THE RHETORIC OF ECONOMICS

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Science Uses Literary Methods

The French and German triads that correspond to our plain English "natural sciences, social sciences, and humanities" are "les sciences naturelles, les sciences sociales, et les *sciences* humaines" and "die Naturwissenschaften, die Sozialwissenschaften, und die Geistes*wissenschaften*." In both the term for studies of poetry, language, and philosophy—studies that are humanistic and decidedly literary in form—includes a "science" word. But in French and German, and in every other language I have looked into, the term is not properly understood as English "science." In Japanese, Finnish, Tamil, Turkish, Korean, and all the Indo-European languages, the science word means "systematic inquiry."

The German speaker has therefore less opportunity to use his word *Wissenschaft,* or the French speaker his *science,* as a club with which to beat on word folk. Nor, on the other side, can it be so easily used the way it is by the English-speaking literati, as a curse against that blackest art, the anti-art, the bane of sweetness and light. It means in all these other languages merely "disciplined inquiry," as distinct from, say, casual journalism or unaided common sense. It does not mean "quantitative," in the way Lord Kelvin used it in 1883: "When you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind"; and added, "It may be the beginning of knowledge, but you have scarcely in your thoughts advanced to the stage of *science.*" Outside of the English-speaking world nowadays the science word does not have epistemological clout.

The word "science" began to be used in the honorific sense by the English only in the late nineteenth century. The earliest citation in sense 5b of the *Oxford English Dictionary* is 1867, from W. G. Ward in the *Dublin Review* for April, p. 255n (italics supplied): "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 later *Supplement* to the dictionary describes this definition 5b nowadays as of course "the dominant sense in ordinary use.") Earlier it meant "studies," as in "classical studies"—*Altertumswissenschaft* in German. In modern English you cannot imagine "classical science." The Wildhagen/Heraucourt German dictionary (1972) gives *die klassiche Wissenschaft* as "humanities" (clearly in the older sense of the English word) and *die philologischhistorische Wissenschaften* as "arts" (in the British academic usage, contrasted, again, with "science").

The point is that the foreigners have gotten it right. "Literary criticism is a science" or "Economics is a science" should not be the fighting words they are in English. The fighting lacks point because, as our friends across the water could have told us, nothing important depends on its outcome. Economics in particular is merely a disciplined inquiry into the market for rice or the scarcity of love. Economics is a collection of literary forms, some of them expressed in mathematics, not a Science. Indeed, science is a collection of literary forms, not a Science. And literary forms are scientific.

The idea that science is a way of talking, not a separate realm of Truth, has become common among students of science since Thomas Kuhn. The idea does not imply that science is inconclusive or that literature is cold-blooded. The point is that science uses art for urgent practical purposes daily. The aesthetic judgements necessary before one of the theories in particle physics is selected for the expensive experiment it requires for testing does not make science arbitrary or flimsy. As Steven Weinberg said about an experiment testing his piece of the physicist's art, "That experiment cost some $30 to $40 million dollars, not for the accelerator you understand, just for the experiment using the accelerator. This is an enormous commitment of your money and our time, one that can only be made when the judgement has been made that the theory is worth testing, and that judgment is very often entirely a matter of how beautiful we think the theory is" (1983, p. 20). From 1967 to 1971 Weinberg's theory was considered too ugly to test. He points out that no one would have financed the British expedition to the South Seas in 1919 to test Einstein's theory had it been thought ugly. The literary critic Kenneth Burke spoke of this persuasiveness of elegant forms: "A yielding to the form prepares for assent to the matter identified with it" (1950, p. 58).

And of course art, in turn, uses "scientific" figures of speech for urgent practical purposes, too. Statistics, for example, are figures of speech in numerical dress. Textual criticism since the Renaissance has depended on the logic of probability and the counting of frequencies. See, for example, Willis 1972, p. 24, on stemmatic theory, and p. 42 on the the-

ory of errors. Anyone who believes the study of literature leads to a softening of the mind and mettle should be made to read this book, supplemented by Reynolds and Wilson (1974) and Housman (1922 [1961]). The height of this sort of thing is John G. Griffith, "A Taxonomic Study of the Manuscript Tradition of Juvenal" (1968).

Wayne Booth attacks the pretensions of Popperian falsifiability to be the very meaning of meaningfulness. Yet he notes that "the test is a powerful one, in dealing with certain problems; I use it myself in trying to test my own guesses about how literary works are put together" (1974a, p. 103).

The only point that Booth and Kuhn and I are making is that the statistical and falsificationist tests should not expand to take over all persuasions. As Booth puts it, "Stated as a universal dogma [falsifiability] is highly questionable" (1974a, p. 103). The only dogma worth promulgating is a broad-minded one, namely, that in a good argument the artistic and scientific modes of thought will interpenetrate each other. "Modernists" around 1950 (the term is explored later in the book, but roughly it means "positivist," "Bauhaus," "formalistic," "behaviorist") believed that the interpenetration of science and art is a contravention of God's law, likely to give birth to monsters. But in this they were mistaken.

The project here is to overturn the monopolistic authority of Science in economics by questioning the usefulness of the demarcation of science from art. To show that economics resembles literary criticism, philology, and social theory as much as particle physics and dambuilding can either thrill economists with a wild surmise or leave them trembling from identity outraged.

If the project outrages some economists, noneconomists incline to fatigued indifference. Since the end of the nineteenth century they have not thought very much of the scientific claims of the subject anyway. All they know about economics is what they read in the papers, but they know what they don't like, and besides, it ain't Science.

The humanist's approach is wrong. It falls for demarcation, supposing without thinking about it much that science is easily demarcated from nonscience. Anyway, economics surely is science, a pretty successful sort at that, though with some peculiar problems coming from its rhetorical naïveté. Economics explains as much about business people and resources as evolution explains about animals and plants, for identical reasons. No one who knows the subject will deny it. Those who do not know it can become persuaded by reading Mancur Olson's *Logic of Collective Action* (1965) or Thomas Schelling's *Micromotives and Macrobehavior* (1978) or Albert Hirschman's *Exit, Voice, and Loyalty* (1970) or Robert Frank's *Passions Within Reason* (1988) or another of the accessi-

ble jewels of the discipline. The claim here is not the vulgar and modernist figure of logic that economics is mere humanism because it is a failure as a science. The claim is that all science is humanism (and no "mere" about it) because that is all there is for humans.

Proofs of the Law of Demand Are Mostly Literary

Economics is scientific, I am claiming, but literary too. Saying that something is "literary" is saying that you can talk of it in ways that sound like the things people say about drama, poetry, novels, and the study of them. Look for example at the performative character of the sentence "Economics is scientific." The sentence carries with it the implication that things can be said about economics and economies that use mathematics; the economists will emulate the rhetoric of controlled experiment; that the economists will have "theorems" from the mathematics and "findings" from the experiments; that it will be "objective" (whatever the word might mean); and even that the world it constructs, to use Nelson Goodman's way of talking, will have a certain character, of maximizing and equilibrium, captured in the perspicacious phrase, "the unreasonable effectiveness of mathematics." All these implications about economics are persuasive.

But equally persuasive are other implications, usually and erroneously thought to be antithetical to science, implied by the sentence "Economics is literary." The literary character of economics shows at various levels, from most abstract to most concrete, from methodology down to the selling of diamonds.

The workaday methods of economic scientists, for example, are literary, a pretty obvious remark when you recognize that the scientific paper is, of course, a literary genre with an actual author, an implied author, an implied reader, a history, and a form (see Bazerman 1981; Bazerman 1988; chapter 5 below). When an economist says, as she very frequently does, "The demand curve slopes down," she is using the English language; and if she is using it to persuade, as she very frequently is, she is a "rhetor," in Latin an orator, whether she knows or likes it or not. A scientific paper, and an assertion within it such as this Law of Demand (that when the price of something goes up the demand for something goes down), does literary deeds. The economic scientist is self-evidently a linguistic actress, and to her performance can be applied the dramatic notions of the literary critic Kenneth Burke, or of the philosophers J. L. Austin and John Searle. Scientific assertions are

speech acts in a scene of scientific tradition by the scientist-agent through the agency of the usual figures of speech for purposes of describing nature or people better than the next scientist.

The error is to think that you are engaged in mere making of propositions, about which formal logic speaks, when in fact you are engaged—all day, most days—in persuasive discourse, aimed at some effect about which rhetoric speaks. The American pragmatist philosophers said this, too. Beliefs expressed in words are to be judged by their effects or, as it was put by William James with "disastrous felicity" (Burke), by their "cash value." Scientists are trying to persuade other scientists when they affirm a law.

The way they persuade others draws mostly on the usual arguments, arguments that you might see in *Areopagitica* or "A Modest Proposal for Preventing the Children of Ireland from Being a Burden to Their Parents or Country." Economists want to persuade themselves of the Law of Demand, that when the relative price of a good increases the quantity demanded of it declines. Consider the good reasons that economists believe the Law of Demand to be persuasive:

1. Sometimes, certain very sophisticated statistical tests of the law applied to entire economies, in which every allowance has been made for bias and incompleteness, have resulted, after a good deal of handwringing and computer-squeezing, in the diagonal elements of certain matrices being negative at the 5 percent level of significance. And sometimes they have not. Even the inventors of fully identified, complete systems of demand equations, such as Hans Theil, have no great confidence in the results. A shift of one metaphor here, a shift of one appeal to authority there, and the "proof" would be valid no longer.
2. Less comprehensive but more numerous demonstrations of the law have been attempted market by market. Agricultural economists, especially, have since 1924 been fitting demand curves to statistics on corn and hogs. Again, the curves sometimes give the right slope, and sometimes don't. The most elaborate of such studies—Houthakker and Taylor's study of all commodities in the American economy (1970)—found that the law was weak. In any case the thought before calculation that forces the law to work (in other words, the specification) contains elements of introspection, analogy, and other sorts of common sense embarrassing to the claims of mindless Objectivity. Econometricians have begun to take heed (Leamer 1978; Cooley and LeRoy 1981). But they need help in thinking about their before-calculation rhetoric.

3. Some economists have tried to subject the law to a few experimental tests. After a good deal of throat-clearing they have found it to be true for clearheaded rats and false for confused humans (Battaglio et al. 1981), an interesting result which no one worries about too much.

These three arguments are properly "scientific," in the strange modern English usage of the word, although only the third quite matches the received view of scientific method. The Scientific arguments yield mixed results.

Does this leave economists uncertain about the Law of Demand? Certainly not. Belief in the Law of Demand is the distinguishing mark of an economist, demarcating her from other social scientist more even than her other peculiar beliefs, such as that assets equal liabilities plus net wealth. Economists believe it ardently. Only some part of their ardor, therefore, is properly Scientific. The rest is below the demarcation line:

4. Introspection is an important source of belief. The economic scientist asks herself, "What would I do if the price of gasoline doubled?" If properly socialized in economics she will answer, "I will consume less." In similar fashion a poet might ask herself what she might do if she saw heather or a wave; a textural critic might ask himself how he would react to a line if "quod, o patrona virgo" were emended to "quidem est, patroni et ergo."
5. Thought experiments (common in physics) are persuasive too. The economic scientist asks in view of her experience of life and her knowledge of economics what other people might do if the price of gasoline doubled. A novelist, likewise, might ask how Huck would respond to Jim's slavery, or a critic might ask how an audience would react to the sacrifice of Coriolanus.
6. Cases in point, though not controlled experiments or large samples, persuade to some degree. A big triumph for the Law of Demand in modern economic history was the oil embargo of 1973–1974: the doubling of gasoline prices caused gasoline consumption to decline, although noneconomists predicted it would not. Likewise, the economist Julian Simon routed the ecologist Barry Commonor in a wager based in part on the Law of Demand (and the Law of Supply): that currently "scarce" resources would become cheaper, not more expensive. This is narrative, not statistical fit (although statisticians are moving toward a rhetoric that a literary person would recognize as narrative: Mosteller and Tukey 1977; Leamer 1978). The narrative tells. In the same way, Booth re-

marks, "The most sensitive book-length theological account we can imagine . . . lacks something that men know together when in answer to the question, 'What is the life of man?' they answer, 'There was once in Bethlehem.'" (1974a, p. 186).

7. The lore of the marketplace persuades. Business people, for instance, believe that the Law of Demand is true, for they cut prices when they wish to raise the quantity demanded. They have the incentive of their livelihood to know rightly. What mere professor would dispute such testimony? To do so would in fact contradict a fundamental conviction among professors of economics (and among professors of ecology and evolutionary biology, too) that opportunities for profit are not usually left lying about untaken. The argument is *ad hominem,* an argument from the character of its audience.
8. The lore of the academy persuades as well. If many wise economists have long affirmed the Law of Demand, what mere latecomer would dispute their testimony? All sciences operate this way, building on the testimony of forerunners. The argument from authority is not decisive, of course, but gives weight. Science could not advance if all questions were reopened every five years.
9. Commonly the symmetry of the law will be a persuasive argument, because, to repeat Kenneth Burke, "Yielding to the form prepares assent to the matter identified with it." If there is a Law of Supply—and there is ample reason to think there is—it is hard to resist the symmetrical attractions of a Law of Demand. At higher levels of the mathematical sciences the appeal to symmetry takes a higher percentage of conviction.
10. Mere definition is a powerful argument, and is more powerful the more mathematical the talk. A higher price of gasoline, for instance, leaves less income to be spent on all things, including gasoline (at least by one definition of income, or of the law).
11. Above all, there is analogy. That the Law of Demand is true for purchases of ice cream and movies, which no one would want to deny, makes it more persuasive also for gasoline. Analogy gives the law its majesty. If the law applied only to the trivial items for which it has been "proven" in modernist style, no one would care. That laboratory rats view cherry soda as a luxury good, though interesting, is not much of a basis for a human science. But if the law applies to gasoline (or to rats), then it is easier to believe that it applies to housing; and if to housing, then to medical care; and then to labor; and then to political power; and then to love. Anal-

ogy is essential for science, but is of course the quintessential literary device.

These are all good reasons for believing the Law of Demand, but only the first three, I repeat, are Scientific by the dichotomous definition of English modernism. The other eight are artistic and literary. The modernist might try to reduce the eight to the three. "Analogy is based on a series of earlier experiments," he might say. But it is easier to see how the efficacy of general equilibrium, simultaneous equation, three-stage least squares methods of fitting complete systems of demand equations (reason 1) depends on the authority of the traditions about error terms (reason 8) or the appeal of symmetry as an aesthetic principle of specification (reason 9) than to see how analogy and introspection can be reduced to econometrics.

The English modernist might say then, "Come, come: this introspection on which you rely for certain of the arguments would not be reliable unless our researchers had invisible lie detectors or perhaps mind-reading apparatus" (Machlup 1955). It is a postulate of modernism, largely unspoken and therefore unargued, that minds do not exist. The puzzle is that a modernist who examines his mind when getting dressed in the morning and assumes the existence of other minds when driving to work claims to deny both as soon as he flicks on the lights at his laboratory. On the job he no longer believes he has a headache when his head hurts, or that his son is sad when he cries.

The modernist might say in desperation, "These 'literary' arguments, as you call them, are in the end merely supportive and probable; the Scientific arguments are the decisive ones." The proper response is, "Who says?" Anyone who actually runs experiments or fits curves knows that they too depend on analogies (the market is just like this demand curve), metaphysical propositions (the time series is a sample from all possible universes), and traditional authority (we have always assumed finite variance of the error term). And she knows that they, too, are merely supportive and probable. There is no certitude to be had, with any methodology.

The arguments fitting a modernist methodology are not in any case the whole story of why economists believe the Law of Demand. As an empirical matter here they would be a rather small part of the story. Few economists would place more than 15 percent of their confidence in the Law of Demand on the first three reasons in total, leaving 85 percent to literary as against "scientific" rhetoric. You can test whether this is true by asking an economist, who will testify to its persuasiveness by introspection (then deny that persuasiveness comes sometimes from

introspection). Or in properly modernist (i.e., behaviorist) fashion you can observe what arguments an economist uses when trying to persuade unbelievers, such as students. Much of her argument will rely on introspection, encouraging the students to examine theirs and improve it by critical thinking. She will exhibit the few cases in point she can remember, especially the more extreme cases such as the oil crisis, and will try to build on analogy with products that the students do believe follow the law. For the rest she will appeal to the identity of convex utility functions and the authority of the scientific tradition. No matter how sophisticated the class is, it will be a rare teacher, and a poor one, who relies much on the econometric results from the data mine and its miners.

Economic scientists, then, persuade with many devices, and as speakers have an audience. To repeat, they do not speak into the void: the rhetorical character of science makes it social. The final product of science, the scientific article, is a performance. It is no more separated from other literary performances by epistemology than pastoral poetry is separated from epic by epistemology. Epistemology is not to the point. Literary thinking is.

Linguistics Is an Appropriate Model for Economic Science

Here is a longer example of how economists can gain from looking at their subject with literary models in mind: linguistics. To quantitative intellectuals it is evident that the great achievement of the nineteenth and twentieth centuries was physics. To literary intellectuals [bracketing the perfection of the novel] it is equally evident that linguistics was. The styles of thought considered prestigious are determined by adherence to one or the other of these two models. Economics since Samuelson's *Foundations of Economic Analysis* (1947) has looked on nineteenth-century physics as its model. Perhaps it should try twentieth-century linguistics.

The founder of modern linguistics, Ferdinand de Saussure, devoted many pages of his *Course in General Linguistics* (1915, pp. 79ff., 115ff.) to the analogy between economics and his new linguistics. It is notable that a scientist as important for economics as Saussure was for linguistics, Léon Walras, flourished at the same time in the same nation, and had similar ideas about the salience of what economists would call cross-sectional and comparative static thinking. The motto of both was "Everything touches everything else, today."