

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 Apocalypse: 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

CHARLIE TYSON

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

deep contours. We are powered, connected, and fed by vast systems of transportation, waste disposal, and electricity. A blossoming of scholarship in “thing theory” has focused on the former category of objects—on private, often domestic, commodities such as chairs, curtains, and doorknobs.<sup>1</sup> Only recently have literary and cultural scholars turned their attention to infrastructural systems such as highways and electrical grids.<sup>2</sup> Yet infrastructure, these scholars find, is boring. Distant from the “glamor of the commodity” and defined by aspirations toward predictability and regularity, infrastructure is noticeable only when pipes hiss or lights flicker off.<sup>3</sup>

The concept of the “technological sublime”—feelings of awe and terror aroused by impressive-yet-alien technologies such as aviation or artificial intelligence—captures the estrangement many people feel from the technologies that undergird their existence. This estrangement is produced by the discrepancy between large-scale technological systems and the human frame of reference. By casting the encounter between human being and technological apparatus in aesthetic terms, the “technological sublime” opens the way for literary and cultural scholars to consider the perceptual qualities involved in such encounters.<sup>4</sup>

At the heart of the technological sublime lies a paradox. Edmund Burke’s *Philosophical Enquiry* (1757) identifies the sublime strongly with objects in the natural world: the “gloomy forest,” the “howling wilderness,” and the “starry heaven”; the lion, panther, and rhinoceros; the cries of animals.<sup>5</sup> In the industrial age and after, a new site of sublimity emerged. The technological systems that altered patterns of economic and daily life for wealthy nations in the nineteenth and early twentieth centuries—such systems as railroads, electric power, and aviation—frequently achieved, in their scale, power, and strangeness, a form of the sublime.<sup>6</sup> Yet, how can technological instruments designed by human beings and under human command stir the feelings of terror and lack of control Burke holds as requisite for sublimity?

Burke draws just one example of the sublime—the noise of artillery—from technology.<sup>7</sup> Many of his examples, however, come from architecture. Built artifacts that seem to have required immense labor for their construction, or which achieve an “artificial infinite” by means of successive, uniform parts (such as seemingly endless rows of pillars), achieve a sublime grandeur.<sup>8</sup> We might think that technological systems could be ushered into Burke’s category of the sublime under the same rubric that admits architecture. Burke’s discussion of “use,” however, gives us cause for hesitation: “Whenever strength is only useful, and employed

for our benefit or our pleasure, then it is never sublime.” That which acts “in conformity to our will” can never be the cause of a grand, terrifying conception.<sup>9</sup> Technological systems possess tremendous power, but they are also objects of use.

The technological sublime, the historian David Nye suggests, may be a distinctively American category. A sense of awe directed at American technological achievements, often experienced in crowds, has since the early national period, Nye contends, produced momentary bonds of democratic solidarity while consecrating technological objects with metaphysical significance.<sup>10</sup>

Yet across the Atlantic in the early decades of the nineteenth century, British cities, too, were being transfigured by structures at once vast and unsettling—gas works, railway stations, tunnels, aqueducts, and factories. (Some elements of city planning that initially struck Victorian elites as sublime would later seem just ugly.<sup>11</sup>) Observing Birmingham in the 1820s, Thomas Carlyle wrote: “Torrents of thick smoke . . . are issuing from a thousand funnels . . . You hear the clank of innumerable steam-engines, the rumbling of cars and vans . . . I have looked into their iron works where 150,000 men are smelting the metal in a district a few miles to the north; . . . their tubs and vats, as large as country churches.”<sup>12</sup> The figures Carlyle reports are large (“a thousand funnels . . . 150,000 men”) but never exact; of the steam-engines that clank and whine, he can say only that they are “innumerable.” His description achieves what Caroline Levine calls the “enormity effect,” a rhetorical strategy that draws on the tradition of the sublime “to train readers to extrapolate a vast world” beyond a text’s limited frame of reference.<sup>13</sup> Carlyle invites us to imagine technological and economic transformations of dizzying scale, gesturing toward an uncountable magnitude by means of suggestive approximation.

A similar fascination with the engineering feats accomplished daily by the railways was, Paul Fyfe observes, widespread among Victorian travelers. F. S. Williams, a railway booster and author of the popular railway history *Our Iron Roads*, recorded his awe at the “immense number of passengers and enormous bulk of goods . . . drawn by engines of the most complicated mechanism, held together with millions of rivets, each engine containing an intricate network of tubes, numerous cranks, and other delicate pieces of workmanship . . . In every separate item of all these innumerable parts lurk elements of danger, and the slightest fracture may produce disaster.”<sup>14</sup> The railways’ mechanical components are (again) “innumerable”: they defy normal human comprehension and

exact representation. Here we see how evidence of human ingenuity—the carefully designed rivets and cranks and gears—can, when sustained at scale, become overawing for any single person (excepting, perhaps, a well-trained engineer). Ordinary Victorian travelers, anxious about boiler explosions or mechanical failures, could only surrender themselves to the intermingled feelings of admiration and dread constitutive of sublime experience.

These preliminary examples suggest that something akin to the technological sublime, no doubt distinct from the well-documented American variant, was a feature of nineteenth-century British culture. Cases where the technological sublime is conspicuously marginal, however, can be just as revealing. One might expect that the telegraph system, with undersea cables stretching from Britain to India, would stir feelings of awe and effacement among nineteenth-century observers.<sup>15</sup> Yet, one of the most common metaphors used by Victorian commentators to describe the telegraph can be characterized as anti-sublime. Victorian writers and technologists repeatedly likened the electric telegraph to the human nervous system. The networks of cables were the nerves, carrying electric messages from one site to another. The telegraph office, where signals were received and transmitted, was the brain.<sup>16</sup> Victorian elites thereby assimilated a complex technological system into a human frame of reference. Human power was not effaced by the telegraph but amplified; the telegraph conducted “intelligence” through circuits that mimicked and extended the workings of the human body.

The Victorian metaphor of the telegraph as human body is revealing, because representations of technology aimed at stirring a sense of sublimity often do so by abandoning reference to the human body and human labor. (Thus marketing materials for the nineteenth-century American transcontinentals routinely omitted mention of workers and machine operators, instead depicting the enormous locomotives as self-propelled beings, steely gleams streaking west across the continent.<sup>17</sup>) The technological sublime frequently accompanies human erasure.

This pattern of human effacement in cultural responses to large technological systems—the steam engines too numerous to count; the rivets and tubes too intricately organized for a single mind to comprehend—suggests a lingering truth in Burke’s insight that use value, even when joined to great power, strips an object of obscurity and terror. With the deletion or minimization of human involvement, technological systems begin to appear autonomous, untrammelled from considerations of use.

Yet the Victorian technological sublime (and anti-sublime) reveals something else, too, about the relation between complex technological systems and the human frame of reference. Strictly speaking, we as human beings, or at least our engineers, control the vast systems that shape our lives. But the more typical felt experience may be that those systems rule us instead.

## NOTES

1. See Elaine Freedgood, *The Ideas in Things: Fugitive Meaning in the Victorian Novel* (Chicago: University of Chicago Press, 2006).
2. Michael Rubenstein, Bruce Robbins, and Sophia Beal, "Infrastructuralism: An Introduction," *Modern Fiction Studies* 61, no. 4 (2015): 575–86; Caroline Levine, "Infrastructuralism, or the Tempo of Institutions," in *On Periodization: Selected Essays from the English Institute*, ed. Virginia Jackson (ACLS Humanities E-Book, 2010).
3. Rubenstein, Robbins, and Beal, "Infrastructuralism," 577.
4. So far, the term has been lodged in the history of American technology as a way of describing American technophilia; see David Nye, *American Technological Sublime* (Cambridge: MIT Press, 1994). The intellectual historian Perry Miller coined the term in *The Life of the Mind in America* (New York: Harcourt, Brace, and World 1965).
5. Edmund Burke, *A Philosophical Enquiry into the Origin of our Ideas of the Sublime and Beautiful*, ed. Adam Phillips (Oxford: Oxford University Press, 1990), 53, 71, 61, 77.
6. Nye, *American Technological Sublime*, xi–xx.
7. Burke, *Philosophical Enquiry*, 75.
8. Burke, *Philosophical Enquiry*, 68–71.
9. Burke, *Philosophical Enquiry*, 60–61.
10. Nye, *American Technological Sublime*, xiv.
11. Nicholas Taylor, "The Awful Sublimity of the Victorian City," in *The Victorian City: Images and Realities*, Vol. 2, ed. H. J. Dyos and Michael Wolff (London: Routledge & Kegan Paul, 1973), 434.
12. Quoted in Herbert Sussman, "Industrial," in *A New Companion to Victorian Literature and Culture*, ed. Herbert F. Tucker (Oxford: Blackwell, 2014), 249.
13. Caroline Levine, "The Enormity Effect: Realist Fiction, Literary Studies, and the Refusal to Count," *Genre* 50, no. 1 (2017): 59–75.

14. Quoted in Paul Fyfe, *By Accident or Design: Writing the Victorian Metropolis* (Oxford: Oxford University Press, 2015), 189–90.
15. Tom Standage, *The Victorian Internet: The Remarkable Story of the Telegraph and the Nineteenth Century's On-line Pioneers* (New York: Walker and Company, 1998), 102–03.
16. Iwan Rhys Morus, “‘The Nervous System of Britain’: Space, Time, and the Electric Telegraph in the Victorian Age,” *British Journal for the History of Science* 33, no. 4 (2000): 455–75.
17. Richard White, *Railroaded: The Transcontinentals and the Making of Modern America* (New York: Norton, 2011), 225–28.



## Teleology

DEVIN GRIFFITHS

[It] would not, after all, be a bad sort of teleology to keep it in mind, as a heuristic fiction or Kantian ‘idea’, in the midst of our political action. . . . Teleology usually involves the assumption that there is some potential in the present which could result in a particular sort of future. But this need not mean that this potential lurks within the present like petals within a bud. It is present rather in the sense that I have a potential to travel up to Glasgow right now, which is hardly some kind of secret structure of my being. Teleology here is just a way of describing where I am in the light of where I could feasibly get to.

—Terry Eagleton, *The Illusions of Postmodernism*<sup>1</sup>

FEW words were as reviled in literary criticism and theory of the eighties, nineties, and early aughts as “teleology.” It seems strange when you remember that teleology—derived from the Greek word *τέλος*, “end” or “purpose”—simply means interpreting things in relation to their possible goal or outcome. It’s hard to imagine reading a novel without any consideration of its conclusion, or a sonnet without considering what its volta seems to do. And, as Eagleton notes, you can’t interpret (much less formulate) politics without addressing the question of purpose, the ends desired as well as the means by which those ends might be achieved. In our current moment, as we grapple with the problem of climate change and collective action, as we struggle to figure out