciplinary Reviews: Climate Change* 1: 54–66.
- . 2011. "Is No-One Responsible for Global Environmental Tragedy? Climate Change as a Challenge to Our Ethical Concepts." In *The Ethics of Global Climate Change*, edited by Denis G. Arnold, 38–59. Cambridge: Cambridge University Press.
- Geras, N. 1999. *The Contract of Mutual Indifference: Political Philosophy after the Holocaust*. London: Verso.
- Gergen, M. M., and K. J. Gergen. 1993. "Narratives of the Gendered Body in Popular Autobiography." In *The Narrative Study of Lives*, edited by R. Josselson and A. Lieblich, 1:191–218. London: SAGE.
- Gheaus, A. 2010. "The Heart of Justice: Care Ethics and Political Theory, by Daniel Engster." *European Journal of Philosophy* 18 (4): 619–23.
- Giddens, A. 1990. *The Consequences of Modernity*. Cambridge: Polity Press.
- . 1991. *Modernity and Self-Identity: Self and Society in the Late Modern Age*. Palo Alto, CA: Stanford University Press.
- Gilligan, C. 1982. *In a Different Voice*. Cambridge, MA: Harvard University Press.
- Goldberg, S. 2000. *Attachment and Development*. London: Hodder Arnold.
- Goodin, R. E. 1985. *Protecting the Vulnerable: A Reanalysis of Our Social Responsibilities*. Chicago: University of Chicago Press.
- Gottlieb, R. S. 1994. "Ethics and Trauma: Levinas, Feminism, and Deep Ecology." *CrossCurrents* 44 (2): 222–40.
- Graham, K. M. 2012. *Beyond Redistribution: White Supremacy and Racial Justice*. Lanham, MD: Lexington Books.
- Groenhout, R. 2004. *Connected Lives: Human Nature and an Ethics of Care*. Oxford: Rowman and Littlefield.
- Groves, C. 2007. "The Humanities and the Shaping of Social Futures." *International Journal of the Humanities* 5: 49–54.
- . 2009a. "Future Ethics: Risk, Care and Non-Reciprocal Responsibility." *Journal of Global Ethics* 5 (1): 17–31.
- . 2009b. "Nanotechnology, Contingency and Finitude." *Nanoethics* 3(1): 1–16.
- . 2010. "Living in Uncertainty: Anthropogenic Global Warming and the Limits of 'Risk Thinking.'" In *Future Ethics: Climate Change and Apocalyptic Imagination*, 107–28. London: Continuum.
- . 2011a. "The Political Imaginary of Care: Generic versus Singular Futures." *Journal of International Political Theory* 7 (2): 165–89.
- . 2011b. "Public engagement and nanotechnology in the UK: restoring trust or building robustness?" *Science and Public Policy* 38 (10): 783–793.
- . 2013. "Horizons of Care: From Future Imaginaries to Responsible Research and Innovation." In *Shaping Emerging Technologies: Governance, Innovation,*

- Discourse*, edited by K. Konrad, C. Coenen, A. Dijkstra, C. Milburn, and H. van Lente. Berlin: IOS Press/AKA: 185–202.
- Habermas, J. 1987. *The Theory of Communicative Action*. Vol. 2. Boston: Beacon Press.
- . 1998. "A Genealogical Analysis of the Cognitive Content of Morality." In *The Inclusion of the Other*, 3–46. Cambridge, MA: MIT Press.
- Hacking, I. 1986. "Culpable Ignorance of Interference Effects." In *Values at Risk*, edited by Douglas MacLean, 136–54. Totowa NJ: Rowman and Allanheld.
- . 1990. *The Taming of Chance*. Cambridge: Cambridge University Press.
- . 1999. *The Social Construction of What?* Cambridge, MA: Harvard University Press.
- Hailwood, S.A. 2000. "The Value of Nature's Otherness." *Environmental Values* 9 (3): 353–72.
- Haley, D. 2011. "Ecology and the Art of Sustainable Living." *Field Journal* 4 (1): 17–32.
- Haller, S. F. 2002. *Apocalypse Soon?: Wagering on Warnings of Global Catastrophe*. Montreal: McGill-Queen's Press – MQUP.
- Hansen, J., M. Sato, P. Kharecha, D. Beerling, R. Berner, V. Masson-Delmotte, M. Pagani, M. Raymo, D. L. Royer, and J. C. Zachos. 2008. "Target Atmospheric CO₂: Where Should Humanity Aim?" *The Open Atmospheric Science Journal* 2 (1): 217–31.
- Hansen, J., L. Nazarenko, R. Ruedy, M. Sato, J. Willis, A. Del Genio, Koch, D. et al. 2005. "Earth's Energy Imbalance: Confirmation and Implications." *Science* 308 (5727): 1431–5.
- Hansson, S.O. 2000. "Seven Myths of Risk." In *Stockholm Thirty Years On: Progress Achieved and Challenges Ahead in International Environmental Co-Operation*. Stockholm: Swedish Ministry of the Environment.
- Harada, T. 2000. "Space, Materials, and the 'Social': In the Aftermath of a Disaster." *Environment and Planning D: Society and Space* 18 (2): 205–12.
- Hazan, C., and P. Shaver. 1987. "Romantic Love Conceptualized as an Attachment Process." *Journal of Personality and Social Psychology* 52 (3): 511–24.
- Heidegger, M. 1998. *Being and Time*. Oxford: Blackwell.
- . 2001. *The Fundamental Concepts of Metaphysics: World, Finitude, Solitude*. Bloomington, IN: Indiana University Press.
- Held, V. 2006. *The Ethics of Care: Personal, Political, and Global*. Oxford: Oxford University Press.
- Hinchliffe, S. 1996. "Helping the Earth Begins at Home: The Social Construction of Socio-Environmental Responsibilities." *Global Environmental Change* 6 (1): 53–62.
- Hoggett, P. 2006. "Conflict, Ambivalence, and the Contested Purpose of Public Organizations." *Human Relations* 59 (2): 175–94.
- Holbrook, J. B., and A. Brigggle. 2013. "Knowing and Acting: The Precautionary and Proactionary Principles in Relation to Policy Making." *Social Epistemology Review and Reply Collective* 2 (5): 15–37.
- Hollway, W, and T. Jefferson. 1997. "The Risk Society in an Age of Anxiety: Situating Fear of Crime." *The British Journal of Sociology* 48 (2): 255–66.
- Hölscher, L. 1999. *Die Entdeckung Der Zukunft*. Frankfurt a. M.: Fischer.
- Hopkins, R. 2008. *The Transition Handbook: From Oil Dependency to Local Resilience*. White River Junction, VT: Chelsea Green Publishing.
- Houston, B. 1990, "Caring and exploitation." *Hypatia*, 5(1): 115–19

- Howell, J. T. 1990. *Hard Living on Clay Street: Portraits of Blue Collar Families*. Prospect Heights, IL: Waveland Press.
- Hudson, J. L. 1989. "Subjectivization in Ethics." *American Philosophical Quarterly* 26 (3): 221–9.
- Hulme, M. 2009. *Why We Disagree about Climate Change: Understanding Controversy, Inaction and Opportunity*. Cambridge: Cambridge University Press.
- Hume, D. 1975. *Enquiries Concerning the Human Understanding*. Oxford: Oxford University Press.
- Ingold, T. 1993. "The Temporality of the Landscape." *World Archaeology* 25 (2): 152–74.
- Intergovernmental Panel on Climate Change (IPCC), 2013. *Climate Change 2013: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change* Geneva: IPCC.
- . 2014. *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Third Assessment Report of the Intergovernmental Panel on Climate Change* Geneva: IPCC.
- Irwin, A., and P. Simmons. 1999. "Faulty Environments and Risk Reasoning: The Local Understanding of Industrial Hazards." *Environment and Planning A* 31: 1311–26.
- Ives, J, and M Dunn. 2010. "Who's Arguing? A Call for Reflexivity in Bioethics." *Bioethics* 24: 256–65.
- Jackson, M. 1989. *Paths toward a Clearing: Radical Empiricism and Ethnographic Inquiry*. Bloomington, IN: Indiana University Press.
- Jaeggi, R. 2001. "Solidarity and Indifference." In *Solidarity in Health and Social Care in Europe*, edited by Rudolf Hubertus, Jozef ter Meulen, Wilhelm Antonius Arts, and Ruud Muffels, 287–308. Dordrecht: Kluwer.
- Jamieson, D. 1992. "Ethics, Public Policy and Global Warming." *Science, Technology and Human Values* 17 (2): 139–53.
- . 1996. "Scientific Uncertainty and the Political Process." *Annals of the American Academy of Political and Social Science* 545: 35–43.
- Jasanoff, S. 2010. "A New Climate for Society." *Theory, Culture & Society* 27 (2–3): 233–53.
- Johnson, M. and Cullen, L. 2001. "Solidarity and Care in the United Kingdom." In *Solidarity in Health and Social Care in Europe*, edited by Rudolf Hubertus, Jozef ter Meulen, Wil Arts, Wilhelm Antonius Arts, and Ruud Muffels, 107132. Kluwer: Dordrecht
- Johnson, L. 2011. "Climate Change and the Risk Industry: The Multiplication of Fear and Value." In *Global Political Ecology*, edited by Richard Peet, Paul Robbins, and Michael Watts, 185–202. New York: Taylor & Francis.
- Jonas, H. 1980. "The Heuristics of Fear." In *Ethics in an Age of Pervasive Technology*, edited by Melvin Kranzberg, 213–21. Boulder, CO: Westview Press.
- . 1982. *The Phenomenon of Life*. Chicago and London: University of Chicago Press.
- . 1984. *The Imperative of Responsibility: In Search of an Ethics for the Technological Age*. Chicago; London: University of Chicago Press.
- Jouvenel, B. 1967. *The Art of Conjecture*. New York: Basic Books.
- Jungk, R. 1954 *Tomorrow is already here*. New York: Simon and Schuster.

- Kahn, R.L., and T.C. Antonucci. 1980. "Convoys over the Life Course: Attachment, Roles, and Social Support." *Life-Span Development and Behavior*. <http://agris.fao.org/agris-search/search.do?recordID=US201302069551>.
- Kant, I. 1996. *Critique of Pure Reason*. Indianapolis, IN: Hackett.
- Kittay, E. F. 2001. "When Caring Is Just and Justice Is Caring: Justice and Mental Retardation." *Public Culture* 13 (3): 557–79.
- . 2013. *Love's Labor: Essays on Women, Equality and Dependency*. London: Taylor & Francis.
- Kopytoff, I. 1986. "The Cultural Biography of Things: Commoditization as Process." In *The Social Life of Things: Commodities in Cultural Perspective*, edited by Arjun Appadurai, 64–95. Cambridge: Cambridge University Press.
- Kravitz, B., D. G. MacMartin, and K. Caldeira. 2012. "Geoengineering: Whiter Skies?" *Geophysical Research Letters* 39 (11): L11801.
- Kuruppu, N., and D. Liverman. 2011. "Mental Preparation for Climate Adaptation: The Role of Cognition and Culture in Enhancing Adaptive Capacity of Water Management in Kiribati." *Global Environmental Change* 21 (2). Special Issue on The Politics and Policy of Carbon Capture and Storage: 657–69.
- Lakoff, G., and M. Johnson. 1980. *Metaphors We Live by*. Chicago, London: University of Chicago Press.
- Lash, S., and J. Urry. 1994. *Economies of Signs and Space*. London: Sage.
- Latour, B. 1987. *Science in Action: How to Follow Scientists and Engineers Through Society*. Cambridge, MA: Harvard University Press.
- . 2008. *It's Development, Stupid! Or How to Modernize Modernization*. *EspacesTemps.net*, Books, 29 May.
- Leonard, H. B., and R. B. Zeckhauser. 1986. "Cost-Benefit Analysis Applied to Risks: Its Philosophy and Legitimacy." In *Values at Risk*, edited by Douglas MacLean, 31–48. Totowa, NJ: Rowman and Allanheld.
- Levinas, E. 1980. *Totality and Infinity: An Essay on Exteriority*. Dordrecht: Springer.
- Lewis, C.S. 1978. *The Abolition of Man: Or Reflections on Education with Special Reference to the Teaching of English in the Upper Forms of Schools*. Glasgow: Fount paperbacks.
- Lewis, O. 1969. "The Possessions of the Poor." *Scientific American* 221 (4), October 1 1969: 114–24.
- Liao, S. M., Anders Sandberg, and Rebecca Roache. 2012. "Human Engineering and Climate Change." *Ethics, Policy & Environment* 15 (2): 206–21.
- Litt, C. J. 1986. "Theories of Transitional Object Attachment: An Overview." *International Journal of Behavioral Development* 9 (3): 383–99.
- Løgstrup, K. E. 1997. *The Ethical Demand*. Notre Dame, IN: University of Notre Dame Press.
- Lomborg, B. 2001. *The Skeptical Environmentalist: Measuring the Real State of the World*. Cambridge: Cambridge University Press.
- Luhmann, N. 1988. "Familiarity, Confidence, Trust: Problems and Alternatives." In *Trust: Making and Breaking Cooperative Relations*, 94–107. London: Basil Blackwell.
- MacIntyre, A. 1981. *After Virtue: A Study in Moral Theory*. London: Duckworth.
- . 1983. "Utilitarianism and Cost-Benefit Analysis: An Essay on the Relevance of Moral Philosophy to Bureaucratic Theory." In *Ethics and the Environment*, edited by D. Scherer and T. Attig, 139–51. Englewood Cliffs, NJ: Prentice Hall.

- . 1999. *Dependent Rational Animals: Why Human Beings Need the Virtues*. London: Duckworth.
- MacLean, D. 1983. "A Moral Requirement for Energy Policies." In *Energy and the Future*, edited by D. MacLean and P. G. Brown, 180–97. Totowa, NJ: Rowman and Allanheld.
- Marchant, G. E. 2003. "From General Policy to Legal Rule: Aspirations and Limitations of the Precautionary Principle." *Environmental Health Perspectives* 111 (14): 1799–1803.
- Marcus, G. E., and E. Saka. 2006. "Assemblage." *Theory, Culture & Society* 23 (2–3): 101–6.
- Marris, P. 1991. "The Social Construction of Uncertainty." In *Attachment across the Life Cycle*, edited by C. M. Parkes, J. Stevenson-Hinde, and P. Marris, 77–90. London: Routledge.
- . 1996. *The Politics of Uncertainty: Attachment in Private and Public Life*. London; New York: Routledge.
- Martinez-Alier, J. 2003. *The Environmentalism of the Poor: A Study of Ecological Conflicts and Valuation*. Cheltenham: Edward Elgar Publishing.
- Maslow, A.H. 1943. "A Theory of Human Motivation." *Psychological Review* 50 (4): 370–96.
- Mayeroff, M. 1990. *On Caring*. New York: HarperCollins.
- McCarthy, C. 2006. *The Road*. New York: Vintage Books.
- McDermott, D. 2008. "Analytical Political Philosophy." In *Political Theory: Methods and Approaches*, edited by D. Leopold and M. Stears, 11–28. Oxford: Oxford University Press.
- Merton, R. K. 1936. "The Unanticipated Consequences of Purposive Social Action." *American Sociological Review* 1 (6): 894–904.
- Meyer, A. 2004. "Briefing: Contraction and Convergence." *Proceedings of the ICE-Engineering Sustainability* 157(4): 189–192.
- Miller, D. 2009. *The Comfort of Things*. London: Polity.
- Mises, L. von. 1998. *Human Action: A Treatise on Economics*. Auburn, AL: Ludwig von Mises Institute.
- Mitcham, C. 1994. *Thinking Through Technology: The Path Between Engineering and Philosophy*. Chicago: University of Chicago Press.
- Mitchell, T. 2004. *Rule of Experts: Egypt, Techno-Politics, Modernity*. Berkeley: University of California Press.
- Moglen, S. 2005. "On Mourning Social Injury." *Psychoanalysis, Culture & Society* 10: 151–67.
- Mol, A. 2008. *The Logic of Care: Health and the Problem of Patient Choice*. London: Routledge.
- More, M. 2004. "The Proactionary Principle (v 1.0)." *Extropy Institute*. <http://www.extropy.org/proactionaryprinciple.htm>.
- Morris, J. 2000. *Rethinking Risk and the Precautionary Principle*. London: Butterworth-Heinemann.
- Moseley, W. G. 2001. "African Evidence on the Relation of Poverty, Time Preference and the Environment." *Ecological Economics* 38 (3): 317–26.
- Mouffe, C. 2005. *The Return of the Political*. London: Verso.
- Murdoch, I. 1999. *Existentialists and Mystics*. Harmondsworth: Penguin.
- Nagel, M. 2001. "Thrownness, Playing-in-the-World, and the Question of Authenticity." In *Feminist Interpretations of Martin Heidegger*, edited by Nancy J.

- Holland and Patricia J. Huntington, 289–306. University Park, PA: Penn State University Press.
- National Research Council (NRC). 2010. *Adapting to the Impacts of Climate Change*. Washington DC: National Academies Press. http://www.nap.edu/catalog.php?record_id=12783.
- Newell, P., and M. Paterson. 2010. *Climate Capitalism: Global Warming and the Transformation of the Global Economy*. Cambridge: Cambridge University Press.
- Noddings, N. 2005. *The Challenge To Care In Schools: An Alternative Approach To Education*. New York: Teachers College Press.
- Noddings, Nel, and Paul J. Shore. 1984. *Awakening the Inner Eye: Intuition in Education*. New York: Columbia University Press.
- Nordmann, A. 2004. "Nanotechnology's Worldview: New Space for Old Cosmologies." *Ieee Technology and Society Magazine* 23: 48–54.
- Norgaard, K. M. 2011. "Climate Denial: Emotion, Psychology, Culture and Political Economy." In *The Oxford Handbook of Climate Change and Society*, edited by J. S. Dryzek, R. B. Norgaard, and D. Schlosberg, 399–413. Oxford: Oxford University Press.
- Northcott, M. S. 2013. *A Political Theology of Climate Change*. Grand Rapids, MI: William B. Eerdmans.
- Norton, B. G. 2005. *Sustainability: A Philosophy of Adaptive Ecosystem Management*. Chicago; London: University of Chicago Press.
- Nussbaum, M. C. 2001. *Upheavals of Thought: The Intelligence of Emotions*. Cambridge: Cambridge University Press.
- O'Neill, J. 1993. *Ecology, Policy and Politics*. London: Routledge.
- O'Neill, J., A. Holland and A. Light. 2008. *Environmental Values*. Abingdon: Routledge.
- Ophuls, W. 1977. *Ecology and the Politics of Scarcity: Prologue to a Political Theory of the Steady State*. San Francisco: W.J. Freeman and Company.
- Oreskes, N. 2003. "The Role of Quantitative Models in Science." In *Models in Ecosystem Science*, edited by C. Draper, W. Canham, J. Cole, and W. K. Lauenroth, 13–31. Princeton, NJ: Princeton University Press.
- Oreskes, N., and K. Belitz. 2001. "Philosophical Issues in Model Assessment." In *Model Validation: Perspectives in Hydrological Science*, edited by M. G. Anderson and P. D. Bates, 23–42. New York: John Wiley & Sons.
- Owen, R. 2014. "Solar Radiation Management and the Governance of Hubris." In *Geoengineering of the Climate System*, edited by R. Harrison and R. Hester, 212–48. London: Royal Society of Chemistry.
- Page, E. 2006. *Climate Change, Justice and Future Generations*. Cheltenham: Edward Elgar Publishing.
- Paine, T. 1998. *Rights of Man, Common Sense, and Other Political Writings*. Oxford: Oxford University Press.
- Parfit, D. 1983. "Energy Policy and the Further Future: The Social Discount Rate." In *Energy and the Future*, edited by P.G. Brown and Douglas MacLean. Totowa, 31–37. NJ: Rowman and Littlefield.
- . 1986. *Reasons and Persons*. Oxford: Oxford University Press.
- Partridge, E. (ed.). 1981. *Responsibilities to Future Generations: Environmental Ethics*. Buffalo: Prometheus Books.
- Passmore, J. 1974. *Man's Responsibility for Nature*. London: Duckworth.

- Phenix, P. H. 1964. *Realms of Meaning: A Philosophy of the Curriculum for General Education*. New York: McGraw-Hill.
- Pickering, A. 1995. *The Mangle of Practice: Time, Agency, and Science*. Chicago: University of Chicago Press.
- Pletcher, G. K. 1981. "The Rights of Future Generations." In *Responsibilities to Future Generations*, edited by E. Partridge, 167–70. New York: Prometheus Books.
- Porter, T. M. 1995. *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*. Princeton: Princeton University Press.
- Power, M. 2004. *The Risk Management of Everything: Rethinking the Politics of Uncertainty*. London: Demos.
- Proctor, R. 1991. *Value-Free Science?: Purity and Power in Modern Knowledge*. Cambridge, MA: Harvard University Press.
- Raffensperger, C., and J. A. Tickner. 1999. *Protecting Public Health and the Environment: Implementing The Precautionary Principle*. Washington, DC: Island Press.
- Railton, P. 1984. "Alienation, Consequentialism, and the Demands of Morality" *Philosophy & Public Affairs*, (13): 134–71.
- Ramsay, Hayden. 1997. *Beyond Virtue: Integrity and Morality*. Basingstoke: Macmillan.
- Ramsey, F. P. 1928. "A Mathematical Theory of Saving." *The Economic Journal* 38 (152): 543–559.
- Randall, A. 2009. "We Already Have Risk Management — Do We Really Need the Precautionary Principle?" *International Review of Environmental and Resource Economics* 3 (1): 39–74.
- Rappaport, R. A. 1996. "Risk and the Human Environment." *Annals of the American Academy of Political and Social Science* 545: 64–74.
- Rawls, J. 1980. "Kantian Constructivism in Moral Theory." *The Journal of Philosophy* 77 (9): 515–72.
- . 1985. "Justice as Fairness: Political Not Metaphysical." *Philosophy & Public Affairs* 14 (3): 223–51.
- . 1995. "Political Liberalism: Reply to Habermas." *The Journal of Philosophy* 92 (3): 132–80.
- . 1999. *A Theory of Justice*. Oxford: Oxford University Press.
- Rayner, S., Heyward, C., Kruger, T., Pidgeon, N., Redgwell, C., & Savulescu, J. 2013. "The Oxford Principles." *Climatic Change*, 121(3): 499–512.
- Read, R. 2012. *Guardians of the Future: A Constitutional Case for Representing and Protecting Future People*. Weymouth: The Greenhouse.
- Reynolds, J., and F. Fleurke. 2013. "Climate Engineering Research: A Precautionary Response to Climate Change?" *Carbon and Climate Law Review*: 101–7.
- Richardson, H. S. 1999. "Institutionally Divided Moral Responsibility." *Social Philosophy and Policy* 16 (2): 218–49.
- Riddihough, G., and L. M. Zahn. 2010. "What Is Epigenetics?" *Science* 330 (6004): 611.
- Robock, A. 2014. "Stratospheric Aerosol Geoengineering." In *Geoengineering of the Climate System*, edited by R.E. Hester and R.M. Harrison, 162–85. London: Royal Society of Chemistry.
- Roco, M. C. 2007. "Progress in Governance of Converging Technologies Integrated from the Nanoscale." *Annals of the New York Academy of Sciences* 1093: 1–23.
- Romanyshyn, R. D. 1989. *Technology as Symptom and Dream*. London: Routledge.

- Rorty, R. 1991. "The Priority of Democracy to Philosophy: In *Objectivity, Relativism and Truth: Philosophical Papers*, 175–96. Cambridge: Cambridge University Press.
- Rose, N. 1999. *The Powers of Freedom: Reframing Political Thought*. Cambridge: Cambridge University Press.
- Rose, G. 1993. "Angry Angels: Simone Weil and Emmanuel Levinas." In *Judaism and Modernity: Philosophical Essays*, 211–24. London: Blackwell.
- Rothstein, H., M. Huber, and G. Gaskell. 2006. "A Theory of Risk Colonization: The Spiralling Regulatory Logics of Societal and Institutional Risk." *Economy and Society* 35 (1): 91–112.
- Ruddick, S. 1980. "Maternal Thinking." *Feminist Studies* 6 (2): 342–67.
- Sagoff, M. 1981. "At the Shrine of Our Lady of Fatima, Or, Why Political Questions Are Not All Economic." *Arizona Law Review* 23: 1283–98.
- Sahlins, M. 1978. *Culture and Practical Reason*. Chicago: University of Chicago Press.
- Sandin, P. 2006. "A Paradox Out of Context: Harris and Holm on the Precautionary Principle." *Cambridge Quarterly of Healthcare Ethics* 15 (2): 175–83.
- Sarewitz, D. 2007. "Ways of Knowing Novel Materials." Symposium on Environmental Effects of Novel Materials and Processes." Presentation. Royal Commission on Environmental Pollution, London, England.
- Sayer, A. 2011. *Why Things Matter to People: Social Science, Values and Ethical Life*. Cambridge: Cambridge University Press.
- Schatzki, T. R. 1996. *Social Practices: A Wittgensteinian Approach to Human Activity and the Social*. Cambridge: Cambridge University Press.
- Schell, J. 2005. *The Unconquerable World: Power, Nonviolence, and the Will of the People*. London: Penguin.
- Schlosberg, D. 2007. *Defining Environmental Justice: Theories, Movements, and Nature*. Oxford: Oxford University Press.
- Schneewind, J. B. 1984. "The Divine Corporation and the History of Ethics." In *Philosophy in History: Essays on the Historiography of Philosophy*, edited by R. Rorty, J. B. Schneewind and Q. Skinner, 173–92. Cambridge: Cambridge University Press.
- Schummer, J. 2001. "Ethics of Chemical Synthesis." *Hyle* 7 (2): 103–24.
- Schutz, A. 1964. "Tiresias, or Our Knowledge of Future Events." In *Collected Papers*, edited by A. Brodersen, Vol. 2, Studies in Social Theory: 277–93. The Hague: Martinus Nijhoff.
- Scott, J. C. 1998. *Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven, CT: Yale University Press.
- Seamon, D. 1979. "Phenomenology, Geography and Geographical Education." *Journal of Geography in Higher Education* 3 (2): 40–50.
- Sevenhuijsen, S. 1998. *Citizenship and the Ethics of Care: Feminist Considerations on Justice, Morality and Politics*. London: Routledge.
- Shove, E., M. Pantzar, and M. Watson. 2012. *The Dynamics of Social Practice: Everyday Life and How It Changes*. London: SAGE.
- Sims, R., W. Medd, M. Mort and C. Twigger-Ross. 2009. "When a 'Home' Becomes a 'House': Care and Caring in the Flood Recovery Process." *Space and Culture* 12: 303–16.
- Soper, K. 2006. "Conceptualizing Needs in the Context of Consumer Politics." *Journal of Consumer Policy* 29 (4): 355–72.

- Stanton, E. C. 1993. *The Woman's Bible*. Boston, MA: Northeastern University Press.
- Steiner, H. 1983. "The Rights of Future Generations." In *Energy and the Future*, edited by Douglas MacLean and P.G. Brown, 151–165. Totowa, NJ: Rowman & Littlefield.
- Stern, D. N. 1985. *The Interpersonal World of the Infant: A View from Psychoanalysis and Developmental Psychology*. New York: Basic Books.
- Stern, D. I. 1997. "The Capital Theory Approach to Sustainability: A Critical Appraisal." *Journal of Economic Issues* 31 (1): 145–73.
- Stilgoe, J., R. Owen, and P. Macnaghten. 2013. "Developing a Framework for Responsible Innovation." *Research Policy* 42 (9): 1568–80.
- Stirling, A. 2007. "Risk, Precaution and Science: Towards a More Constructive Policy Debate." *EMBO Reports* 8 (4): 309–15.
- Strydom, P. 1999. "The Challenge of Responsibility for Sociology." *Current Sociology* 47 (3): 65–82.
- Sunstein, C.R. 2005. *Laws Of Fear: Beyond The Precautionary Principle*. John Robert Seeley Lectures. Cambridge: Cambridge University Press.
- Tallacchini, M. 2005. "Before and beyond the Precautionary Principle: Epistemology of Uncertainty in Science and the Law." *Toxicology and Applied Pharmacology* 207 (2): 645–51.
- Tannert, C., H.-D. Elvers, and B. Jandrig. 2007. "The Ethics of Uncertainty: In the Light of Possible Dangers, Research Becomes a Moral Duty." *EMBO Reports* 8 (10): 892–896.
- Tenner, E. 1997. *Why Things Bite Back: Technology and the Revenge of Unintended Consequences*. New York: Vintage Books.
- Thompson, M., R. J. Ellis, and A. B. Wildavsky. 1990. *Cultural Theory*. Boulder, CO: Westview Press.
- Thornes, J. E., and F. D. Pope. 2014. "Why Do We Need Solutions to Global Warming?" In *Geoengineering of the Climate System*, edited by R. Harrison and R. Hester, 1–21. London: Royal Society of Chemistry.
- Tilley, C. 1994. *A Phenomenology of Landscape: Places, Paths and Monuments*. Oxford; Providence, RI: Berg Publishers.
- Todorov, T., 1996. *Facing the Extreme: Moral Life in the Concentration Camps*. London: Weidenfeld & Nicholson.
- Tronto, J. C. 1993. *Moral Boundaries: A Political Argument for an Ethic of Care*. New York: Routledge.
- . 2001. "An Ethic of Care." In *Ethics in Community-Based Elder Care*, edited by M. Holstein and P. Mitzen: 60–8. New York: Springer.
- Tsoukas, H. 1999. "David and Goliath in the Risk Society: Making Sense of the Conflict between Shell and Greenpeace in the North Sea." *Organization* 6: 499–528.
- Tuan, Y. F. 1974. *Topophilia: A Study of Environmental Perception, Attitudes, and Values*. New York: Columbia University Press.
- . 2007. *Space and Place: The Perspective of Experience*. Minneapolis: University of Minnesota Press.
- Tubbs, N. 2005. "Fossil Fuel Culture." *Parallax* 11: 104–15.
- Turner, B.S. 1993. *Max Weber: From History to Modernity*. London: Routledge.
- Van Hooff, S. 1995. *Caring: An Essay in the Philosophy of Ethics*. Boulder, CO: University Press of Colorado.

- Vineis, P., and M. Ghisleni. 2004. "Risks, Causality, and the Precautionary Principle." *Topoi: An International Review of Philosophy* 23 (2): 203–10.
- Walker, M. U. 1989. "Moral Understanding: Alternative 'Epistemology' for a Feminist Ethics." *Hypatia* 4 (2): 15–28.
- Wallendorf, M., and E. J. Arnould. 1988. "'My Favourite Things': A Cross-Cultural Inquiry into Object Attachment, Possessiveness, and Social Linkage." *Journal of Consumer Research* 14: 531–47.
- Weil, S. 1962. "Human Personality (1943)." In *Selected Essays 1934–1943*, 313–39. Oxford: Oxford University Press.
- White, S. 1997. "Liberal Equality, Exploitation, and the Case for an Unconditional Basic Income." *Political Studies* 45 (2): 312–26.
- Wolsink, G. 2006. "Invalid Theory Impedes Our Understanding: A Critique on the Persistence of the Language of NIMBY." *Transactions of the Institute of British Geographers* 31 (1): 85–91.
- Wynne, B. 1992. "Uncertainty and environmental learning: reconceiving science and policy in the preventive paradigm." *Global Environmental Change* 2(2): 111–127.
- . 1996. "May the Sheep Safely Graze? A Reflexive View of the Expert-Lay Knowledge Divide." In *Risk, Environment and Modernity: Towards a New Ecology*, edited by Scott Lash, Bronislaw Szerszynski, and Brian Wynne, 44–83. London: Sage.
- . 2001. "Creating Public Alienation: discourses of risk and ethics on GMO's." *Science as Culture* 10(4):445–481.
- Young, I. M. 1990. *Justice and the Politics of Difference*. Princeton, NJ: Princeton University Press.
- Young, R. M. 1989. "Transitional Phenomena: Production and Consumption." In *Crises of the Self: Further Essays on Psychoanalysis and Politics*, 57–72. London: Free Association Books.

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