

OTHER THINGS EQUAL

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Economics: Art or Science or Who Cares?

Cambridge University Press just published a book called *Knowledge and Persuasion in Economics*. Nice book. The blurb was originally drafted to begin, "Is economics an art or a science?" That's the standard question that editors, journalists, and many economists like to ask about economics. Let's get this straight. Art or science? Entertainment or business? OK. Now we can talk.

As often in thinking, what's mainly wrong with Art vs. Science is the question itself. Here are three pieces of news about the question from the frontier of science studies, a field revolutionized over the past quarter century.

The first news is that the "art-science" distinction beloved by late-nineteenth century British writers is hard to defend. No one who has looked closely at the matter over the past quarter century has found seams in the universe that distinguish Art from Science. The linguist Solomon Marcus, for example, wrote a paper in 1974 called "Fifty-two Oppositions between Scientific and Poetic Communication" in which he tried to drive a wedge between what gets written in the *Eastern Economic Journal* and what gets written in *Poetry*. No go. Both use metaphors. Both are rational and irrational, explicable and ineffable, persuasive and expressive. Marcus did what amounts to an analysis of variance, and found as much variation within as between science and (poetic) art.

The physicist Tullio Regge remarked to Primo Levi, the chemist and writer, "I liked the sentence in which you say that the periodic table is poetry, and besides it even rhymes" [Levi and Regge, 1992, 9]. Levi responded, "The expression is paradoxical, but the rhymes are actually there. . . . To discern or create a symmetry, 'put something in its proper place,' is a mental adventure common to the poet and the scientist" [ibid., 9-10]. Attempts to distinguish art and science do not seem to work, though from the best workers. Thomas Kuhn noted truly that "we have only begun to discover the benefits of seeing science and art as one" [1977, 343]. But then he tried out a distinction anyway. He argued that beauty in science (a differential equation with startlingly simple solutions, say) is an input into the solution of a technical problem, whereas in art the solution of a technical problem (contraposto in representing a standing figure, say) is an input into the beauty. Maybe. Yet at different levels of the art and science you find different inputs and outputs. An economic scientist will work like an artist at a technical problem to achieve beauty; but then the beauty at another level will become an input into a technical problem. One might stand better amazed, as a physicist did of mathematics, about the unreasonable effectiveness of aesthetic standards in science.

The second piece of news from the front lines of science studies is that modern English has a notably weird definition of "science." We English speakers over the past century and a half have come to use "science" in a peculiar way, as in British academic usage — arts and Sciences, the "arts" of literature and philosophy as against the "Sciences" of chemistry and geology. A historical geologist in English is a Scientist; a political historian is not. The usage would puzzle an Italian mother boasting of her studious little boy, *mio scienziato*, my learned one. She does not mean that he is a physicist. Italian uses the science word to mean simply "systematic inquiry" (as does French, Spanish, German, Dutch, Icelandic, Swedish, Norwegian, Gaelic, Polish, Hindi, Hebrew, Hungarian, Finnish, Turkish, Korean, Tamil). Only English, and only the English since the mid-nineteenth century, has made physical and biological science (definition 5b in the old *Oxford English Dictionary*) into, as the *Supplement* and the *New Oxford* describe it, "the dominant sense in ordinary use." The first citation is from the *Dublin Review* of 1867: "We shall . . . use the word 'science' in the sense which Englishmen so commonly give to it; as expressing physical and experimental science, to the exclusion of theological and metaphysical." The Italian half of the *Cambridge Italian Dictionary* warns of English "scientific" that *nell'uso comune non si riferisce ai principi filosofici classici*: that is, in the common English use, by contrast with Italian, the science word does not admit knowledge learned beyond the laboratory. In other tongues the word means "something more systematic than casual journalism." In German the word "Wissenschaft" means just "systematic inquiry," and so the German word for the arts and humanities contains the science word: "Geisteswissenschaften."

The non-English and English-pre-nineteenth-century sense is used for instance by Doctor Johnson in 1775 about part of his trip to the Western Isles: "Of Fort George I shall not attempt to give any account. I cannot delineate it *scientifically*, and a *loose and popular description* is of use only when the imagination is to be amused." The most famous declaration of the new and narrower sense of the word, with its implied scorn for Art (and for biology, geology, economics, history, and come to mention it most fields of physics and chemistry), is Kelvin's in 1883: "When you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind. It may be the beginning of knowledge, but you have scarcely in your thoughts advanced to the state of *science*." Alfred Marshall, in some ways an old-fashioned guy, was still in 1895 using the older, Johnsonian sense. To describe one blade of the supply-and-demand scissors dominating the other "is to be excused only so long as it claims to be merely a popular and not a strictly *scientific* account of what happened" [Bk. V, iii, 7]. The English definition was won by Kelvin.

The third piece of news from the new science studies is that scientists are *just like other people*. Amazing. The finding comes from a new method, applied in the past quarter century, the method of studying science by studying not what philosophers say about scientists but *the scientists and their scientific activities*. Shocking. The new studies of science claim that in answering the question "What is Science (contrasted with Art)?" we should *not* depend on philosophers or philosopher wannabes among physicists and economists but *actually look at what the scientists (and artists) do*. Cra-a-a-zy.

Scientists are people. They are not the machines for accumulating data that you find in Baconian philosophy; nor are they the romantic heroes seeking falsification that you hear of in Popperian philosophy. They are men and women trying to figure things out and then persuade each other. In other words, science even in the narrow and modern English sense cannot be "demarcated" from other serious persuasive activities, such as law courts or family discussions. The warmed-over positivism that focuses on demarcation, forty years past its time, turns out to have little to do with laboratory life, or how experiments end.

These new "social studies of science" are mainly British. An older line in the study of science is mainly American, the Clan of the Columbia sociologist Robert K. Merton, and does not wholly approve of the newer clan (though Merton told me recently that he's a "social constructivist," too). The old clan concerned itself mainly with schools and influences, and used biography as its method. By contrast the Britishers and their American allies (with a stray Frenchman or two) call themselves the Clan of Thomas Kuhn, especially the Kuhn of his early book on Copernicus or his collection of essays in 1977, *The Essential Tension* (not the Kuhn of *The Structure of Scientific Revolutions*, which has surprisingly little influence in science studies). Their method is anthropology and close reading.

Another way to state the lineage of the Kuhnian Clan is with three names: Fleck, Polanyi, and Kuhn. It's a test of whether an alleged expert on science actually knows about science studies to ask her whether she's read these three. Fleck before the Second World War [1935 (1979)], Polanyi after it [1946, 1962, 1966], and Kuhn from 1959 on remade the study of science. All three were trained as scientists in the English sense, and could therefore engage in participant observation with some credibility. The first two were internationally known in their sciences; Kuhn, trained as a particle physicist, is internationally known as a historian. As the philosopher Paul Feyerabend observes, "Fleck, Polanyi and then Kuhn were (after a long time) the first thinkers to compare . . . school philosophy with its alleged object — science — and to show its illusionary character. This did not improve matters. Philosophers did not return to history" [Feyerabend, 1987, 282], stoutly ignoring Fleck, Polanyi, and Kuhn. No facts, please: we're philosophers.

All right, then, what's the payoff for economics? Since I'm an economist, I won't say. If I were so smart as to know the future of the science I'd be rich. But if you believe that knowing what you are doing is a good idea, then you'll want to listen to the new studies of science, the Clan of Kuhn. Even some pretty smart scientists do *not* believe that knowing what you are doing is a good idea — witness statistical significance in economics. When I told an eminent economist recently about the findings of science studies he got angry and started shouting at me. Some people don't like to get reading lists.

But if you do like reading, the reading below is a way of seeing science as art and seeing art as science, together, the way people once did and the way non-English speakers still do. It's a way to get started thinking how a participant-observer or a literary critic of economics might think about the field. Especially it's a way round

the silly question, a question no one thought to ask before the Romantics, and which after a century and a half without coherent answer should perhaps be retired, "Economics: Art or Science?"

Further Reading

(Getting Started in the New Studies of Science)

- Feyerabend, P.** *Farewell to Reason*. New York: Verso, 1987. Don't be misled by the terrifying title.
- Fleck, L.** *Genesis and Development of a Scientific Fact*, edited by T. J. Trenn and R. K. Merton, Foreword by T. Kuhn. Chicago: University of Chicago Press, 1935 (1979). A biologist asks, "How did a disease get to be called one?"
- Keller, E. F.** *A Feeling for the Organism: The Life and Work of Barbara McClintock*. New York: Free Press, 1983. Think that feminism has nothing to do with Science? Think again.
- Kuhn, T.** *The Essential Tension: Selected Studies in Scientific Tradition and Change*. Chicago: University of Chicago Press, 1977. Read this, not *The Structure of Scientific Revolutions*.
- Lakatos, I.** *Proofs and Refutations: The Logic of Mathematical Discovery*. Cambridge: Cambridge University Press, 1976. But math is different, right? Wrong.
- Levi, P. and Regge, T.** *Conversations*. Translated by R. Rosenthal. Harmondsworth: Penguin, 1992. One wishes Regge, a typical physicist, had let the chemist Levi talk more; know another profession like that?
- Mulkay, M.** *The Word and the World: Explorations in the Form of Sociological Analysis*. London: Allen and Unwin, 1985. One of a score of British sociologists of science (some other names to watch for are Trevor Pinch, Harry Collins, Bruno Latour) who write close studies of science in action. This one is about oxidative phosphorylation and the problem of stoichiometry.
- Nelson, J., Megill, A. and McCloskey, D. N., eds.** *The Rhetoric of the Human Sciences: Language and Argument in Scholarship and Public Affairs*. Rhetoric of the Human Sciences. Madison: University of Wisconsin Press, 1987.
- Polanyi, M.** *Science, Faith and Society*. Chicago: University of Chicago Press, 1946 (1964).
- _____. *Personal Knowledge: Towards a Post-critical Philosophy*. Chicago: University of Chicago Press, 1962.
- _____. *The Tacit Dimension*. Garden City, NJ: Doubleday, 1966.
- Selzer, J. L., ed.** *Understanding Scientific Prose*. Madison: University of Wisconsin Press, 1993. Rhetoric of the Human Sciences. On Gould and Lewontin on the spandrels of San Marco.

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