

The Uses and Risks of Adaptation

1. Archie Carr, *Ulendo: Travels of a Naturalist In and Out of Africa* (New York: Knopf, 1964), xi–xii.
2. George Orwell, *The Road to Wigan Pier* (New York: Harcourt, [1937] 1972), 207.
3. Edward R. Tufte, *The Cognitive Style of PowerPoint* (Cheshire, CT: Graphics Press, 2003), 3, 4. Tufte is best known for his book *The Visual Display of Quantitative Information* (Cheshire, CT: Graphics Press, 1983), a landmark exposition on how to present graphs, charts, maps, and tables effectively, without losing important information.
4. Clive Thompson, "PowerPoint Makes You Dumb," *New York Times Magazine*, December 14, 2003, 88.
5. David Leonhardt, "Technology Eases the Ride to Higher Tolls," *New York Times*, July 4, 2007, C1, C4.

When Machines Replace People

1. In Karel Capek's play *R. U. R.: (Rossum's Universal Robots): A Fantastic Melodrama* (trans. Paul Selver [Garden City, NY: Doubleday, Page, 1923]), Capek, who coined the word *robot*, lamented the folly of replacing humans with machines. The ending is happier than what we are likely to experience. For another take on the same theme—the preciousness of the human spirit—see P. D. James's *The Children of Men* (Toronto: Penguin Books, 1992).

Pseudocommunities

1. Bruce Wilshire, *The Moral Collapse of the University: Professionalism, Purity, and Alienation* (Albany: State University of New York Press, 1990), 9.
2. Lewis Mumford, *The City in History: Its Origins, Its Transformations, and Its Prospects* (New York: Harcourt, Brace and World, 1961); see especially pp. 511–513 ("Families in Space") for an explanation of why modern America has proved such fertile soil for pseudocommunities.
3. Jane Austen, *Emma* [1815], vol. 4 of *The Oxford Illustrated Jane Austen*, 3rd ed., ed. R. W. Chapman and M. Lascelles (Oxford: Oxford University Press, 1988) (also see the citations for the chapter titled "Jane Austen and the World of the Community"); Elizabeth Gaskell, *North and South* (London:

- Penguin Books, [1854–55], 1970); *Wives and Daughters* (London: Penguin Books, [1864–66] 1986). Elizabeth Gaskell, like Jane Austen who preceded her, had an exceptional ability to describe the society and environment around her. Both of these books record changes in traditional community life; the first because of the new power of industrial development, and the second because of the growing importance of science.
4. Peter W. Huber and Mark Mills, "Dig More Coal—The PCs Are Coming," *Forbes* (31 May 1999), 70–72. Many people think of the Internet and e-mail as free, but as the authors point out, it takes "about 1 pound of coal to create, package, store and move 2 megabytes of data. The digital age, it turns out, is very energy-intensive" (70).
 5. Bill McKibben, *The Age of Missing Information* (New York: Plume, 1993); George W. S. Trow, *Within the Context of No Context* (New York: Atlantic Monthly Press, [1981] 1997); Clifford Stoll, *High-Tech Heretic* (New York: Anchor Books/Random House, 1999). (The three books cited here are important reading for anyone who thinks that electronic pseudocommunities are the way of the future.)
 6. Norman H. Nie and D. S. Hillygus, "The Impact of Internet Use on Sociability: Time-Diary Findings," *IT and Society* 1 (2002): 1–20. The principal finding of this extensive study was: "On average, the more time spent on the Internet at home the less time spent with friends, family and on social activities; in contrast, Internet use at work has little effect on sociability" (11). These authors conclude that the Internet, when used at home, displaces social contact—hardly a surprising finding. Another example of the many papers on this subject is Eric J. Moody, "Internet Use and Its Relationship to Loneliness," *CyberPsychology and Behavior* 4 (2001): 393–401. But for a more cautious view, see Robert D. Putnam, *Bowling Alone: The Collapse and Revival of American Community* (New York: Simon and Schuster, 2000). For Putnam, who also cites extensive research, television is more of a villain than the Internet. He states, "It is precisely those Americans most marked by . . . dependence on televised entertainment who were most likely to have dropped out of civic and social life—who spent less time with friends, were less involved in community organizations, and were less likely to participate in public affairs." He qualifies his assessment somewhat by noting that "we cannot be entirely certain that [heavy users of television and other electronic entertainment] would be more sociable in the absence of television" (246).
 7. Trip Gabriel, "Computers Help Unite Campuses But Also Drive Some Students Apart," *New York Times*, Nov. 11, 1996.
 8. H. F. Harlow and R. R. Zimmerman, "Affectational Responses in the Infant Monkey," *Science* 130 (1959): 421–432.

Obsolescence

1. A complete list of references on the causes of the dinosaurs' extinction would probably be longer than this book. Here are a few, listed in chronological order, that I have found interesting: Editor, "How Geomagnetic Reversals May Wipe Out Animals," *New Scientist* (Jan. 29, 1976): 231; Dale A. Russell, "The Gradual Decline of the Dinosaurs—Fact Or Fallacy?" *Nature* 307 (1984): 360–361; J. L. Cloudsley-Thompson, "The Success of the Dinosaurs," *New Scientist* (May 24, 1984): 13–17; Virginia Morell, "How Lethal Was the K-T Impact?" *Science* 261 (1993): 1518–1519; David Archibald, "Were Dinosaurs Born Losers?" *New Scientist* (Feb. 13, 1993): 24–32; Editor, "What Really Killed the Dinosaurs?" *New Scientist* (Aug. 16, 1997): 23–27; Charles R. Marshall, "Mass Extinction Probed," *Nature* 392 (1998): 17–20; Richard A. Kerr, "No 'Darkness at Noon' to Do In the Dinosaurs?" *Science* 295 (2002): 1445, 1447; Kate Ravilious, "Killer Blow," *New Scientist* (May 4, 2002): 28–31; Arturo Casadevall, "Fungal Virulence, Vertebrate Endothermy, and Dinosaur Extinction: Is There a Connection?" *Fungal Genetics and Biology* 42 (2005): 98–106.
2. George Sturt, *The Wheelwright's Shop* (Cambridge: Cambridge University Press, [1923] 1993), 202. George Sturt, who also wrote under the name of George Bourne, wrote some of the best early twentieth-century descriptions of the impact of technological change—and the "meaningless" work that came with it—on the lives of people and their communities; see George Sturt [George Bourne, pseud.], *Change in the Village* (New York: Augustus M. Kelley, [1912] 1969). Two other works that provide great insights into change and obsolescence are: Christopher Lasch, *The True and Only Heaven: Progress and Its Critics* (New York: W. W. Norton, 1991); and Kirkpatrick Sale, *Rebels against the Future: The Luddites and Their War on the Industrial Revolution: Lessons for the Computer Age* (Reading, MA: Addison-Wesley, 1995).
3. Jeff Rothenberg, "Ensuring the Longevity of Digital Documents," *Scientific American* (Jan. 1995), 44–45.
4. Wendell Berry, *The Unsettling of America: Culture and Agriculture* (San Francisco: Sierra Club Books, 1977), 59.
5. Stephen Jay Gould, *Wonderful Life: The Burgess Shale and the Nature of History* (New York: Norton, 1989); one of the best, most thoroughly readable, and fascinating books on evolutionary history. Gould understood the danger of making sweeping generalizations involving such concepts as obsolescence.

Accelerating Social Evolution

1. John Ralston Saul, *Voltaire's Bastards: The Dictatorship of Reason in the West* (New York: Vintage, 1992), 64.
2. Scott Adams, *The Dilbert Principle: A Cubicle's-Eye View of Bosses, Meetings, Management Fads and Other Workplace Afflictions* (New York: HarperCollins, 1996), 198. Dilbert seems to have struck a nerve among modern corporate Americans: a quick Google search for "Dilbert," made in July 2007 found 12,800,000 matches. Perhaps the best and funniest commentary on the curious and frequently self-destructive structure and (mal)function of modern organizations was written long before Dilbert by the naval historian C. Northcote Parkinson: C. Northcote Parkinson, *Parkinson's Law: And Other Studies in Administration* (Boston: Houghton Mifflin, 1957).
3. Paul De Palma, "http://www.when_is_enough_enough?.com," in *The Best American Science and Nature Writing 2000*, ed. David Quammen (Boston: Houghton Mifflin, 2000), 66–67.
4. Erwin Chargaff, *Heracleian Fire: Sketches from a Life before Nature* (New York: Rockefeller University Press, 1978), 167.

Writing

1. P. G. Wodehouse, *The Most of P. G. Wodehouse* (New York: Simon and Schuster, 1960); *Right Ho, Jeeves* (Harmondsworth, UK: Penguin, 1953). There is no point in criticizing bad writing without providing examples of how writing ought to be done. Wodehouse produced nearly one hundred books during his long life, all elegantly written and eminently readable. *Right Ho, Jeeves* is one of his best and funniest; the other volume listed includes some of his finest short stories.
2. For other examples, see Richard Mitchell, *The Graves of Academe* (Boston: Little, Brown, 1981). Mitchell is one of our most insightful, amusing—and ruthless—critics of bad writing.
3. As instant messaging has been supplemented by the highly abbreviated text messaging and its variants, my students' writing seems to have deteriorated further. But at least the affect-effect distinction no longer confuses them. Now, people have abandoned *affect* entirely, in favor of *impact* used as a verb, which cannot be confused with *effect*. This has impacted me greatly, partly because I am reminded of wisdom teeth when I hear it, and partly because the usefully nuanced neutrality of *affect* has given way to the

heavy-handed bludgeoning of *impact*. See Sven Birkerts, *The Gutenberg Elegies: The Fate of Reading in an Electronic Age* (New York: Fawcett Columbine, 1994). Many people have claimed that modern problems with writing are a direct result of the demise of reading among a population hooked on TV, the Internet, and electronic communication. Birkerts is among the most eloquent and persuasive of them. See also: Nicholas Carr, “Is Google Making Us Stupid?” *Atlantic* 302 (July/August 2008), 56–63.

4. George Orwell, “Politics and the English Language,” in *The Collected Essays, Journalism and Letters of George Orwell, IV: In Front of Your Nose, 1945–1950*, ed. Sonia Orwell and Ian Angus (New York: Harcourt Brace Jovanovich, 1968), 127–140. This is the classic essay on the connection between writing and life.
5. Improving one’s writing is a lifelong affair, but it need not be onerous or dull. Two readily available books on writing that I have found useful and fun to read are Strunk and White, a slim classic which has gone through several editions, and Garner, a more contemporary and much more comprehensive work, well on its way to becoming a classic: William Strunk Jr. and E. B. White, *The Elements of Style*, 3rd ed. (New York: Macmillan, 1979); Bryan A. Garner, *Garner’s Modern American Usage* (New York: Oxford University Press, 2003). Because Garner distinguishes between and describes both American and British usage, his book is useful beyond North America.

Part Three: Toward a Sustainable Economics

1. Wendell Berry, *Life Is a Miracle: An Essay against Modern Superstition* (Washington, DC: Counterpoint, 2000), 54.

Affluence and Austerity

1. Paul L. Wachtel, *The Poverty of Affluence: A Psychological Portrait of the American Way of Life* (Philadelphia: New Society, 1989).
2. Michael N. Dobkowski and Isidor Wallimann, eds., *The Coming Age of Scarcity: Preventing Mass Death and Genocide in the Twenty-first Century* (Syracuse, NY: Syracuse University Press, 1998); Sir James Goldsmith, *The Trap* (New York: Carroll and Graf, 1994); James Howard Kunstler, *The Long Emergency: Surviving the End of Oil, Climate Change, and Other Converging Catastrophes of the Twenty-First Century* (New York: Grove Press, 2006); Matthew R. Simmons,

Twilight in the Desert: The Coming Saudi Oil Shock and the World Economy (New York: John Wiley and Sons, 2005).

3. Harry Wiland and Dale Bell, *Edens Lost and Found: How Ordinary Citizens Are Restoring Our Great American Cities* (White River Junction, VT: Chelsea Green, 2006).

Energy and Friendly Fire

1. David Pimentel and Tad W. Patzek, “Ethanol Production Using Corn, Switchgrass, and Wood; Biodiesel Production Using Soybean and Sunflower,” *Natural Resources Research* 14 (March 2005): 65–76. Pimentel was one of the first scientists to document, in 1973, the enormous energy costs of modern agriculture (corn), and Patzek is a world authority on energy, peak oil, and alternative fuels. Here, the authors show that the production of ethanol from corn, switchgrass, and wood, and the production of biodiesel from soybeans and sunflowers require more energy inputs than the fuels, themselves, provide. To claim that these technologies will solve the energy crisis is another example of pretending on a grand scale.
2. Mathis Wackernagel and William Rees, *Our Ecological Footprint: Reducing Human Impact on the Earth* (Philadelphia: New Society Publishers, 1996), 27, 127. The concept of the “ecological footprint”—the amount of land needed to provide the energy and materials and to absorb the wastes of an average person living in a particular country—has become widely used since the publication of this immensely readable and amusingly illustrated little book. The ecological footprint of the United States is calculated by the authors to be 5.1 hectares (12.6 acres) per person. The authors, Canadians, show that most industrialized countries have an “ecological deficit”—in other words, they require much more land than they actually have to meet their consumption and waste assimilation needs. The deficit is made up by the nonindustrialized nations.
3. P. H. Tyedmers, R. Watson, and D. Pauly, “Fueling Global Fishing Fleets.” *Ambio* 34 (2005): 635–638.
4. Pimentel, D., R. Zuniga, and D. Morrison, “Update on the Environmental and Economic Costs Associated with Alien-Invasive Species in the United States,” *Ecological Economics* 52 (2005): 273–288.
5. Angus Wright, *The Death of Ramón González: The Modern Agricultural Dilemma*, rev. ed. (Austin: University of Texas Press, 2005). This classic work, first published in 1990, describes the impact of export agribusiness, with its