

# FROM THE KNOWLEDGE OF ECONOMICS TO THE ECONOMICS OF KNOWLEDGE:

FRITZ MACHLUP ON METHODOLOGY  
AND ON THE "KNOWLEDGE SOCIETY"

Richard N. Langlois

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## I. INTRODUCTION

When Professor Perlman asked me to write this paper, he charged me with discussing the connection between the Knowledge Project, the monumental ten-volume effort Fritz Machlup left unfinished at his death, and the doctrine of praxeology taught by Ludwig von Mises, Machlup's teacher in Vienna. The idea of an intellectual journey instantly sprang to mind: this would be an essay about Machlup's travels from the narrow confines of praxeology (the knowledge of economics) to the broad fields of the knowledge society (the economics of knowledge).

This is still an intellectual travelogue. But, as I eventually came to realize, there are two very different kinds of intellectual journeys. The most familiar is the sort we associate with, for example, the doctrine of the "young" Marx and the "older" Marx. A scholar follows through his life a path that, while logical in each step, ultimately leads him to a position not only different from but possibly inconsistent with his original standpoint: it is

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as if there were “two Marxes.” The other sort of trek is perhaps less dramatic but certainly no less remarkable. A scholar develops a single consistent position early on and travels an ever-widening trail in pursuit of its implications. Machlup’s journey, I argue, is of this second sort. However many Marxes there may have been, there was only one Machlup.

## II. MACHLUP, MISES, AND VIENNA

Vienna in the 1920s was no longer the capital of a grand empire, and perhaps some of the charm and romance we now associate with the *fin de siècle* had disappeared with the war. But the city and decade in which Machlup was trained must still rank high on any historian’s list of intellectual hot-spots. It was a world of multidisciplinary intellectual “circles,” a network of overlapping—if sometimes conflicting—schools of thought. The most famous of these was the Vienna Circle of logical positivists; but there were others, including the circle of economists and philosophers who revolved around Mises.

Machlup began his study of economics at the University of Vienna in 1920. In his first year, he sat through the crushingly boring lectures of an elderly Friedrich von Wieser. He came back for more the next year, but also began to participate in a seminar Mises gave at the University: “it was there,” Machlup said later, “that I really started to become an active economist” (Salerno and Ebeling, 1980, p. 1). Mises became his mentor and dissertation advisor.<sup>1</sup> As soon as Machlup received his doctorate—in December, 1923, when he was barely twenty-one—he was granted admission to the Mises Circle and its private postdoctoral seminar. The semester that left the biggest impression on him was the one devoted to economic methodology. It was this seminar that attracted many philosophers and other noneconomists, including Felix Kaufmann, Alfred Schutz, Fritz Schreier, and Herbert Feigl.<sup>2</sup>

It’s clear that Machlup was strongly influenced by Mises. But he also came into contact with the wide range of ideas that characterized the intellectual life of Vienna in that era. For example, Machlup’s friend Kaufmann was a member of both the Mises Circle and the Vienna Circle of logical positivists, and he was a vocal critic of Mises’s position on methodology. These two influences—Ludwig von Mises and the richness and diversity of contemporary Viennese thought—combined to produce the view of the world that Machlup carried with him through his career.

Mises represented, in essence, the third generation of the Austrian School founded by Carl Menger in the 1870s. Menger retired in 1903, leaving Wieser and Eugen von Böhm-Bawerk as his most prominent successors. The rising star of the third generation was Mises’s close contemporary,

Joseph Schumpeter. Mises's intellectual allegiances remained with the founder, however, and he saw the original message and focus of the Austrian School slipping away. He viewed Wieser and Böhm-Bawerk with a certain ambivalence. But it was the methodological views of Schumpeter—a kind of early positivism influenced by Ernst Mach and Vilfredo Pareto (Schumpeter, 1908)—that most agitated him. Indeed, Mises's entire methodological system can be seen as a reaction against positivism and an attempt to return to the original vision of Menger (Lachmann, 1982, p. 34).

The thrust of Mises's approach was to uphold the logical against the empirical. At the epistemological level, this manifested itself as an assertion of the *a priori* character—and the *a priori* validity—of the fundamental postulates of economics. Mises wanted to reassert against positivism the Mengerian notion of “exact laws” independent of experience. Menger had drawn inspiration from a kind of Aristotelianism, which saw exact laws as a manifestation of the natural and essential relationships among things. Mises declined to go quite that far, turning instead to an idiosyncratic version of the neo-Kantian philosophy then dominant in German universities (Lachmann, 1982, p. 36). Reason may not be inherent in the nature of things in general, argued Mises in effect, but reason *is* inherent in the categorical structure of the human mind.

At the methodological level—which, for Mises, was never very far from the epistemological—this philosophy translated into a concern with the logic of human action. Indeed, for Mises the subject of economic science is praxeology, the study of human action. This is a brand of methodological subjectivism, since it insists on studying economics from the agent's point of view. But it is also an antipsychological methodology. Following Max Weber, Mises saw economics as concerned not with the nature of the agent's motives (or even with the psychological interpretation of utility) but as flowing from the logic according to which the agent pragmatically applies means to ends (Lachmann, 1976, p. 56). And we can know this logic *a priori*, since our brains are hard-wired with the same categories as the economic agent's.

In a sense, Mises faced a dilemma. He wanted “exact laws,” which meant that the study of human action must lead to definite conclusions. But he also rejected determinism, which meant that the “exactness” of the theory could not come at the expense of the free will of the economic agent. Praxeology is thus a kind of compromise. It is a form of what Spiro Latsis calls situational determinism (Latsis, 1972, 1976). The agent is free to choose his own ends; economics merely studies the logic and ramifications of the situation the agent faces in achieving those ends with the means at his disposal.

The influence of Mises shows strongly in the views Machlup was to take on these issues. Indeed, an emphasis on the situationally deterministic

character of marginalist price theory was to become a hallmark of Machlup's contributions to the methodological debate. But the epistemology from which Machlup arrived at this position and the methodological apparatus with which he supported it are both noticeably different from those of Mises. And this difference arguably reflects the influence on Machlup of the many other strands of contemporary Viennese thought.

For one thing, Machlup did not subscribe to Mises's view that the basic postulates of economics partake of a synthetic *a priori* character. This doesn't mean that Machlup wasn't fundamentally a neo-Kantian in some sense. Although he seldom applied labels to himself—and, indeed, always presented his views as a mixture of common sense and mainstream philosophical opinion—there nonetheless remains a sense in which Machlup's position clearly does derive from Kant. One label Machlup did accept was that of conventionalist, which was pinned on him by Latsis.<sup>3</sup> As Latsis explains it, “conventionalists agreed with Kant that the human mind categorizes experience within a framework: but they claimed that the human mind is *creative*, that it is not imprisoned in Kant's eternal categories, but can freely choose its framework and then, by imaginative adjustments, adjust it to accommodate all experience” (Latsis, 1976, p. 9).

Mises, who is an apriorist in Latsis's lexicon, was obviously drawing on the Kant of the eternal categories. By moving to this more “creative” Kantianism, Machlup was actually moving in the direction of those Mises saw himself as reacting against; in fact, Machlup was allying himself with the skepticism of Mach and Pareto. The assertion that “the same facts may be explained by an infinity of theories, equally true, because they all reproduce the facts to be explained” (Pareto, 1909, quoted in Latsis, 1976, p. 9) probably captures Machlup's attitude as well as it does Pareto's (Langlois and Koppl, 1985, p. 8).

### A. The Path Not Taken

How does this pattern of influence connect with Machlup's eventual concern with the question of knowledge and its role in society? One answer is that an intellectual background of this sort leads more-or-less naturally to a concern with knowledge. But that would be too simple and misleading an answer. For the connection between Machlup's early influences and his Knowledge Project is not perhaps the most obvious one that might have been made. To appreciate the logic that led Machlup to the Knowledge Project—as well as the characteristically Machlupian form that project took—it might be helpful to glance at the road Machlup *did not* follow.

Machlup's friend and contemporary F. A. von Hayek was another of Mises's brilliant students in Vienna. Like Machlup, Hayek was strongly influenced by Mises's subjectivist approach, but, also like Machlup, he

rejected Mises's strong apriorism in favor of a more skeptical and "creative" brand of Kantianism. (Gray, 1982, pp. 22–33.) In *The Sensory Order* (Hayek, 1952), a treatise on the philosophy of mind written largely while he was a student in Vienna, Hayek presented a picture of the mind as operating with a complex categorical structure that is learned rather than innate. Thus, like Machlup, Hayek's epistemology was a kind of compromise between the strong rationalism of Mises and the strong empiricism of Mach and the positivists. In economics, this compromise manifested itself in Hayek's well-known distinction between the Pure Logic of Choice (deductive, axiomatic analysis using the rationality principle) and "the empirical element" (the study of how economic agents acquire knowledge—how they learn) (Hayek, 1948). While praising Walrasian general-equilibrium constructs and other pure-logic models for their heuristic value, Hayek insisted that the problem of knowledge—of how economic agents learn—ought to be the central focus of economic investigation.

Thus was Hayek led by his concern with knowledge to abandon conventional static micro-theory in favor of such heterodox concerns as expectations, disequilibrium, and process-theory—ideas that are characteristic of what has come to be called the modern Austrian School (Kirzner, 1981). Moreover, we can find in Hayek ideas that parallel and anticipate many of the concerns of, say, Herbert Simon (see especially Hayek, 1967). The result is that Hayek's journey from Mises and Vienna ended up in a position almost diametrically opposed in many ways to that of Machlup, who was always in the forefront of *opposition* to heterodox attacks on conventional micro-theory, especially those from Simonian and related perspectives<sup>4</sup> (Machlup, 1946, 1967).

Thus, in Hayek's case as in Machlup's, the connection between intellectual background and a concern with the economics of knowledge is a straightforward one. Mixing subjectivism with a bit of empiricism leads to concern with the knowledge possessed by economic agents, which might easily turn into a full-blown concern with the role of knowledge in society. In Hayek's case, the path turns out to be one not unlike the road from Mises to Shackle that Professor Lachmann urges us to follow (Lachmann, 1976, 1982). But this was not Machlup's path.

## B. Machlup on Methodology

If Hayek's trail can be traced back to the influence in Vienna of Machian positivism, Machlup's failure to follow the same path can be traced to his quite different early methodological influences.

Mises himself was surely part of the story. But the strongest influence on Machlup came from his longtime friend Alfred Schutz. A sociologist and philosopher, Schutz was concerned with much the same problem as

Mises: the problem of determinate theory in a world of free will. And, like Mises, he saw a kind of situational determinism as the solution. But, like Machlup (and virtually everyone else), Schutz did not accept Mises's strong *a priori* approach. He turned instead to the method of ideal types. The notion of ideal types originated with Weber, who had applied them, and the related method of *Verstehen* or "understanding," to the analysis of history. Schutz's idea was to make the ideal type a tool of theory. By choosing an appropriate "psychologically anonymous" ideal type, one could abstract from the idiosyncrasies (and the free will) of particular real-world individuals to produce theoretical statements of general validity—while retaining the possibility of subjective understanding.

How one constructs the appropriate ideal type is a complicated issue beyond our scope. But notice that a psychologically anonymous ideal type needn't be a psychologically empty one. To put it another way, the ideal-typical method does not by itself imply situational determinism. Connecting the two was in many ways Machlup's distinctive contribution. He saw that the level of anonymity of the ideal type—and, therefore, the level of generality of the theoretical statement it is used to construct—is not arbitrary. It depends effectively on what I have described elsewhere as the "system constraint"—on the institutional structure one assumes (Langlois and Koppl, 1985; Langlois, 1986).

Machlup explicates the issue of generalizability in a clear and straightforward way in his 1936 article "Why Bother with Methodology?" Consider, he says, the following three economic propositions.

*Statement (1):* 'If, because of an abundant crop, the output of wheat is much increased, the price of wheat will fall.'

*Statement (2):* 'If, because of increased wage-rates and decreased interest rates, capital becomes relatively cheaper than labor, new labor-saving devices will be invented.'

*Statement (3):* 'If, because of heavy withdrawals of foreign deposits, the banks are in danger of insolvency, the Central Bank Authorities will extend the necessary credit' (Machlup, 1978, p. 64).

In Machlup's view, only the first of these statements can claim a high level of generality. The reason is that, because of the very nature of the circumstances involved, the economic agents in statement (1) may be replaced by anonymous ideal types—no personal details or psychological quirks matter, since each is powerless to affect price. In statement (3), by contrast, the outcome depends crucially on the details of the particular individuals involved; thus, we cannot assert (3) as a general proposition. (Statement (2) possesses an intermediate level of generality.)

This explains Machlup's insistence that general price theory—"marginalism"—deals only with the effects of the behavior of anonymous masses of hypothetical reactors. One implication of this is that price theory ought

to be largely *uninterested* in the level of knowledge individuals (or firms) possess or in the problems of information acquisition they face. Machlup was always somewhat impatient with the view that imperfect information and bounded rationality somehow invalidated marginalist results. What, he asked, “can be ‘imperfect’ about information on, say, a tax increase? Why should it take special theories of bureaucracy to explain how the news of a wage increase ‘flows’ through various hierarchical levels up or down or across? Yet this, and this alone, is the information that is essentially involved in the theory of prices and allocation, since it is the *adjustment to such changes* in conditions for which the postulate of maximizing behavior is employed.” (Machlup, 1967, p. 25, emphasis original).

The result seems paradoxical. This is hardly the attitude toward knowledge in economics that one would have expected to lead to pioneering research in the economics of knowledge. Like all paradoxes, this one is resolved by adopting the proper perspective. And that will mean examining Machlup’s methodology from a wider angle, as well as considering more closely the contours of his eventual contribution to the economics of knowledge.

### C. Semantics as Rhetoric

Machlup’s role in the famed marginalist controversy is normally seen as a defensive—even an apologetic—one. If this is so, his is an odd sort of apologetics, since his defense paints marginalism into a corner so small that it *excludes* almost the whole of the present-day neoclassical research program (Langlois and Koppl, 1984). But there is another way to understand Machlup’s role in the marginalist controversy (and in methodological discussion generally), one that more fully reveals the connections among the diverse strands of the Machlup opus.

Recall the title of his 1936 essay: “Why Bother with Methodology?” Contrary to what my discussion above may have implied, the principal point of that essay was not to demand of economists that they restrict themselves to statements of general theoretical validity. Instead, the essay is an attempt—as the title suggests—to persuade economists that methodology matters. And why does it matter? It matters because methodology—understood as self-consciousness about the meaning and logical status of theoretical propositions—can have substantive implications. To Machlup, methodology is in a real sense a *semantic* exercise: it involves clear thinking about meaning and the categories of meaning.

One way to understand Machlup’s conventionalist methodology is as an anticipation of views that now arguably constitute the mainstream of the philosophy of science. At a time when most writers held to strong empiricist views or “naive” versions of falsificationism, Machlup was articulating a

position akin to that we now associate with names like Kuhn and Lakatos (Caldwell, 1982; Langlois and Koppl, 1985). To Machlup, a theory is never proven true or false by experience: all theories are *necessarily* true, since they are logically consistent systems of propositions. Moreover, many (an infinite number of?) such systems may fit a given set of facts. Thus, the task of theory selection is one of determining the *applicability* of a theory. More importantly, theories, for Machlup, cannot be appraised in isolation; they must be evaluated as part of a complete "research program." Ultimately, the criterion of theory choice for Machlup is not predictive ability or any empirical requirement; rather, it lies in the *explanatory* value of the theory as reflected in its ability to generate "ah-haahhness," that "feeling of relief and satisfied curiosity" researchers experience when they are able to see how observed regularities fit within a coherent theoretical system (Machlup, 1955, p. 9). This sort of appraisal is very much an act of personal knowledge in the manner of Polanyi (1958) or Kuhn (1970).

Looking at Machlup's methodology in this way helps us understand why he was always a voice for tolerance and pluralism in an era of methodological prescriptivism (Coats, 1978). This suggests a related way in which we might understand Machlup's methodological position. It is an anticipation of an even more recent development in methodological discussion—Donald McCloskey's insistence that economics, like all intellectual activities, is an exercise in rhetoric (McCloskey, 1983). In many ways, semantics was for Machlup what rhetoric is for McCloskey; for both of them, methodology, in Professor Perlman's phrase, is ultimately "the study of the bases for critical (i.e., self-conscious) persuasion" (Perlman, 1978, p. 38). Researchers should always insist on freedom of choice in method and program, but they must submit to strong standards of clarity and logical precision.<sup>5</sup>

This is not an attitude Machlup came to late in life. It reflects, I argue, a Misesian attention to the logic of categories, leavened by a tolerance and pluralism whose roots no doubt trace to the richness and diversity of Viennese intellectual life in the 1920s.

### III. THE KNOWLEDGE PROJECT

It is as an exploration in semantics, then, that we should understand Machlup's Knowledge Project. The project was a massive—one might say monumental—one. It was nothing less than an attempt to embrace knowledge in all its manifestations—to categorize it and to discuss its economic implications.

The first of these ten volumes, which was published in 1980, contains a preface in which Machlup recounts his involvement with the topic of knowl-

edge. It is a trail that began with (1) his interest in the theory of the firm in the 1930s; (2) that led to a concern with patent policy; (3) that turned to an interest in research and development and in science-and-technology information; (4) that moved on to the role of education in the R&D process; and (5) that culminated in a concern with the role that knowledge plays in the economy as a whole.

In 1962, Princeton University Press published Machlup's *The Production and Distribution of Knowledge in the United States*, a careful treatise on the place of knowledge and the "knowledge industry"—a Machlup coinage—in the modern economy. The book was immediately hailed as a pioneering work. It stands as the first major scholarly announcement of the "information revolution" and the "knowledge society"—ideas that have proved to be among the most significant of the last twenty years.

In the 1970s, when he was himself in his seventies, Machlup began the monumental task of expanding and updating that 1962 volume. The new work would be called *Knowledge: Its Creation, Distribution, and Economic Significance* and would also be published by Princeton University Press. Roughly speaking, each volume of the new work was to perform the function that had been played by a *chapter* of the 1962 volume. Machlup remarked in characteristic fashion that the project was itself "a flagrant instance of the knowledge explosion"<sup>6</sup> (Machlup, 1980, p. xiii).

One aspect of the project is, of course, the economic one. But throughout his work in the economics of knowledge, Machlup took a resolutely—and solidly competent—Marshallian view. The connection between knowledge and economics extended only to the role of knowledge as a commodity that can be bought, sold, and invested in. There is no emphasis in any of the volumes (or in the works leading to them) on the role of knowledge in economic theory.<sup>7</sup> Again, Machlup didn't follow that path.

But he did follow a semantic path. Indeed, the Knowledge Project is much more a semantic exercise than an economic analysis. It is categorizing and classifying, defining and refining, organizing and labeling. It is an intellectual approach that puzzles and bores the narrower members of the profession. But it is also a dazzlingly polymathematic and richly urbane form of scholarship. Perhaps this is Machlup's legacy, which is in turn partly the legacy of Mises and Vienna: that clear thinking about knowledge is itself knowledge.

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