

societal import. This image was in marked contrast with the perceived captivity of scientists to what C. Wright Mills (1916–1962) called the “military-industrial complex.” However, Kuhn’s own reluctance to engage with his radical admirers suggests that his model was proposed more in the spirit of nostalgia than criticism and reform. This interpretation is supported by the original Harvard context for the restorative conception of revolution, the so-called Pareto Circle, a reading group named after the Italian political economist whose “circulation of elites” model was seen in the middle third of the twentieth century as the strongest rival to Karl Marx’s (1818–1883) theory of proletarian revolution. This group was convened in the 1930s by the biochemist Lawrence Henderson (1878–1942), who taught the first history of science courses at Harvard, and who was instrumental in the appointment of chemistry department head, James Bryant Conant (1893–1978), as university president. As president, Conant hired Kuhn and coauthored the case history on the chemical revolution that launched the latter’s more generally influential thinking about scientific revolutions.

SEE ALSO *Kuhn, Thomas; Philosophy of Science*

BIBLIOGRAPHY

- Cohen, H. Floris. 1994. *The Scientific Revolution: A Historiographical Inquiry*. Chicago: University of Chicago Press.
- Cohen, I. Bernard. 1985. *Revolution in Science*. Cambridge, MA: Harvard University Press.
- Fuller, Steve. 2000. *Thomas Kuhn: A Philosophical History for Our Times*. Chicago: University of Chicago Press.
- Kuhn, Thomas. 1962. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press. 2nd ed., 1970.

Steve Fuller

RHETORIC

Rhetoric is employed in both act and perception, in private thought and public communication. It is a means of communication as well as a theory for understanding and criticizing itself and the alternative means of communication. Wedded by the motives of both author and audience, the rhetoric of the social sciences is, like other rhetorics, simultaneously a guide for persuasive writing and a framework for intelligent reading. Centrally speaking, the rhetoric of the social sciences is the study and practice of argumentation and proof making, constrained only by the available means of persuasion. As such, rhetoric judges and is judged, it moves and is moved. Rhetoric is our ways and means of scientific deliberation. Following the models of

Aristotle (c. 384–322 BCE) and of Cicero (106–43 BCE), the Roman statesman and philosopher, rhetoric is also importantly about the *ethos* or *character* of the author; to some theorists, such as Quintilian (35–96 CE), it is nothing less than “the good person speaking well.”

Rarely claimed after Aristotle to be a science unto itself, rhetoric as a discipline has profoundly shaped the sciences, and each of the sciences, including the social sciences, have returned the sometimes painful favor by reshaping and redefining the theories and vocabularies of rhetoric; (cf. Socrates, in Plato’s *Phaedrus*: “The method of the science of medicine is, I suppose, the same as the science of rhetoric. . . . In both sciences it is necessary to determine the nature of something” [2005, p. 56]).

An ancient discipline of Greek and Latin origins established originally for pleadings in law, politics, and international commerce, the rhetorical theories of Cicero, Quintilian, St. Augustine (354–430 CE), and especially Aristotle proved to be of central importance to all of human communication, including scientific communication, and became the foundation for liberal education in Europe for more than twenty centuries. The influence of rhetoric was particularly strong in the medieval university *trivium*, of which St. Thomas Aquinas (c. 1225–1274) is a product. The trivium was organized around three basic subjects: grammar (that is, words, word order, phonics, sentence structure, and the like), logic (syllogism, cause and effect, quality versus quantity, and so forth), and rhetoric—with rhetoric presiding as queen and lord. Rhetoric was not a mere synthesis of grammar and logic, though partly it was; rhetoric provided fundamental training in strategic theories of persuasion. It gave students practice in the arts of persuasion and good citizenship that would be necessary for success in later pursuits, such as immediately in the *quadrivium* (the study of mathematics, science, and music) and followed by (at least for some students) investigations in philosophy, theology, and public service. Compared to today’s four- or five-step handbooks on “valid” scientific method, the handbooks of rhetoric appear, like scientific argument itself, copious. In Aristotle’s *On Rhetoric* alone, one can identify several scores of distinct strategies for argument and proof, and literally thousands more of unique “commonplaces” (or *topoi*)—that is, general and particular sites of knowledge and belief—for use in designing arguments (Aristotle [c. 350 BCE] 1991). The sum of the permutations, a subset of all the available means of persuasion, is immense.

In the sixteenth century a Frenchman named Peter Ramus (1515–1572) was deeply inspired by his surface reading of Plato (c. 427–347 BCE), the sophists, and other classical rhetoricians. A persuasive and powerful (but not, it seems, a highly original or ethical thinker), Ramus commenced to reduce the very word *rhetoric* to mere “style,”

“emotion,” “ornament,” or, in the foulest of moods, “manipulation”—a project that was encouraged by the so-called scientific revolution, of which Ramus was a part. In the century before René Descartes, Ramus thought a new language and taxonomy of thought were necessary to suit the scientific and mathematical ideas of the Renaissance, and Aristotelian rhetoric and logic, which students had been learning for centuries, was eclipsing, he said, the full reception of those ideas (Ong 1958; Olmsted 2006). That Ramus himself adapted ancient principles of rhetoric (such as the pairing of opposites) to enact his, as Ong puts it, “superficial” revolution was to Ramus and his followers apparently beside the point. The fleeting success of antirhetoric rhetoric—such as, to repeat, Ramus’s own reduction of the very word to mean “mere” style—had been observed in previous epochs, however, and would periodically recur.

In educated circles of the late eighteenth century, rhetoric reappeared in a form closer to its ancient, philosophical stature (Adam Smith and Jeremy Bentham each wrote a book on rhetoric, Smith emphasizing the rhetoric of *belles lettres* and Bentham the fallacies of political pundits). In the second half of the nineteenth century a notable addition to rhetoric and religion was supplied by Cardinal Newman in *Essay in Aid of a Grammar of Assent* (c. 1870). Rhetoric was then shoved far under the rug by neopositivists of the late nineteenth and early twentieth century (the neopositivists were a diverse group that included, among others, the scientist-philosophers Karl Pearson, Ernst Mach, and the so-called “scientific socialists”). But the logical positivists, the members and philosophical allies of the Vienna Circle, went even further and tried with some success to bury rhetoric along with other “cognitively meaningless” subjects such as, they said, metaphysics, theology, and poetry. In retrospect, the positivists said, their goal was not to kill off rhetoric and other humanistic disciplines but simply to banish them from scientific deliberation.

In the 1940s and 1950s the study of rhetoric was again revived to respectability, this time by the writings of I. A. Richards, Kenneth Burke, Richard McKeon, Chaim Perelman, Wayne Booth, Richard Weaver, and some others. A tiny postwar boom came to rhetoric by way of a delayed interest in the philosophy of Friedrich Nietzsche (1844–1900) and American philosophical pragmatism (represented by C. S. Peirce, William James, and John Dewey), both of which, like Aristotle and his followers, saw symbols and human action as inextricably entwined, even in science. A larger boost came from specific economic and cultural change. Demand for workers in the fields of technology, such as in for example the increasingly important radio and broadcast journalism industries, gave new value to the skills of the rhetorician. And in the 1970s and 1980s the philosophical and cultural

movements generally referred to as “postmodernism” gave new purpose to theories and arts of communication, that is, to rhetoric.

Nowadays the larger universities maintain a department of rhetoric. If lacking a full department of their own, academic rhetoricians find employment with journalists and others in a department of communication studies, with political scientists and others in a school of public affairs, or with scientists, historians, and philosophers in the departments of classics and science and technology studies.

Rhetoric is among the oldest of subjects and also the most fluid. The fluidity of rhetoric—its ability to adapt to radically changing social, economic, and political conditions—is essential to and descriptive of its fitness. Rhetoric is constantly under attack, often by highly skilled writers. To them—the Platonists, the Ramists, the Cartesians, the logical positivists, the scientific socialists, and the media journalists—the University of Chicago philosopher Richard McKeon (1900–1985) never tired of pointing out that because rhetorical choices are always being made—from the arid symbols of first-order predicate logic to the manifestos of scientists and philosophers who would deny the force of rhetoric—rhetorical training is always relevant to the human condition.

Contemporary social scientists are formally speaking innocent of their own rhetoric. That is not to say they do not grasp the words, facts, models, theories, experimental methods, and institutional environments with which and in which they operate; rather, with a few exceptions, professional societies and the modern university do not require more than an imitative capacity to work with other than highly specific, state-of-the-art rhetorical forms to gain in-group authority (Latour and Woolgar 1979; McCloskey 1985; Nelson, Megill, McCloskey 1987; Brown 1989; Klamer 2007). A mathematical article purporting to prove with utility theory the goodness of market economies, for example, is not likely to refer to the decline of “character” talk in nineteenth-century economic psychology. Nor is the positive social scientist likely to know or even care about the purposive erasure of “ethics” and “narrative” from twentieth-century economic thought. Today’s social scientist is trained to believe with the *Publication Manual of the American Psychological Association* that there is only one scientific style—today’s style, exemplified by articles published in the top-ranked journals. Her neatly separated section titles—introduction, theory, model, data, hypothesis test, policy implications, conclusion—are said by her teachers to represent distinct and nonrhetorical epistemic objects (Bazerman 1988). She is trained to “let the facts speak for themselves” and to keep her values out of sight (Burke 1950; Booth 1974; Fish 1990). Likewise, the empirical economist does

not bother to learn the rhetorical history of “statistical significance testing,” even though significance testing is his lifeblood, and does not achieve the crucial “test” of “economic” or “social scientific significance” his handbook on method imagines (McCloskey and Ziliak 1996; Ziliak and McCloskey 2007). The loss of rhetoric in social science training is more than a simple academic farewell to reason.

Some observers argue that without a basic training in rhetoric, a social scientist cannot know the difference between knowledge and belief, and why the difference matters. Quite a few others think that the reason to bring rhetoric back to the center of education—including graduate education—is that highly specialized scientists would become better equipped to speak with other specialists, and, perhaps more importantly, with policy makers and the general public. Specialization, Adam Smith observed, is on balance good for society; but he added that it is only through mutually beneficial exchange that the gains from specialization can be realized ([1762–1763] 1963). Rhetoric, some say, enables both the means and the ends.

BIBLIOGRAPHY

- Aristotle. [c. 350 BCE] 1991. *On Rhetoric: A Theory of Civic Discourse*. Trans. George A. Kennedy. New York: Oxford University Press.
- Bazerman, Charles. 1988. *Shaping Written Knowledge: The Genre and Activity of the Experimental Article in Science*. Madison: University of Wisconsin Press.
- Bentham, Jeremy. [1824] 1962. *The Handbook of Political Fallacies*. Intro. Crane Brinton. New York: Harper.
- Booth, Wayne C. 1974. *Modern Dogma and the Rhetoric of Assent*. Chicago: University of Chicago Press.
- Brown, Richard Harvey. 1989. *Social Science as Civic Discourse*. Chicago: University of Chicago Press.
- Burke, Kenneth. 1945. *A Grammar of Motives*. Berkeley and Los Angeles: University of California Press.
- Burke, Kenneth. 1950. *A Rhetoric of Motives*. Berkeley and Los Angeles: University of California Press.
- Fish, Stanley. 1990. Rhetoric. In *Critical Terms for Literary Study*, ed. Frank Lentricchia and Thomas McLaughlin, 203–222. Chicago: University of Chicago Press.
- Klamer, Arjo. 2007. *Speaking of Economics: How to Be in the Conversation*. London: Routledge.
- Klamer, Arjo, Robert M. Solow, and Donald N. McCloskey, eds. 1989. *The Consequences of Economic Rhetoric*. Cambridge, U.K.: Cambridge University Press.
- Lanham, Richard A. 1991. *A Handlist of Rhetorical Terms*. Chicago: University of Chicago Press.
- Latour, Bruno, and Steve Woolgar. 1979. *Laboratory Life: The Social Construction of Scientific Facts*. New York: Sage.
- McCloskey, Deirdre N. [1985] 1998. *The Rhetoric of Economics*. Madison: University of Wisconsin Press.
- McCloskey, Deirdre N., and Stephen T. Ziliak. 1996. The Standard Error of Regressions. *Journal of Economic Literature* 34 (March): 97–114.
- McKeon, Richard. 1987. *Rhetoric: Essays in Invention and Discovery*. Ed. and intro. Mark Backman. Woodbridge, CT: Ox Bow Press.
- McKeon, Richard. 1990. *Freedom and History, and Other Essays: An Introduction to the Thought of Richard McKeon*. Ed. Zahava K. McKeon. Chicago: University of Chicago Press.
- Nelson, John S., Allan Megill, and Donald N. McCloskey. 1987. *The Rhetoric of the Human Sciences*. Madison: University of Wisconsin Press.
- Olmsted, Wendy. 2006. *Rhetoric: An Historical Introduction*. Malden, MA: Blackwell.
- Ong, Walter J. [1958] 1983. *Ramus, Method, and the Decay of Dialogue*. Chicago: University of Chicago Press.
- Pearson, Karl. 1892. *The Grammar of Science*. London: J. M. Dent and Sons.
- Perelman, Chaim. 1979. *The New Rhetoric and the Humanities*. Dordrecht, Netherlands: D. Reidel.
- Plato. [c. 380s–370s BCE] 2005. *Phaedrus*. Trans. Christopher Rowe. London: Penguin.
- Rorty, Richard. 1982. *Consequences of Pragmatism*. Minneapolis: University of Minnesota Press.
- Smith, Adam. [1762–1763] 1963. *Lectures on Rhetoric and “Belle Lettres”*. Ed. John C. Bryce. Oxford: Clarendon Press.
- Ziliak, Stephen T., and Deirdre N. McCloskey. 2007. *The Standard Error: How Some Sciences Lost Interest in Magnitude, and What to Do About It*. Ann Arbor: University of Michigan Press.

Stephen Ziliak

RHODES, CECIL 1853–1902

Cecil John Rhodes, a British immigrant to southern Africa, founded the De Beers diamond monopoly, served as prime minister of Britain’s Cape Colony, and colonized Southern and Northern Rhodesia (later Zimbabwe and Zambia). Rhodes was the embodiment of late nineteenth-century rapacious capitalism and imperialism. His activities did much to shape important objects of social scientific study with respect to southern Africa: monopoly capitalism, migrant labor, and colonialism.

Rhodes was born to an English parson of modest circumstances. At the age of seventeen, he emigrated to southern Africa. Rhodes arrived in 1870, three years after a diamond-mining rush had begun in an area soon to be annexed by Britain and incorporated into the Cape Colony. The following year, Rhodes left for the diamond fields, where the town of Kimberley emerged to support the mines. Diamonds quickly transformed the region’s political economy, becoming the Cape Colony’s largest export by 1875 and leading to calls for confederation of the region’s colonies and settler states.