7/11/2025 1:44 PM

Lachmann Practiced Humanomics, Beyond the Dogma of Behaviorism

Deirdre Nansen McCloskey[1]

"Humanomics," a recent coinage by the humanist and experimental economist Bart Wilson, suggests that economists might well walk on both feet. Yes, to be sure: let us also employ the behaviorist, positivist, quantitative foot thrust forward so dogmatically since the 1930s by Robbins, Samuelson, Friedman, Lipsey, Jensen, Becker, and Stigler. But then let us walk as well on the other cognitive, hermeneutic, qualitative foot recommended since the 1770s for getting somewhere meaningful at speed by Smith, Mill, Mises, Schumpeter, Keynes, Knight, Hayek, Boulding, Shackle, Hirschman, Heilbroner, Buchanan, Kirzner, Lavoie, Boettke, Klamer, Amariglio, and Ludwig Lachmann.

You will note the prominence of Austrian economists and their fellow travelers in the humanistic list. That is my point here. I am trying to persuade the Austrians and the neo-institutionalists (not entirely overlapping groups) to turn seriously to the humanities. Lachmann is not a perfect instrument for the purpose. He could issue such conventional ukases as " The real nature of truth, the ultimate grounds of human existence, the universal criteria of the Good and the Beautiful, are the province of the philosopher, not of the scientist. For this very reason the economist, as an economist, must refrain from making value-judgements" (Lachmann 1950). But on other grounds he is better humanist even than some of the older Austrians.

Humanistic stories and metaphors have, I claim, serious scientific status in using and criticizing mechanisms such as the prisoner's dilemma or the tragedy of the commons or incentives as trumps. It is humans, not rats or computer programs, we are construing, which is something that Lachmann knew vividly. Lachmann, like many Austrians, and like some neo-institutionalists, and like very few other economists since the 1930s, faced humans and human meaning—as economists should if they want to make scientific progress. He did not hop painfully along on

[1] Emerita professor of economics, history, English, and communication, University of Illinois at Chicago, deirdre2@uic.edu. The paper was originally written for the World Interdisciplinary Network for Institutional Research annual seminar on Ludwig Lachmann, University of Witwatersrand, Johannesburg, South Africa, April 13, 2017. I than the participants for their thoughtful comments on the presentation, and the participants in my Sunday Seminar on Humanomics, J, J. Chen, Atanacio Hernandez, Theodore Kalambokididis, and Alfred Saucedo for comments on a draft.

his behaviorist foot, toppling over from time to time.[2] Lachmann may have undervalued, as many Austrians do, what can be achieved by mere behaviorism. But at least he knew he had two feet.

Yet surely *de gustibus non est disputandum*, eh? Surely the Scientific Method you learned in high school chemistry requires you to eschew discussion of ends, and to focus merely on means, yes?

No. *De gustibus finibusque* est *disputandum,* if you want a social science worthy of the name, walking on two feet. In an interview Lachmann said, "My impression from reading certain recent Chicago publications such as the famous article, 'De Gustibus Non Est Disputandum' (*AER*, March, 1977), is that these economists don't understand the difference between action and reaction. They seem unwilling to admit that there is such a thing as spontaneous action in the world." A narrowing and strictly reactive positivism of the sort favored during the 1920s in Austria (we are all Austrians) has been philosophically dead since the 1950s. Now through humanomics the news of the death is finally arriving in our precincts (I tried in the 1980s and 1990s to bring the news [1985, 1994], but I failed).

Behaviorism in psychology, for example, reached its vigorous maturity during the 1950s, noting reactions of dogs to bells and of rats to rewards, but then promptly died of a cognitive heart attack, a little bit before economists started to perform similar behaviorist experiments on rats and pigeons.[3] The economic experimenters did not realize that showing animals to be "rational" from watching their observable responses to budget lines merely showed how strange and inhuman the definition of the word had become in economics. One can take a humanistic hint from what is known in philosophy as the Oxford School of "ordinary language" philosophy of Gilbert Ryle and J. L. Austin, using ordinary language as a philosophical mining site, and therefore asking what "rationality" might properly mean. It does not mean satisfying the weak axiom of revealed preference, not in ordinary language. It means "reasonable," which only in a much reduced sense would apply to rats and pigeons or for that matter computer programs.

The by-now ageing behavioral economics (Any findings relevant to markets yet?), which was also inspired by 1930s behaviorism, attempts once again to revive the dead notion that we can best study humans by pretending that we don't know what is going on in their heads, that we are not ourselves inside human minds, that there is nothing to be learned from 4,000 years of written reports of human minds, and that we can only "predict" behavior from the outside by posing tricky inferential questions, showing humans to be incompetent statisticians. The "naturalist" turn in neuro-economics is similar: it claims that the mind is the brain

[2] I offer a recent criticism of Michael C. Jensen as a spectacular example of toppling (McCloskey 2017).

[3] Kagan 2006. **Cite pigeon experiments**

(for which there is scant evidence). It was given answer so long ago as DDDD by Andrew Marvell:

The Austrians like Lachmann (unlike the Austrians like Murray Rothbard) understand the import of such lines. He would understand the philosopher's remark that consciousness is characterized by "the liberty of its conceptual and imaginative powers from the constraints of its material circumstances," which Lachmann called spontaneous action, or that "within the mechanistic view . . . causality is no more than mindless force [such as reaction to Max *U* under constraints] and so the causal power of seemingly immaterial things like . . . volition or final purposes creates a deep problem."[4]

Time to stop and reflect. Time to stop worrying, to assuage away an anxiety that has made reflection impossible, about whether economics "is a science" (as it certainly and uncontroversial is, by any non-English definition of the word) and to stop worrying about whether we as economists are allowed to wear the white coats of Real Scientists. Time to stop thinking that only a reactive Scientific materialism governs the world, and start acknowledging that "there is such a thing as spontaneous action in the world."

The humanities—such a literary criticism in the Department of Literature, and number theory in the Department of Mathematics, and transcendent meaning in the Department of Theology—study categories, such as good/bad, lyric/epic, 12-tone/melodic, red giant/white dwarf, hominid/Homo sapiens, prime/not, God/gods, exist/not. The crucial and neglected point in the battle of the two cultures is that such humanistic and human categorization is a *necessary initial step in any scientific argument*. You have to know what your categories *are* by well-considered definition, such as Homo sapiens sapiens/Homo sapiens neanderthalensis, before you can *count* their members.

Economic theory, for example, is humanistic, dealing in definitions and their relations, called "theorems" or, more useful for science, "derivations." It says things like, as Coase did, "Transactions costs may be important here, and this is how they should be defined." Or, as Fisher and Friedman said, MV = PT. Or, as Edgeworth and Samuelson said, $(dU/dx)/(dU/dy) = P_x/P_y$. Or, as Lachmann said, "Markets may be more about events out of equilibrium than about states in equilibrium." Or, as Kirzner and now McCloskey say, "Discovery may be more important for human progress than is routine accumulation." They are humanists all, dealing in categories and derivations, in advance of examining the history of actual markets. I once spent some time browsing through Jean Tirole's textbook on the theory of finance. Here were gathered some hundreds of theories, with no evidence supplied about which might apply to actual financial markets. The book is as much an

[4] Hart 2013, pp. 156, 161.

exercise in humanism as is Kant's *Critique of Pure Reason* or Ramunajan's notebooks on number theory.

Some definitions and their corresponding theorems are helpful and wise, some misleading and stupid. The humanities, and the humanistic steps in any science, study such questions, offering more or less sensible arguments short of factual inquiry for a proposed category being wise or stupid. The humanities study the human mind and its products, as for example John Milton's *Paradise Lost* or Mozart's "Flute and Harp Concerto" **get K number**or the set of all prime pairs. In 1910, for example, many economists and other scientists such as the great statistician Carl Pearson believed that the category "Aryan race" was helpful and wise in thinking about the economy and the society.[5] Around then the American Progressives, and especially the leading economists among them, believed passionately in racism, and advocated policies such as immigration restrictions and the minimum wage to achieve eugenic results in favor of the Aryan race.[6] Later we decided that race was actually a misleading and stupid and even evil category.

The necessity of the humanistic first step, observe, applies to physical and biological sciences as much as to *les sciences humaines* or *die Geisteswissenschaften.* Meaning is scientific, because scientists are humans asking questions interesting to humans about the meaning of β decay. The Danish physicist Niels Bohr wrote in 1927, that "It is wrong to think that the task of physics is to find out what the world is. Physics concerns what we can *say* about it."[7] We. Humans. Say. With words. About such *geisteswissenschaftliche* categories the German-American poet Rose Äuslander wrote, "In the beginning / was the word /and the word was with God / And God gave us the word / and we lived in the word. / And the word is our dream / and the dream is our life."[8] True. We dream of categories, in our metaphors and stories, and with them make our lives, especially our scientific lives, saying the world. There is nothing scary or crazy or French or postmodern about such an idea. The "hardest" sciences rely on human categories. The category of "capital accumulation," for example, can be defined in an aggregate, Smithian/Keynesian way. Or it can be defined in a disaggregated, task-specific Austrian way. The humanistic job of economic theory, as Lachmann well knew, is to ponder the categories, to see their internal logic.

But the humanistic step, though I am saying it is quite necessary for scientific thought, is not the whole scientific job. Theory is not science *tout court.* Specializing in humanistic theorizing of the sort that Paul Samuelson or Frank Hahn did is fine,

---

[5] A late example of his views is Pearson 192NN, and an earlhy one is Pearson 189NN, footnote: "

[6] Leonard 2016.

[7] Quoted in *Niels Bohr: Reflections on Subject and Object* (2001) by Paul McEvoy, p. 291. The provenance of the remark is a little hazy, but it is well known. In Danish, the philosopher Hans Siggaard Jensen informs me, it was something like "*Fysik er ikke om hvordan verden er, men om hvad vi kan sige om den*."

[8] *Am Anfang/war das Wort/und das Wort/war bei Gott/Und Gott gab uns das Wort/und wir wohnten/ im Wort/ Und das Wort ist unser Traum/ und der Traum ist unser Leben*. **Give a citation**

but it does not do the entire scientific job unless it is at some point firmly attached to experiment or observation and other tests against the world, as much of the work of these two men never was. If you are making a quantitative point, as must happen in a policy science like economics or in a world-speaking science like physics, then after the humanistic step you must proceed to the actual count.

Too often in economics it does not really happen, because economists think that theorems offer [factual] "insight," and believe that statistical significance "tests" the theory. The two sides, theory and econometrics, they say, can specialize. It is delightfully simple, imitating physics by not understanding how physics in fact works. The procedure was first made explicit in 1957 by Tjalling Koopmans, a Dutch-American economist at Yale (Nobel 1975), who in his *Three Essays on the State of Economic Science* recommended just such a specialization. He recommended that "theorists" spend their time on gathering a "card file" of qualitative theorems attaching a sequence of axioms A', A'', A''', etc. to a sequence of conclusions C', C', C''', etc., *separated from* the empirical work, "for the protection [note the word, you students of free trade] of both."

Now this would be fine if the theorems were not qualitative. If they took the quantitative form that theorems do in physics (better called "derivations," since physicists are completely uninterested in the existence theorems that obsess mathematicians and philosophers and economic theorists), good. Then the duller wits like Deirdre McCloskey the economic historian could be assigned to mere observation, filling in blanks in the theory. But *there are no blanks to fill in*, no How-Much questions asked, in the sort of theory that economists admire the most and that seems to take up half their waking hours (a little less, I am glad to acknowledge, in recent years, in favor of quantitative simulation: praise the Lord).

What physicists found unusual about Enrico Fermi (1901-1954) is that he did both, both mathematical, qualitative, humanistic, categorizing theory on the one hand and simulating, quantifying, factual, practicing experiment on the other, and did both at a Nobel-prize level. For example, the question came up in casual conversation whether there were advanced civilizations elsewhere in the universe. Fermi fell silent for a few minutes, doing what became known as a Drake calculation in his head, and arriving as an approximation at a high estimate of the probable number of such civilizations. He broke his silence with a challenge, though: "Well, where *is* everybody?" If they were there, there had been enough time since the Big Bang for many of them to have developed very advanced technology, in which case they would already be speaking to us. Something is wrong, he implied, with the supposition that we are *not* alone. (Leo Szilard, a Hungarian physicist in the group, replied: "Enrico, they are already speaking to us. We just call them Hungarians," such as Teller, von Neumann, Wigner, and Szilard.)[9]

The purpose of a scientific assertion is to change minds. But it is mischievous

[9] Segrè and Hoerlin 2016, p. 272-273.

to seek to change minds merely by the "insight" that is imagined to come from pure theory, such as the numerous solution concepts in game theory, or Tirole's hundreds of theories of finance, unless you have checked the theory against facts of our world and shown that the insight is quantitatively important. Otherwise we are liable in economics to be misled by our political passions, as so many economists are. Such is the merit of numbers. If you know that real income per head has risen in Europe since 1800 by a factor of about thirty, then your political impulse to condemn "capitalism" as impoverishing is at least disciplined. You may continue to be a socialist, but you will have to sharpen your argument in some other way than going on and on using the same alternative false-fact of impoverishment.

§

Here then is an example of incomplete economic science, about which Lachmann had something to say.

Some economists grasp that institutions have to do with human meaning, not merely Northian "constraints." The Austrians and the old institutionalists managed to escape, Houdini-like, from the straightjacket that Douglass North, Gary Becker, Deepak Lal, Avner Greif, Steven Levitt, Max U, and their friends have so eagerly donned. Lachmann, for example--after all a student of the last great maven of the German Historical School, Werner Sombart, but afterwards a deep convert to Carl Menger's and Friedrich Hayek's Austrian School--spoke of "certain superindividual schemes of thought, namely, *institutions*, to which schemes of thought of the first order [notice that to the Austrians the economy *is* thought, all the way down], the plans, must be oriented, and which serve therefore, to some extent, the coordination of individual plans."[10] Thus a courtroom of the common law is a scheme of thought, backed by propriety and bailiffs and law books. It coordinates individual plans. Thus too a language is a scheme of thought, backed by ethics and social approval and conversational implicatures. It too coordinates individual plans.

A still deeper example of a humanistic categorization in aid of economic science is Bart Wilson's argument that a sense of justice resides less in the individual brains of economic actors as in their language games.[11] Indeed, the subjectivist turn in economic theorizing in the 1870s, Lachmann averred, implied that "economic phenomena [should have been] . . . seen as utterances of individual human minds."[12] "Utterances." Yes, and directed at other humans, not solipsistic remarks such as "I think, therefore I am." Lachmann was a lucid and precise writer of English. By "utterance" he meant just that, human speech coordinating with other humans.

Silent, maximizing, behaviorist prudence of the solipsistic Max *U* agent is a virtue, to be sure. It is the virtue characteristic of a human seeking profit—yet also

10. Lachmann 1977, p. 62, quoted in Boettke and Storr 2002, p. 171.

11 Cite Wilson.

12 Lachmann 1985 (1994), p. 45.

of a rat seeking cheese and of a blade of grass seeking light. What Lachmann and the new American Austrian economists inspired by him during his visits to New York University grasp is that prudence is surely important, just the ticket for understanding entry and exit, say, but that meaning is imparted to human lives by the *non*-prudential virtues, and by the speech that utters them. I admit that Lachmann, as an economist of his generation, did not quite tip into full humanomics. But the "coordination of individual plans" of which he and other Austrians speak so much goes far beyond the mechanical rules of markets and constitutions that many economists would like to stop at, the lonely maximizing of Samuelsonian economics.

After all, temperance and courage and love and justice and hope and faith are also virtues, and are the ones *defining* humans. (More humanomics.) Unlike prudence, which characterizes every form of life and quasi-life down to bacteria and viruses, the nonprudence virtues are characteristic of humans uniquely, and of human languages and their constructed meanings. In no sense is a prudent blade of grass "courageous," or a prudent rat "faithful" (outside of the movie *Ratatouille,* whose humor turns on the irony of the rat hero being more faithful, and less motivated by Prudence Only, than many of the humans). In 1725 Bishop Butler complained about "the strange affection of many people of explaining away all particular affections and representing the whole of life as nothing but one continued exercise of [prudent] self-love."[13] Compare recently Gary Becker. Or as Hugo de Groot, Grotius, put it in 1625, "The saying that every creature is led by nature to seek its own private advantage, expressed thus universally, must not be granted. . . . [The human animal] has received from nature a peculiar instrument, that is, the use of speech; I say that he has besides that a faculty of knowing and acting according to some general principles; so that what relates to this faculty is not common to all animals, but properly and peculiarly agrees to mankind."[14]

Compare recently Douglass North and his followers, who will have none of particular affections and human speech and meanings and acting according to some general principle aside from one's self-love. His behaviorist talk about "constraints" and "rules of the game" misses what he could have learned from Lachmann, Geertz, Weber, Smith, Aquinas, Cicero, Confucius, Moses, or his mother (North's mother, or Moses')—that social rules expressed in human languages have human meanings. They are instruments as well as constraints, as Lachmann says, playthings as well as fences, communities as much as ward rules.[15]

Take for example so trivial an institution for providing incentives, and coordinating individual plans, as a traffic light.[16] When it turns red, it surely does

---

[13] Butler, *Fifteen Sermons,* 1725, Preface, p. 349.

14. Grotius 1625, propositions vi and vii.

15. Lachmann 1977, p. 141; quoted in Boettke and Storr 2002, p. 171.

16. I learned after I wrote this that Erving Goffman in 1971 made the same point about traffic lights. Behavior is not just behavior. To the people involved, in the situation they believe they are in, it has meaning.

create an incentive to stop. For one thing, the rule is self-enforcing, because the cross traffic has the green. (In the old joke a New York City taxi driver drives at high speed through every red light but screeches to a halt at every green. His terrified passenger demands to know why. "Today my brother is driving, too, and he *always* goes through red lights!") For another, the police may be watching, or the automatic camera may capture your license plate. The red light is a fence, a constraint, a rule of the game, or of the asylum. So far goes North, and with him most economists.

Yet the red light has meaning to humans, who are more than rats in a prudence-only experiment facing food incentives. Among other things it means the state's dominance over drivers. It signals the presence of civilization, and the ever-contested legitimacy granted to the state that a civilization entails. (Test: you are struggling through a pathless jungle and come upon. . . a traffic light: "Mr. Civilization, I presume.") It signals, too, the rise of mechanical means of regulation. The Afrikaans language calls the traffic light '*n robot*, in contrast to a human traffic officer with white gloves on a concrete stand. The red light is in Lachmann's terms a system of thought.

It is a system that some drivers find comforting and others find irritating, depending on their attitudes toward the state, toward mechanical inventions such as *robots*, toward traffic officers. For a responsible citizen, or an Iowan, or indeed for a fascist conformist, the red light means the keeping of rules. She will wait for the green even at 3:00 a.m. at an intersection obviously clear in all directions, an intersection lacking a license-plate camera or police person in attendance, or a reliably irresponsible brother on the road, even when she's in a bit of a hurry. Incentives be damned. But for a principled social rebel, or a Bostonian, or indeed for a sociopath, the red light is a challenge to his autonomy, a state-sponsored insult. Again, incentives be damned. If the Broken-Window policy of policing, for example, is applied *too* vigorously it could well evoke an angry reaction from potential criminals, and could result in more, not less, crime, or at any rate widespread resentment of the police. In fact, it has.

One of Lachmann's heroes was Max Weber. In his little book, *The Legacy of Max Weber* (1971) he riffs on Weber's anti-behaviorist methods. As early as 1907, in an article entitled "The Paradigm of the Skat game" (skat is a German card game), Weber had attacked the metaphor of society governed by the Northian phrase "rules of the game," employed at the time by the legal philosopher Rudolf Stammler. "An institution," Lachmann writes, "provides means of orientation to a large number of actors. It enables them to co-ordinate their actions by means of orientation to a common signpost" (1971). It is not dispositive "rules of the game," but merely a sign, always to be interpreted. So clothing is an institution, and so is language, and of course price "signals," as we say.

Lachmann summarizes Weber's attack on Stammler (and before the letter, on North) as, "Norms as such cannot determine a concrete outcome" (p. 61). The rules of chess do not imply a solution (in tic-tac-toe, assuming mild rationality, they do). Noting that Weber was trained as a lawyer, Lachmann quotes him on legal change (pp. 63-64): "The really decisive element," Weber had written, "has always been a *new line of conduct* which then results either in a change of the meaning of the existing rules of law or in the creation of new rules of law." The law is not closed, not tic-tac-toe.

In the Weber book Lachmann criticizes his master Menger for his economistic (Appendix VI) "needs theory" of institutions—which is North's: functionalism: "The weakness of this theory," Lachmann notes, "lies in its failure to provide us with any criterion by which to distinguish between those needs which will find their satisfaction through appropriate institutions and those which will not" (p. 67). It is a rare fault in Jared Rubin's recent, brilliant book on why Islam did not result in economic growth that he cannot explain why the need for economic growth did not find satisfaction in appropriate economic institutions.[17]

Lachmann continues: "Weber's approach to social action is something very different from that of the structural-functional theories. Weber was concerned with the *meaning* the actor attributes to his action. Most social-system theories ignore this aspect of action" (p. 74). Yet Menger, too, thought of entities in society as giving life to the social world, all depending on human valuation. Like John Searle's suggestive writings on social constructions, good old Menger saw meaning emerging from social agreements.[18] Utterances. Language games. Ethics. All of them have radically unpredictable in outcome, which is Rubin's problem in distinguishing the European alliance of religion and politics in the divine right of kings from the similar, but fatally anti-economic, Islamic alliance, such as the 1744 deal between Wahhabi Islam and the House of Saud.

§

How, then, do you stay on the scientific rails, once the humanistic job of classification is done?[19] You do it by bringing in measured perception, used in a positivist way. That is the relationship between the humanistic theorizing and the quantitative measuring. The one gives meaning and content to the other. As Kant famously said "Thoughts without [perceptual] content are empty, intuitions [that is, perceptions] without concepts are blind . . . . The understanding can intuit nothing, the senses can think nothing. Only from their unification can cognition arise" (A50–51/B74–76).

---

[17] Cite Rubin.

[18] Cite Searle.

[19] The question was suggested at the Sunday Seminar by my friend Laurence Iannaccone of Chapman University.

But you are not to lose sight of humanistic understanding, in Weber *verstehen,* the view out from the human soul, not from outside at the behavior of the human body. Lachmann and other Austrian economists have, for example, a lively appreciation of the humanity of businesspeople. Capital is not measurable as an aggregate, he writes, because "different segments of the minds of different manager-entrepreneurs [find] expression in the specific compositions of their capital combinations" (p. 149 in Dolan 1976). As he says in another essay in the same volume, "Each owner's judgment of his investment expenditure . . . rests on a subjective expectation about the future" (p. 157-158). He declares that "we must not abstract from those act of the mind in choice *and interpretation* that shape and constitute the social world" (p. 216 in Lachmann, "Austrian Economics," italics supplied). A little later he asserts that the neo-Ricardians "admit with a bad conscience" the idea of interpretation and that the neoclassicals have to ignore it entirely, "since their formal apparatus offers no scope for the interpretive action of the human mind" (p. 217). Of the devotées of the neoclassical synthesis of 1900, he writes "The individual interests them only in his capacity as a possessor of given tastes, not as a possessor of a mind capable of probing and digesting experience, of acquiring and diffusing knowledge" (p. 218 in "Austrian Economics").

That is what economics needs, as psychology acquired in the 1960s, a theory of a human mind. Lachmann can lead us to it, and to a full humanomics.

§

I do not wish merely to preach (although there is nothing wrong, come to think of it, with preaching a gospel of scientific common sense). Let me give a concrete example of the scientific payoff of humanomics.

References

Becker, Gary, and George Stigler. 1977. "De Gustibus Non Est Disputandum." *American Economic Review* NN:PPP .

Boettke and Storr

Butler, Bishop Samuel.

Dolan, Edwin G., ed. 1976. *The Foundations of Modern Austrian Economics*. Kansas City: Sheed and Ward.

Goffman, Erving. 1971

Grotius, Hugo de Groot. 1625.

Hart, David Bentley. 2013. *The Experience of God: Being, Consciousness, Bliss.* New Haven and London: Yale University Press.

Jeroild whatever at Harvard cognitive revolution autobiography

Kagan 2006

Kagan, Jerome. 2006. *An Argument for Mind*. New Haven and London: Yale University Press.

Kirzner, Israel. 1976. "On the Method of Austrian Economics." Pp. 4-51 in Dolan 1976.

Lachmann 1985 (1994)

Lachmann, Ludwig M. 1950. "Economics as a Social Science" *South African Journal of Economics* 18 (September):

Lachmann, Ludwig M. 1971. *The Legacy of Max Weber.*

Lachmann, Ludwig M. 1971. *The Legacy of Max Weber.* Berkeley: The Glendessary Press. Reproduced at Library of Liberty.

Lachmann, Ludwig M. 1976. "Austrian Economics in the Age of the Neo-Ricardian Counterrevolution." Pp. 215-223 in Dolan 1976.

Lachmann, Ludwig M. 1976. "On Austrian Capital Theory." Pp.145-151 in Dolan 1976.

Lachmann, Ludwig M. 1976. "Toward a Critique of Macroeconomics." Pp. 152-159 in Doland 1976.

Lachmann, Ludwig M. 1977.

Lachmann, Ludwig M. 1978. "Interview." *Austrian Economics Newsletter* 1 (Fall 1978). At https://mises.org/library/interview-ludwig-lachmann.

Lachmann, Ludwig M. 1990. "Austrian Economics: A Hermeneutic Approach." Pp. 134-146 in Lavoie, ed. *Economics and Hermeneutics*.

Leonard, Thomas NNN. 2016.

Marvell, Andrew. *The Garden.*

McCloskey, Deirdre Nansen. 1985 (1998). *The Rhetoric of Economics.* Madison: University of Wisconsin Press.

McCloskey, Deirdre Nansen. 1994. *Knowledge and Persuasion in Economics.* Cambridge: Cambridge University Press.

McCloskey, Deirdre Nansen. 2017. " The Ethical and Scientific Offences of Erhard and Jensen." A comment on Erhard and Jensen, "Putting Integrity into Finance: A Purely Positive Approach." *Capitalism and Society,* Columbia University, Center on Capitalism.

Menger, Karl. Appendix VI

Pearson, Karl

Pearson, Karl.

Pigeon experiments

Rubin, Jared.

Searle, John.

Segrè, Gino, and Bettina Hoerlin. 2016. *The Pope of Physics: Enrico Fermi and the Birth of the Atomic Age*. New York: Henry Holt.

Tirole, Jean ook on finance

Wilson, Bart on Wittgenstein