

## BIBLIOGRAPHY

- Addison, Joseph, and Richard Steele. "On the Pleasures of the Imagination." In *Selections from The Tatler and The Spectator*. Edited by Robert Allen. New York: Holt, Rinehart and Winston, 1957.
- Dickie, George. *Evaluating Art*. Philadelphia: Temple University Press, 1988.
- Goldman, Alan. "The Education of Taste." *British Journal of Aesthetics* 30 (1990): 105-116.
- Hume, David. *Of the Standard of Taste and Other Essays*. Edited by J. W. Lenz. New York: Bobbs-Merrill, 1965.
- Hutcheson, Francis. *An Inquiry into the Original of Our Ideas of Beauty and Virtue*. New York: Garland, 1971.
- Kant, Immanuel. *Critique of Judgment*. Translated by Werner S. Pluhar. Foreword by Mary J. Gregor. Indianapolis: Hackett, 1987.
- Kivy, Peter. "Recent Scholarship and the British Tradition: A Logic of Taste, The First Fifty Years." In *Aesthetics: A Critical Anthology*, edited by F. Dickie, R. Schafer, and R. Roblin. 2nd ed. New York: St. Martin's, 1989.
- Shaftesbury, Anthony Ashley Cooper. *Characteristics of Men, Manners, Opinions, Times*. New York: Bobbs-Merrill, 1964.
- Sibley, Frank. "Aesthetic Concepts." *Philosophical Review* 68 (Oct. 1959): 421-450.

David E. W. Fenner

**TECHNOLOGY.** Introduced in the first decades of the nineteenth century, the word *technology* signified the pursuit of a science to encompass all the *industrial arts*. *Mechanical art*, a term used in medieval and early modern Europe, indicated something different because it included, for example, painting and sculpture. The introduction of the term *technology* corresponded somewhat contemporaneously with the introduction of other key terms for modernity, including *scientia*, *class*, *capitalism*, and *socialism*. They all come from a time troubled by the "machinery question," a fundamental topic for both political economists and Romantic authors during the same period. This question was posed as a response to the installation of an endless series of novel machines in newly built textile factories, which seemed to have nurtured a class differentiation between those who were amassing fortunes by owning the machines and those who were barely paid at subsistence level to work in them. Having won a decisive battle against those who defended the old order by crediting land rather than labor as being the source of value, classical political economists were unprepared to challenge the popular assumption of machinery being the source of value. The dramatic change similarly confused the best of the future critics of these economists. A young Karl Marx (1818-1883) assumed that the new machinery, despite the hardships that it imposed on many, inevitably paved the way to a better future society.

The denaturalization of the landscape ensuing from the spread of steam engines overwhelmed the Romantics, who lamented the loss of a better (past) society. Despite their unheeded objections, for decades England had used previous "atmospheric" engines for draining mines, with pistons that moved up by the pressure of the steam and down by the

pressure of the atmosphere, in the pattern of the engine that Thomas Newcomen introduced early in the eighteenth century. By the last two decades of the same century, following James Watt's series of modifications, there were also engines with pistons moving in both directions only by the pressure of the steam. Like the electronic computer of the last decades of the twentieth century and the electric generator of the last decades of the nineteenth, Watt's steam engine was heralded as a universal (global, general purpose) machine, that is, a machine that could be automatically used in all places and at all times.

A technological progressive in comparison to Newcomen, Watt turned out to be conservative next to those who configured the successor models to his engine, namely, high-pressure steam engines versus his low-pressure model. A myriad of local reconfigurations were needed before the supposedly global steam engine could produce mechanical motion, first, strong enough to pull a train or propel a ship, and second, uniform enough to spin a fine textile or generate electricity. The need for reconfiguring a universal machine was repeated in the history of the supposedly universal electric generator and, more recently, regarding the supposedly universal electronic computer. The safety of low-pressure versus the efficiency of high-pressure engines has also been a perpetual issue, reproduced in the "battle of the currents" (direct versus alternating) between Thomas Edison and George Westinghouse during the 1880s and 1890s and the analog versus digital battle between engineers and mathematicians during the 1950s and 1960s. A symbol of progress in the 1880s, Edison in more recent times is viewed as exhibiting a puzzling conservatism. Biographers of the Massachusetts Institute of Technology electrical engineering professor Vannevar Bush are equally puzzled by how the preferences of this champion of mechanized analysis of the interwar period appear to be so incompatible with the prevalent post-World War II computing orientation.

## Technocracy

The work of a generation of historians sensitive to the symmetrical study of technological success and failure suggests that animated debates concerning choice between competing technologies have been the rule, not the exception. In the case of the automobile—another technology assumed to be globally preeminent—early-twentieth-century battery-run and internal-combustion-powered vehicles competed hard in various local contexts against each other (as well as against those moved by steam pressure). Now a technical hope of the future, the electric car did not lose in the past because of an internal technical inferiority; the gasoline-driven internal combustion engine prevailed because of an abstracted over a socially situated conception of technical efficiency. Unsurprisingly, the term *technology* became widely used only after the early-twentieth-century rise of "technocracy," a movement that promoted an abstracted conception of technical superiority by seeking to replace the acknowledged subjectivity of politics by the assumed objectivity of engineering.

The technocracy movement was propelled by the establishment of Fordism, a mode of mass production of automobiles with internal combustion engines. The technical