16. Austen, *Pride and Prejudice*, 55–6.
17. If not entirely universal, it is nevertheless ordinary.

Sustainability

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"SUSTAINABILITY" generally means the ability to be maintained at a certain level, but in recent years the word has come to refer almost exclusively to environmental sustainability: the perhaps fantastical set of circumstances under which life may continue on this planet under conditions similar to those prevailing now.[1] While the word "sustainable" was not used in the contemporary sense of minimizing environmental impact until 1976,[2] the concept has a much older history: historians of northern Europe, particularly Germany, have traced the development of sustainable forestry management and other agricultural practices back to the middle ages.[3] But the concept (or perhaps we should say anxiety) really got a kick-start with the publication of the Reverend Thomas Malthus's *Essay on the Principle of Population* in 1798.[4] The argument of that work was simply that population increases geometrically while food supply increases arithmetically; the two upward curves meet at a crisis point where famine becomes inevitable and population growth will thus be "checked."[5] The enormous cultural impact of Malthus's thesis is one good reason to date the birth of the modern sustainability idea to the nineteenth century. Others include the sharp increase in environmental stressors—in terms of pressure on both resources and environmental sinks—occasioned by the industrial revolution, and the birth of political economy as a professional discipline in the early decades of the century.[6]

For sustainability is essentially an economic question. Its two central components are issues with which political economists have long grappled: population and resources, including food. (Two other important components of sustainability could be mentioned: the management of waste, including carbon sinks, and climate change. Waste recycling was an important topic in the nineteenth century, but it was almost always invoked in the context of soil fertilization.[7] And while Jesse Oak Taylor

https://doi.org/10.1017/S1060150318001134 Published online by Cambridge University Press

has demonstrated that anxiety over pollution was a crucial part of "green" Victorian consciousness—and late-Victorian texts such as Richard Jefferies's *After London* and M. P. Shiel's *The Purple Cloud* evince a significant concern with what we can loosely term "climate"—the pressing fear of imminent environmental and economic collapse due to climate change is of course not a prominent feature of popular discourse until the late twentieth, or even twenty-first, century.[8])

Victorian discussions of population and resources together, then, form a proto-sustainability discourse that closely prefigures our own. In addition to Malthus, whose thesis influenced a wide range of Victorian thinkers including Darwin, a central figure in the population debate was William Forster Lloyd, whose *Two Lectures on the Checks to Population* (1833) introduced the concept of the tragedy of the commons, which occurs "when the constitution of society is such as to diffuse the effects of individual acts throughout the community at large, instead of appropriating them to the individuals, by whom they are respectively committed."[9] The "individual acts" in this case are the decisions to marry and bear children, and the "effects" are the costs of care and feeding of the results. Lloyd effectively extends Malthus's dismal prognosis by noting that, because of this diffusion of costs, rationality and restraint are not effective checks on population: "the simple fact of a country being over populous . . . is not, of itself, sufficient evidence that the fault lies in the people themselves."[10]

On the resources side, writers such as William Stanley Jevons, Edward Hull, and William Armstrong worried that economic crisis was inevitable due not to the exhaustion of food supply but instead to the depletion of fossil fuel resources.[11] The "coal question" debate of the 1860s was in many ways a continuation of earlier anxieties about wood and forest management, with the added ingredient of a post-Lyell sense of the vast time scales involved in the creation of fossil fuels (rendering them effectively and practically nonrenewable). As Benjamin Morgan has argued in a recent discussion of the "coal imaginary," "new scales of energy use and of geological time shared certain figural and rhetorical resolutions."[12] Elizabeth Carolyn Miller's recent work has considered the narrative formations attendant upon these resolutions in the work of William Morris, George Eliot, Joseph Conrad, and others.[13]

The conceptual synthesis of long-term population and resource management is the stationary or steady-state economy—characterized by a zero rate of profit and growth, a fixed stock of wealth, and a stable

population—which is a direct nineteenth-century precursor to certain strains of economic/environmental sustainability. While Adam Smith and David Ricardo lamented the stationary state as the inevitable and unfortunate future of capitalism (Marx referred to the stationary state as the "bourgeois 'Twilight-of-the-Gods'"), later thinkers such as J. S. Mill and John Ruskin heralded the stationary state as, in Mill's words, "a very considerable improvement on our present condition."[14] Steady-state economies are thus the conceptual obverse (either voluntary or involuntary) of capitalism, which is characterized by perpetual growth—which often relies on colonial markets, resources, or labor secured by violent appropriative imperial expansion.[15] Recent versions of zero- (or even negative-) growth economies in response to ongoing environmental crisis have been championed by ecological economists, most prominently Herman Daly.[16]

The sustainability concept has recently absorbed a number of direct body blows from the academic left. Important recent critiques by Stacy Alaimo, Allan Stoekl, Jeremy Davies, and Leerom Medovoi, among others, have pointed out the inconsistencies, contradictions, and even outright bad faith inherent in the concept.[17] As Davies eloquently notes, "to talk of sustainability and steady-state economics is to deal in abstractions that would be equally applicable at any time; it is to engage in a romance of stasis."[18] In other words, sustainability discourse attends to spatial constraints (resources, population, the "carrying capacity" of the planet) while fantasizing that temporal constraints can be overcome—that the current state of affairs can go on nearly forever.

Criticisms of this kind are cognate with the strain of queer theory, emerging from the work of Leo Bersani and Lee Edelman, skeptical of "reproductive futurity." One of the unstated—and nearly unstatable—assumptions of sustainability discourse, after all, is that we should care about the future of humanity: this is an assumption that makes sense only in the context of a commitment to the reproduction of our species, if not ourselves. The paradox of futurity was intuited long ago by our dismal population theorist William Forster Lloyd, who noted that when the consequences of individual actions are borne by the social body, "the future is struck out of the reckoning."[19] The problem with thinking about environmental stewardship as sustainability is that to care about the future in these terms one must have a personal investment in it, but because of Malthusian population dynamics the planet cannot indefinitely maintain all of the personal investments needful.

Notes

1. Even at this very high level of abstraction, the concept raises many unanswerable questions. Sustainability for whom or what? The thoroughly anthropocentric Brundtland Report (officially entitled *Our Common Future*) defines sustainable development as meeting "the needs of the present without compromising the ability of future generations to meet their own needs." Even assuming sustainability is for future generations of humans (a pretty big assumption), we are left with enormous questions. *All* human beings? How many? At what standard of existence? And for how long? Further, these basic questions don't even begin to address the problem of exactly how this state of sustainability is to be brought about. *Our Common Future: Report of the World Commission on Environment and Development*, Chapter 2, "Towards Sustainable Development," http://www.un-documents.net/ocf-02.htm#IV.
2. Every essay on sustainability is legally required to begin with the term's usage history according to the *OED*. Recent excellent treatments of the concept by Allen MacDuffie and Leerom Medovoi go further, unearthing tensions in the word's etymological history that imply its inherent incoherence or untenability. Allen MacDuffie, *Victorian Literature, Energy, and the Ecological Imagination* (Cambridge: Cambridge University Press, 2014), 102–04; and Leerom Medovoi, "A Contribution to the Critique of Political Ecology: Sustainability as Disavowal," *New Formations* 69 (2010), 129–43,130–32.
3. See Ulrich Grober, *Sustainability: A Cultural History*, trans. Ray Cunningham (Totnes: Green Books, 2012) and Paul Warde, "The Invention of Sustainability," *Modern Intellectual History* 8, no. 1 (2011), 153–70.
4. Thomas Malthus, *An Essay on the Principle of Population* (Library of Economics and Liberty, 2000), http://www.econlib.org/library/Malthus/malPop1.html.
5. The food curve can be pushed upward by technological advances that increase production; it was widely believed that the invention of nitrogen fertilizers in the early twentieth century solved (or at least indefinitely delayed) the Malthusian conundrum. However, the environmental impacts of the byproducts of chemical fertilizers (along with those of monoculture crops and other agribusiness practices) have put paid to that fantasy. I am grateful to Benjamin Morgan for this insight. (Malthus's own suggested solution—perhaps an equally fantastic one—was abstinence and late marriage.)

6. For a recent excellent treatment of the economic-environmental impacts of the industrial revolution, see Andreas Malm, *Fossil Capital: The Rise of Steam Power and the Roots of Global Warming* (New York: Verso, 2016).
7. Catherine Gallagher notes that both John Ruskin and Charles Dickens imagined a possibly self-sustaining sanitation system in which bodily products and remains (including corpses, human waste, and blood products) would nourish further production in a closed and infinite cycle of renewal. As Justus von Liebig laments in 1840, "When we consider the immense value of night-soil [human waste] as a manure, it is quite astounding that so little attention is paid to preserve it. The quantity is immense which is carried down by the drains in London to the River Thames, serving no other purpose than to pollute its waters. . . . [T]he value of the manure thus lost amounts annually to several *millions of pounds sterling*." Catherine Gallagher, *The Body Economic: Life, Death, and Sensation in Political Economy and the Victorian Novel* (Princeton: Princeton University Press, 2006), 100–07; Justus von Liebig, *Chemistry, In Its Application to Agriculture and Physiology* (Cambridge: John Owen, 1842), 194n (emphasis original).
8. Jesse Oak Taylor, *The Sky of Our Manufacture: The London Fog in British Fiction from Dickens to Woolf* (Charlottesville: University of Virginia Press, 2016); Richard Jefferies, *After London* (Mineola: Dover Publications, 2015); M. P. Shiel, *The Purple Cloud* (London: Penguin Classics, 2012).
9. William Forster Lloyd, *Two Lectures on the Checks to Population*, rpt. as "W. F. Lloyd on the Checks to Population," *Population and Development Review* 6, no. 3 (1980), 479. The term "tragedy of the commons" was coined by Garrett Hardin, "The Tragedy of the Commons," *Science* 162, no. 3859 (1968), 1243–48.
10. Lloyd, *Two Lectures*, 480.
11. William Stanley Jevons, *The Coal Question: An Enquiry Concerning the Progress of the Nation* (London: Macmillan, 1865); Edward Hull, *The Coal-Fields of Great Britain: Their History, Structure and Duration* (London: Edward Stanford, 1861); William Armstrong, "Address of the President," *Report of the Thirty-Third Meeting of the British Association for the Advancement of Science* (London: John Murray, 1864).
12. Benjamin Morgan, "Scalar Rupture: Coal at the Holocene/Anthropocene Boundary" (Unpublished ms., 2017), 3.

13. Elizabeth Carolyn Miller, "William Morris, Extraction Capitalism, and the Aesthetics of Surface," *Victorian Studies* 57, no. 3 (2015): 395–404, and "Extraction Ecologies and Victorian Literature," keynote address, North American Victorian Studies Association Conference (Banff, Canada, November 18, 2017).
14. John Stuart Mill, *Principles of Political Economy with some of their Applications to Social Philosophy* (Library of Economics and Liberty), http://www.econlib.org/library/Mill/mlP61.html; Karl Marx, *Theories of Surplus Value*, trans. G. A. Bonner and Emile Burns (New York: International, 1952), 427.
15. As Jason W. Moore points out, the "endless frontier strategy of historical capitalism is premised on a vision of the world as interminable: this is the concept of capital and its theology of limitless substitutability" (*Capitalism in the Web of Life: Ecology and the Accumulation of Capital* [New York: Verso, 2015], 66).
16. Herman E. Daly, *Steady-State Economics*, 2nd. ed. (Washington, DC: Island Press, 1991) and *Beyond Growth: The Economics of Sustainable Development* (Boston: Beacon Press, 1996).
17. Stacy Alaimo, "Sustainable This, Sustainable That: New Materialisms, Posthumanism, and Unknown Futures," *PMLA* 127, no. 3 (2012): 558–64; Allan Stoekl, "'After the Sublime,' After the Apocalpyse: Two Versions of Sustainability in Light of Climate Change," *Diacritics* 41, no. 3 (2013): 40–57; Jeremy Davies, *The Birth of the Anthropocene* (Berkeley: University of California Press, 2016); Medovoi, "Contribution."
18. Davies, *The Birth of the Anthropocene*, 198–99.
19. Lloyd, *Two Lectures*, 479.

Technology

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WE live in a built world, one the Victorians helped make. The rooms in which we live and work are filled with clothespins, books, lightbulbs, and other marks of material culture. Modern industrial societies are artefactual, however, not just in their manifest contents but in their