

Eastern Economic Journal, Volume IX, No. 4,
October-December 1985, pp. 309-330 (corrected version)
[Original page numbers in brackets.]

Knowledge and Rationality in the Austrian School: an Analytical Survey

Richard N. Langlois*

Introduction.

This paper undertakes an examination of the “Austrian” approach to economic knowledge. This is at once a simple task and a difficult one. It is simple in that the theme of knowledge is an easy thread to find in all the writers of this school. But it is a difficult task in that the thread is at times so thick and complex that it can easily lead one through every area the Austrians have touched.

In order to avoid wandering unnecessarily into dark and lonely corners, we need to recast the issue somewhat. Fundamentally, I would argue, the Austrian writers — despite their many differences — are united by their attempt to grapple with the same conceptual puzzle: how is economic theory to deal with the fact that the economic agent resides in an open-ended world?

*Department of Economics, The University of Connecticut, Storrs, CT 06269-1063. The author would like to thank Roger Koppl and Randy Kroszner for helpful comments.

That economic agents — and economists, for that matter — live in an open-ended world is hard to dispute. Yet economic theory, especially in its neoclassical manifestations, finds this an extremely troubling idea. It is difficult to analyze the optimum allocation of resources if there are always new resources, techniques, markets, or even tastes yet to be discovered. Now, one may legitimately choose to construct closed theories (models) in which all knowledge is ultimately given. For instance, one might argue that all theories (models) necessarily convey only part of the truth, and that there are circumstances in which the assumption of fixed-and-given knowledge is not inappropriate. Similarly, one might argue that economic theory progresses by successive approximation, and thus that “perfect knowledge” is only a starting point from which to move to more “realistic” assumptions about the knowledge agents possess. What sets the Austrians apart is that, for the most part, they rejected both of these arguments and chose to pursue theories in which the open-ended character of the world makes itself unmistakably felt.

In what follows I will survey the Austrian school — in what I hope is an [310] only slightly selective way — to see how each writer dealt with the problem of incorporating into theory the potential open-endedness of economic knowledge. This will involve in part a “dehomogenization” of the Austrians: for, while they are united by a concern with the problem of knowledge, each approached the problem in his own way.

Before setting off on the survey, though, we will need to construct a bit of conceptual equipment.

Rationality, knowledge, and the economic system.

The concern with the problem of economic knowledge among writers of the Austrian school has its roots in the methodological level. The Austrians are known for their adherence to a doctrine called subjectivism, which holds, roughly speaking, that explanation in the social sciences consists in tracing social phenomena back to the perceptions and intentions of the agents whose actions those phenomena comprise. Taking this doctrine seriously immediately forces one to ask about the motives and — more to the point — the knowledge the economic agent possesses.

Subjectivism finds its origins in the traditional methods of textual analysis (Lachmann, 1971, p. 18). In this sense, it is an interpretive method, one that requires the analyst to decipher the intentions, purposes, and meanings of the agent in much the way a literary scholar interprets the meaning of a text. This is what Max Weber called the process of *Verstehen* or “understanding.” In the realm of theory, this approach leads to a requirement that, in the words of Fritz Machlup, “all types of action that are used in the abstract models constructed for purposes of analysis be ‘understandable’ to most of us in the sense that we could conceive of sensible

men acting (sometimes at least) in the way postulated” (Machlup, 1978, p. 153).

The issues here are subtle and complex ones, and I've dealt with some of them at length elsewhere (Langlois, 1986). At the risk of oversimplification, though, let me suggest that there are two general ways to interpret the requirement of understandability. The first I will call the “strict” or “rationalist” and the second the “loose” or “institutional” interpretation.

The strict criterion of subjective understandability insists that we interpret human action as rational action. Rationality is a matter of consistency, of correct deduction from premises. In economic theory, of course, rational action involves choosing the means most conducive to achieving some end. In principle, this is almost entirely a logical and not at all a psychological notion. Rationality is in principle a property not of the agent but of a problem-situation or means-ends framework: given one's ends and the structure of means at one's disposal, there is only one rational thing to do.¹ The act of interpretation consists in connecting the (hypothetical) agent with a problem situation.

In practice — both neoclassical practice and Austrian practice — it is nearly impossible to [311] refrain from interpreting rationality as a

¹ This is often called the method of “situational determinism.” (See Latsis, 1976; but cf. also Boland, 1982 and Langlois, 1986.)

behavioral or psychological notion. After all, what makes this form of “rational reconstruction” (or, in the case of theory, rational *construction*) a valid method of subjective interpretation is that there is a reasonable connection between the logic of the agent's situation and the way the agent does in fact behave. In this sense, then, it is legitimate to say that the rationality postulate constitutes a theory of knowledge — a theory of how the agent knows and how that knowledge influences behavior (Langlois, 1983).

There are two related difficulties with the strict criterion. The first I will call “Kirzner's problem”; the second, “Hayek's problem.”

Kirzner's problem arises precisely from the fact of an open-ended world. If we are to trace all economic phenomena back to the choices of agents within means-ends frameworks, how are we to account for the possibility of novelty? In an open-ended world, we cannot suppose all means-ends frameworks simply to be given, for new knowledge is always emerging in a way that changes the agent's perception of both means and ends. If rationality consists solely in choice within a means-ends framework, then how do we explain the choice of the framework itself? Must we consign this process to the realm of the irrational — and therefore give up economic explanation by the strict criterion?

Hayek's problem concerns not so much the interpretation of the individual agent's behavior but the manner in which the behavior of individuals connect together in the economic system. As a logical matter,

adherence to the strict criterion does not commit one to any particular compositional principle — that is, any principle with which to connect together in a theory the behavior of individuals so as to produce aggregate or market-level results. In fact, though, most adherents to the strict criterion seem implicitly to view the appropriate compositional principle as either obvious or as somehow “contained in” the rationality postulate itself. Hayek pointed out, in effect, that such an assumption is inconsistent not merely with the fact of an open-ended world but with subjectivism itself. To say that an individual allocates resources rationally is not particularly problematical; but to get from such an assertion to statements about how the economy as a whole allocates resources requires assumptions about how the knowledge of the individual agents fits together. Indeed, to say that the economy allocates resources rationally is implicitly to assume that all the agents are operating with the same knowledge — and thus that all knowledge is given and objective.

The loose criterion of subjective interpretation is less susceptible to these criticisms, since it is less insistent about what constitutes rational action. Like the strict criterion, the loose criterion requires an explanation in terms of the motives and perceptions of individual agents. Moreover, the loose criterion is also in principle a non-psychological conception: it too consists in a rational reconstruction (or construction) of the problem-situation the agent finds himself in. (And the loose criterion is also far more

psychological or behavioral in practice than in principle.) The difference is that the loose criterion admits of a wider conception of what it means to be rational. More correctly, perhaps, we might say that the loose criterion demands not rationality but reasonableness (Cf. Boland, 1982, p. 38). And reasonableness need not involve conscious deduction from explicit [312] premises — and therefore need not translate strictly into consistent optimizing behavior. This means that the loose criterion is able to bring under the cape of subjectivism a number of possible theories of knowledge. Moreover, the loose criterion's reduced emphasis on rationality (narrowly construed) makes it less likely to see the conscious rationality of agents as somehow leading directly to a compositional principle. The subjectivist who adheres to the loose criterion may thus be more attentive to alternate compositional principles — various sorts of selection arguments or invisible-hand mechanisms (Langlois, 1986).

One reason for making this distinction is to suggest that the two criteria may lead to different perceptions of the way the economic system works in the face of open-ended knowledge. Very loosely, we might say that those who adhere to the strict criterion see rationality as the “glue” that holds the system together. For these writers, the open-endedness of knowledge potentially creates fundamental difficulties for the smooth functioning of the economy. By contrast, those who adhere to the looser conception of subjective interpretation need not see rationality as holding the

system together; that task may devolve to rules, routines, habits, or social institutions generally. Thus the problem of open-ended knowledge may seem less troubling for the functioning of the economy. Indeed, many of the regularities we perceive in social phenomena may appear precisely as a *result* of this open-endedness (Heiner, 1983).

I do not offer this distinction as a characterization of the positions of any of the writers I intend to discuss. In fact, most — if not perhaps all — reflect a blend of these two views, with some leaning more toward the “strict” pole and others toward the “loose” end. Nonetheless, this distinction will, I hope, provide a frame on which to drape the ideas of the Austrian school and on which to examine the various approaches to the problem of economic knowledge in an open-ended world.

Carl Menger.

It should come as no surprise that Menger, the founder of the Austrian school, was very much concerned with the problems of uncertainty, imperfect knowledge, and the open-endedness of the world. Indeed, the trend in Menger scholarship over the past ten or fifteen years has been to stress precisely these elements in his thought and thus to “dehomogenize” him from his more equilibrium-minded cohorts in the marginalist revolution (Streissler, 1972; Jaffé, 1976; Koppl, 1983). Menger's *Principles* (Menger, 1981 [1871]), writes Erich Streissler,

is a conscious complement to Adam Smith's *Wealth of Nations* and for this reason it is not static, but concerned with economic progress. It is intended to elucidate the *change in the range and quality of economic goods*. It is an investigation of the restraints of economic action, or rather the *change of restraints* through a change in the choice variables (and not primarily an investigation of the objective function in economics), to such an extent that Menger thought it necessary to stress this aspect as the sole object of economic theorizing. And it is, above all, basically an *information theory*, economic theory under *uncertainty* and not under certainty. (Streissler, 1972, p. 427, emphasis original.)”

Although one still sees it repeated incessantly (often from the pens of those who should know better) that Adam Smith dealt with a world of atomistic traders, equilibrium, and perfect competition, students of Smith understand that quite the opposite is the case. One has only to read the first few pages of *The Wealth of Nations* to recognize that Smith was concerned with economic growth — and that the engine of growth is innovation brought about by the division of labor. A similar story is true for Menger. His *Principles* is not perhaps a complement to *The Wealth of Nations* so much as it is a kindred but alternative theory of the engine of economic growth. For Menger, the division of labor is not so much a cause as an effect of economic progress; the real cause of growth is an increasing attention to goods of “higher order,” that is, goods that are not used directly for consumption but are used to make consumption goods (or used to make goods that are used to make consumption goods, etc.). Thus for Menger as for Smith, innovation — the acquisition of new knowledge — is the driving force of growth. The process of recognizing possibilities for increasingly “roundabout” production processes is

a matter of the extension of human knowledge. This is presumably what Streissler means when he says that Menger investigated changes in the constraints facing human action: in modern terminology, Menger was concerned with the expansion of the “choice set” as knowledge expands (Streissler, 1972, p. 127). This, then, is one of the principal ways in which Menger was concerned with the problem of an open-ended world. [313]

Where Menger most clearly parts company from the classical tradition, of course, is on the question of value. Cost of production does not determine value; value for Menger “is merely the importance that we first attribute to the satisfaction of our needs, that is, to our lives and well-being, and in consequence carry over to economic goods as the exclusive causes of the satisfaction of our needs” (Menger, 1981, p. 116). This is clearly subjectivism. But what kind of subjectivism is it?

We might easily be tempted to argue that Menger implicitly adhered to the strict criterion of subjective interpretation. His theory of value arises from a consideration of what he calls the “economizing individual.” This individual has needs — in fact, a hierarchy of needs — and seeks to satisfy those needs with the scarce goods at his or her disposal. Value thus arises as a logical relationship between needs and available resources. In this sense, Menger is a true marginalist, and he spends a good deal of time setting out the allocational logic for optimally assigning goods to needs (Menger, 1981, pp. 121-145).

In the end, though, I would argue that Menger's conception of rationality is not that implied in the strict criterion. For one thing, it is clear that Menger does not portray the process of economizing as a purely logical or cleanly rational activity. As Jaffé suggests, “Thorstein Veblen's strictures upon what he considered the Austrian preconception of human nature fit Jevons's or Walras's theory much better than they do Menger's. ... Man, as Menger saw him, far from being a 'lightning calculator,' is a bumbling, erring, ill-informed creature, plagued with uncertainty, forever hovering between alluring hopes and haunting fears, and congenitally incapable of making finely calibrated decisions in pursuit of satisfactions.” (Jaffé, 1976, p. 521.).

But the issue is somewhat deeper. Menger's preoccupation with error and learning is a reflection of his conception of rationality, which is fundamentally Aristotelian — and therefore somewhat different from the maximizing conception implicit in what I called the strict criterion (White, 1977; Kauder, 1965). To Menger, rationality does not consist in deducing from given knowledge the best means to achieve given ends; the rational agent is one who works at understanding both his or her needs and the means of satisfying them. But rationality doesn't rule out the possibility of error. “Even individuals whose economic activity is conducted rationally, *and who therefore certainly endeavor to recognize the true importance of satisfactions* in order to gain an accurate foundation for their economic

activity, are subject to error. Error is inseparable from all human knowledge” (Menger, 1981, p. 148, emphasis added).

Even if this is not the conception of rationality I associated with the strict criterion of interpretation, it is nonetheless a strict version of “situational determinism” in its own right. “The direct needs of each economic subject,” Menger says elsewhere, “are given in each case by his individual nature and previous developments (by his individuality). The goods directly available to him are strictly given by the economic situation of the moment. Our direct needs and the immediately available goods are in respect to any present moment given facts that are not within our discretion. Thus *the starting point and the goal of every concrete human economy are ultimately determined strictly by the economic situation of the moment*” (Menger, 1963 [1883], emphasis original.) [314]

In the end, then, Menger's story is a mixed and complex one. As befits a founder, his work contains elements that — as we shall see — his followers took in more than one direction.

Joseph Schumpeter

The next logical step in a history of the Austrian school would normally be a discussion of Friedrich von Wieser and Eugen von Bohm-Bawerk, Menger's immediate successors. For a number of reasons — principal among them

that these writers do not provide the proper grist for my thematic mill — I propose to jump directly to the second generation of Austrians.

In some ways, Joseph Schumpeter does not properly belong in the Austrian tradition. His origins and training were certainly Austrian. But his methodological tastes seem, by his own account, at least, distinctly non- or even anti-Austrian. In 1908, he published a methodological tract in favor of a Mach-Pareto brand of positivism (Schumpeter, 1908); and he always professed himself a fan of the Walrasian tradition, asserting, in a famous quote, that “Walras is in my opinion the greatest of all economists” (Schumpeter, 1954, p. 827). Nonetheless, it is one of many paradoxes about Schumpeter that his own work was in substance distinctly non-Walrasian. Schumpeter's own theory turns out to be quite “Austrian”² and very much concerned with the problem of the open-endedness of economic knowledge.³

That we can interpret Schumpeter in subjectivist terms should not be surprising when we consider the strongly Weberian character of his portrayal of the entrepreneur. Moreover, Schumpeter provides us with a fairly good example of what I called the loose criterion. His conception of economic knowledge has little rationalist flavor at all. In describing what he calls “the circular flow of economic life,” Schumpeter presents us with a highly

² Streissler (1972, p. 423) suggests that Schumpeter's theory of entrepreneurship was influenced in part by Menger. But see also Kirzner (1979, chapter 4) and Martin (1979).

³ I discuss these issues at greater length in a paper on which this section draws heavily (Langlois, 2003).

empirical — even evolutionary — picture of the way economic knowledge is acquired. “The assumption that conduct is prompt and rational,” he says,

is in all cases a fiction. But it proves to be sufficiently near to reality, if things have time to hammer logic into men. Where this has happened, and within the limits in which it has happened, one may rest content with this fiction and build theories upon it. It is then not true that habit or custom or non-economic ways of thinking cause a hopeless difference between the individuals of different classes, times, or cultures, and that, for example, the “economics of the stock exchange” would be inapplicable say to the peasants of to-day or the craftsmen of the Middle Ages. On the contrary the same theoretical picture in its broadest contour lines fits the individuals of quite different cultures, whatever their degree of intelligence and of economic rationality, and we can depend upon it that the peasant sells his calf as cunningly and ego-[315]tistically as the stock exchange member his portfolio of shares. But this holds good only where precedents without number have formed conduct through decades and, in fundamentals, through hundreds of thousands of years, and have eliminated unadapted behavior (Schumpeter, 1934, p. 80.)

We might call this a theory of “bounded” rationality. The agent acts rationally, but only within a limited sphere. Most of the agent’s behavior is informed by habits and customs, built up over the years, that embody, as it were, useful knowledge the agent cannot consciously command. Moreover, when Schumpeter says that the agent acts “rationally” within a limited sphere, he seems to mean it in a sense far closer to what Max Weber meant than to what is implied in the idea of maximizing. It is very much a sociological notion of rationality rather than a logical one. Schumpeter associates rational conduct with cunning and egotism — precisely the notions from which proponents of the strict criterion wish most to distance

themselves. And the question of differences in the extent of rational conduct among different peoples and different social classes is obviously a Weberian issue.

The circular flow is a closed world. There may be changes in data and various shocks to which the agents must adapt, but there is nothing fundamentally new. It is the entrepreneur whose task it is to introduce novelty. And novelty, for Schumpeter, brings with it problems not found in the circular flow. The entrepreneur who steps outside the confines of the ordinary

must really to some extent do what tradition does for him in everyday life, viz. consciously plan his conduct in every particular. There will be much more conscious rationality in this than in customary action, which as such does not need to be reflected on at all; but this plan must necessarily be open not only to errors greater in degree, but also to other kinds of errors than those occurring in customary action.

How different a thing this is becomes clearer if one bears in mind the impossibility of surveying exhaustively all the effects and counter-effects of the projected enterprise. Even as many of them as could in theory be ascertained if one had unlimited time and means must practically remain in the dark. ... Here the success of everything depends upon intuition, the capacity of seeing things in a way which afterwards proves to be true, even though it cannot be established at the moment, and of grasping the essential fact, discarding the unessential, even though one can give no account of the principles by which this is done" (Schumpeter, 1934, p. 85).

By stepping outside the bounds of routine, the entrepreneur extends the sphere in which conscious planning is necessary for successful action. But, because of "bounded rationality," he or she cannot in fact act rationally in the

strict sense and, as a result, must rely on intuition.⁴ Thus entrepreneurship à la Schumpeter is an extra-rational activity from the point of view of the logical conception of rationality — though it is very much a rational activity according to Schumpeter's own meaning of the term.

Once the entrepreneur has succeeded in “carrying out a new combination” — if he or she has in fact succeeded — imitators quickly swarm in, bid away the quasi-[316]rents of entrepreneurship (“profit,” in Schumpeter's terms), and help reestablish a new circular flow. In Schumpeter, it is not the conscious rationality of the agents, in any sense of the term, that holds the system together; rather, it is the tendency for experience “to hammer logic into men.” We might even go so far as to say, as Nelson and Winter (1982) suggest, that Schumpeter really had a kind of selection mechanism at the back of his mind. It is this selection mechanism that tends to restore the system to the circular flow. This is why Schumpeter (unlike other writers to whom we'll turn in a moment) did not see entrepreneurship or the introduction of novelty as fundamentally troubling. Entrepreneurship is *creative* destruction.

⁴ At least in the “early” stages of capitalism. Schumpeter also contended, of course, that “with time and progressive rationalisation” (Schumpeter, 1934, p. 85), people would be able consciously to anticipate and plan for novelty. This development will render the entrepreneur obsolete. I discuss this issue elsewhere (Langlois, 2003), arguing that this claim represents a fundamental tension in Schumpeter's work and, ultimately, reflects his confusion of two different kinds of knowledge.

Ludwig von Mises.

Ludwig von Mises and Schumpeter were close contemporaries and belong to the same “generation” of the Austrian school. They were also both influenced by Max Weber. Beyond these similarities, however, the writers are for our purposes largely a study in contrasts. Whereas Schumpeter practiced a methodology very different from the one he preached, Mises unfailingly linked almost every substantive area of his work to a consistent methodological position. And whereas Schumpeter derived from Weber what I have argued is a “loose” interpretation of the criterion of subjective interpretation, Mises found in the same source a basis for what is arguably the paradigm of the strict criterion.

Mises’s position was in many ways a reaction to trends — such as Schumpeter's expressed methodological views — that he saw developing in economics in general and Austrian economics in particular. He viewed his task as one of returning the discipline to the path staked out by its founder (Lachmann, 1982, p. 34). As we saw, Menger developed a kind of Aristotelian version of situational determinism that interpreted economic conduct in terms of the agent's (usually imperfect) attempts to act in accordance with the economic logic of the situation he or she faces. Mises took a different tack. Starting from a neo-Kantian rather than an Aristotelian philosophy, he argued, in effect, that — contra Menger — reason is not inherent in the objective situation the agent faces. But reason *is* inherent in the way one

understands and confronts the situation one faces. “Life and reality are neither logical nor illogical,” Mises says; “they are simply given. But logic is the only tool available to man for the comprehension of both” (Mises, 1949, pp. 67-68).

Menger saw an agent's scale of needs as a reality existing independently of the will; the theory of marginal utility emerges as a relationship between those needs and the scarce means available to satisfy them. That theory thus reflects “exact laws,” determinate subject only to the possible errors the [317] agent may commit in perceiving needs or the causal connections among needs and means. Mises retains the conception of a scale of needs. But, unlike Menger, he sees these needs as in fact wholly arbitrary — at least from the economist's point of view. This is perhaps Mises's greatest innovation: the completely subjective definition of rationality. To Mises all action is necessarily rational by definition; he calls the term “rational action” a pleonasm, and contrasts action not with irrational behavior but with instinctive behavior (Mises, 1949, pp. 19 and 20). In large measure, this conception is an attempt to rid economics in general and utility theory in particular of all psychological content. As part of his attack on psychological interpretations of utility, Mises quotes Max Weber for support. “The theory of marginal utility, he [Weber] asserts, is 'not psychologically substantiated, but rather — if an epistemological term is to be applied —

pragmatically, i.e., on the employment of the categories: ends and means”
(Mises, 1949, p. 126).

In one sense, we can say that Mises was certainly successful in his quest to rid utility theory of psychology. Compared with early theories — not merely Menger's but especially Jevons's — Mises's theory makes no appeal to physiological laws of satiation or overtly psychological theories like hedonism or Benthamite utilitarianism. It is as if Mises has removed all intermediate stages from the process of cognition. One does not start by considering a scale of wants and then contemplating the process (which may or may not always be “rational”) by which the agent gets from the scale to the observed choices. As far as the economist is concerned, there is no such process. “It is customary,” says Mises,

to say that acting man has a scale of wants or values in his mind when he arranges his action. On the basis of such a scale, he satisfies what is of higher value, i.e., his more urgent wants, and leaves unsatisfied what is of lower value, i.e., what is a less urgent want. There is no objection to such a presentation of the state of affairs. However, one must not forget that the scale of values or wants manifests itself only in the reality of action. These scales have no independent existence apart from the actual behavior of individuals. The only source from which our knowledge concerning these scales is derived is the observation of a man's actions. Every action is always in perfect agreement with the scale of values or wants because these scales are nothing but an instrument for the interpretation of a man's acting. (Mises, 1949, pp 94-95.).

Indeed, this passage seems to compress the cognitive process to such an extent that it has caused some interpreters to worry that Mises may have

slipped too close to behaviorism (Lachmann, 1982, p. 38), perhaps even anticipating the revealed-preference view of Samuelson.

There is a way to interpret Mises that not only vindicates his claim to have removed psychology from economics but also absolves him of the charge of behaviorism. Under this interpretation, the last sentence of the quotation holds the clue. The logic of means and ends is not a claim about how the mind of an agent actually works; rather, it is an *interpretation* of his or her behavior based on the logic of the situation — a reconstruction of an observed choice in terms of a mean-ends logic. This is more or less what Spiro Latsis has in mind when he credits Mises with inventing the method of [318] situational determinism (Latsis, 1976, pp. 4-7). Under this interpretation, Mises's approach is a version of what Karl Popper calls the method of “situational analysis,” in which “we replace concrete psychological experiences by abstract and typical situational elements like 'ends' or 'knowledge'”; and Mises's notion of action is just a (strong form) of what Popper calls “the rationality principle,” according to which agents “act in an *adequate* or *appropriate way*, that is, in conformity with the situation envisaged” (Popper, 1967, p. 144, translation mine).

I think this is a valid interpretation — even though I also think there is an irreconcilable tension between this interpretation and another of the items on Mises's methodological agenda: the status of his fundamental postulates as valid *a priori*. In order to argue for the *a priori* validity of his

version of the rationality principle, Mises appeals (in neo-Kantian fashion) to the categorical structure of the brain. We know these postulates to be valid, he argues, because the categories of means and ends are so fundamental to thought that conscious action on any other basis would be inconceivable. However one views this claim, it is clear that it rests on an association of the rationality principle of economic theory with the nature of concrete human reasoning. “Action and reasoning are congeneric and homogeneous; they may even be called two different aspects of the same thing. That reason has the power to make clear through pure ratiocination the essential features of action is a consequence of the fact that action is an offshoot of reason” (Mises, 1949, p. 39). If this is the case, then Mises's version of the rationality postulate is not in fact merely a version of situational analysis: it is a psychological theory as well, a theory about how the minds of economic agents actually work. As such, Mises does not make good his claim to have rid economics of psychology — he has merely based his economics on a particular (and scarcely unassailable) psychological theory.

It is clear, in any event, that Mises notion of human action translates into the strict criterion of interpretation. Two issues remain. What is the compositional principle in Mises? And what is Mises's attitude toward the open-ended character of economic knowledge?

The first of these is a somewhat controversial issue. Mises was, of course, a leading methodological individualist. As such he denied the

possibility of directly apprehending social “wholes” or of using them as building blocks of a theory. He did not deny the reality of such wholes, but insisted that knowledge of them be built up from considering the actions of individuals. “If we scrutinize the meanings of the various actions performed by individuals,” he writes, “we must necessarily learn everything about the actions of collective wholes” (Mises, 1949, p. 42). Taken literally, this assertion is evidence of a naive version of methodological individualism in which the properties of wholes are somehow “contained in” or can be deduced from consideration of the parts alone, without even implicit consideration of the compositional principle involved. Such a view is untenable, and was rejected by such staunch individualists as Hayek (Langlois, 1983). Mises's position seems ambiguous, though; in the main, he seems to consider the entire issue merely idle pedantry (Mises, 1949, p. 43). What *is* clear is that Mises was a thoroughgoing rationalist; and, as such, there is a clear sense in which he saw reason — human action — as the fundamental source of cohesion in the [319] economic system (which is, of course, the social “whole” in question). For Mises, I think it fair to say, conscious rationality is what holds the system together.

Mises was also clearly concerned with the open-endedness of economic knowledge. “Human action,” says Mises, “is one of the agencies bringing about change. It is an element of cosmic activity and becoming” (Mises, 1949, p. 18). He also devotes two chapters of his tome *Human Action* to the topics

of time and uncertainty. In the end, though, as Ludwig Lachmann has pointed out on several occasions, Mises never did come to grips with an issue that was very much latent in his work: the issue of expectations and radical uncertainty (Lachmann, 1976; 1982). In Lachmann's view, Mises's conception of subjectivism was not geared to address that issue. As we saw, Mises was concerned with “extending” the subjectivism of Menger into the realm of values. Needs, for Mises, were no longer more-or-less objective and susceptible to investigation by the agent (or even perhaps the economists): values became wholly subjective and simply “givens” to the economist. For Lachmann, subjectivism needs to be extended one step further from the subjectivism of values to the subjectivism of expectations (Lachmann, 1943, p 18; 1982, p. 38).

But why did Mises restrict himself to this (in Lachmann's view) narrow concept of subjectivism? Lachmann has an answer for that as well, an answer whose implications will resurface as something of leitmotif in this essay. “Time,” he says, quoting G. L. S. Shackle, “is a denial of the omnipotence of reason.’ Who could blame a stout rationalist for ignoring phenomena concomitant to elusive Time?” (Lachmann, 1982, p. 37 [Shackle, 1972, p. 27]).

F. A. Hayek.

However limited Mises's conception of subjectivism may or may not have been, it is clear that the subjectivism of expectations became a concern for at

least one writer in the next generation of Austrians. For Mises's student F. A. Hayek, issues of knowledge and expectations become central to economic theory.

In his well-known article “The Use of Knowledge in Society,” written in the context of the socialist calculation debate⁵ of the 1930s and 40s, Hayek argued for the efficacy of the price system as a mechanism for transmitting information and making good use of the “knowledge of the particular circumstances of time and place” that all economic agents possess (Hayek, 1945 [1948, p.80]). But it is an earlier article, “Economics and Knowledge,” that is more interesting for our purposes. Here Hayek examines the concept of equilibrium in economics and the assumptions about knowledge that underlie it. His central thesis is that “the tautologies, of which formal equilibrium analysis in economics essentially consists, can be turned into [320] propositions which tell us anything about causation in the real world only insofar as we are able to fill those formal propositions with definite statements about how knowledge is acquired and communicated” (Hayek, 1937 [1948, p. 33]).

Formal equilibrium modeling, says Hayek, consists in an exercise in the logic of means and ends, what he calls the Pure Logic of Choice; but we

⁵ Indeed, this debate was arguably quite important in influencing the movement of Austrian economics into questions of knowledge and learning. As Don Lavoie has argued, even the Austrians themselves failed to realize initially the extent to which their position has come during the course of the debate to diverge from that of static

cannot use this logic to say anything about the process by which equilibrium is attained or about whether there exists a tendency toward equilibrium. This is what I called “Hayek's problem.” Although Hayek's criticisms are aimed primarily at the neoclassical research program, it is clear that his conception of the Pure Logic of Choice is essentially the Misesian subjectivism of means and ends, what I called the strict criterion of subjective interpretation. His complaint is not, it seems, with this Pure Logic of Choice itself but with the compositional principle that (I hinted) is implicit in Mises: the notion that it is possible to make statements about “social processes” directly by considering only the logic of allocation of individual agents. “Implication,” as Hayek says elsewhere, “is a logical relationship which can be meaningfully asserted only of propositions simultaneously present to one and the same mind” (Hayek, 1948, p. 90). To say that the logic of allocation of an individual mind can take us to statements about social processes is necessarily to assume that all the minds in society share the same premises — and therefore the same knowledge. To put it another way, the Pure Logic of Choice is applicable only when all minds *do* in fact share the same knowledge: in equilibrium. That Logic can say nothing, Hayek argues, about conditions of disequilibrium or about the process that leads to equilibrium. Statements about disequilibrium, in Hayek's view, are necessarily empirical

neoclassical welfare economics. This has led to a widespread misinterpretation of the nature and meaning of the debate (Lavoie, 1985).

statements “about how experience creates knowledge”; and an assertion of a tendency toward equilibrium is an empirical not a logical proposition.

As Israel Kirzner points out, Hayek has in effect split economic explanation in two parts. “Hayek has offered us a view of the market process that sees it as made up of a succession of two diverse elements, logical inevitability and empirical accident” (Kirzner, 1979, p.26). At each point, the agents make decisions using the logic of choice. But the choices of one individual may not mesh with those of others. The consequences of this failure to mesh — surpluses and shortages, for example — convey information to the agents that cause them to revise their plans. But, says Kirzner, the “specific lessons market experience will impart are *not* understandable through the logic of choice; they are to be understood by the economist only as empirical regularities — if regularities indeed prevail at all — that happen to be the way they are. Apart from the accident of such empirical regularities, there is nothing in the logic governing the set of choices made by market participants at one date to account for the set of choices they make at future dates” (Kirzner, 1979, p. 27).

The source of this dichotomy is in large measure the strict criterion of subjective interpretation. If “rational action” is to mean only the Pure Logic of Choice (as Hayek here agrees) then learning — the acquisition, as it were, of premises not previously “given” to the agent — cannot be a “rational” activity. There is in the large only one way to heal the dichotomy: one can

broaden the (strictly logical) conception of rational action so that it *includes* learning. This still leaves open the question of whether broadening the definition in this way removes the empirical element — thereby returning [321] disequilibrium economics and the tendency toward equilibrium to the realm of logical necessity — or whether it merely allows the empirical element to creep into our understanding of even the static choices of individual agents. As we'll see, Kirzner argues the former. But what about Hayek?

If we have to go by Hayek's strictly economic writings, we would have to say that he leaves the dichotomy unhealed. If, however, we examine some of his later writings (which are principally in the areas of philosophy and political theory), we might construct a case that Hayek *does* have a theory of behavior that unifies allocation and learning.⁶

Hayek has long been an opponent of what he calls the Cartesian conception of rationality — the idea that rationality consists exclusively in

⁶ There is in fact some justification for this in Hayek's own writings. "When I look back," he wrote in the 1960s, "it seems to have all begun, nearly thirty years ago, with an essay on 'Economics and Knowledge' in which I examined what seemed to me some of the central difficulties of pure economic theory. Its main conclusion was that the task of economic theory was to explain how an overall order of economic activity was achieved which utilized a large amount of knowledge which was not concentrated in any one mind but existed only as the separate knowledge of thousands or millions of different individuals. But it was still a long way from this to an adequate insight into the relations between the abstract rules which the individual follows in his actions, and the overall order which is formed as a result of his responding, within the limits imposed on him by those abstract rules, to the concrete particular circumstances which he encounters. It was only through a re-examination of the age-old concepts of freedom under the law, the basic conceptions of traditional liberalism, and of the problems of the philosophy of law which this raises, that I have reached what seems to me a tolerably

logical deduction from explicit premises. He identifies a long and well-developed tradition in which “reason had meant the capacity to recognize truth ... when [one meets] it, rather than a capacity of deductive reasoning from explicit premisses” (Hayek, 1967, p. 84). In a very real sense, this *defines* rationality as learning. Nothing in such a definition precludes the possibility that the agent often consciously surveys the means at his or her disposal and chooses among them “optimally” in view of ends. Indeed, in order for the idea of learning to be coherent, we have to interpret that notion in something like a means-ends (or at least a more-is-preferred-to-less) framework: the agent has “learned” when the knowledge he or she comes to possess is “better” than the knowledge he or she had before — and “better” makes sense only in view of some goal (Langlois, 1983). But this rationality-as-learning idea does not commit one to explaining *all* behavior in terms of the conscious means-ends rationality of the agent. Some aspects of the agent's behavior can be guided by habits, customs, and other social institutions. These social institutions may in turn be explicable in terms of earlier conscious choices — but not necessarily the choices of the agent, for whom the institutions may be “exogenous.” [322]

What is more interesting about this conception of rationality is its implication that the agent pays consciously attention to means and ends *primarily* when acquiring new knowledge. In a sense, this is a complete

clear picture of the nature of the spontaneous order of which liberal economists have so

reversal of the story Hayek told in 1937: it is no longer the equilibrium “snapshots” that are governed by the Pure Logic of Choice — it is precisely the episodes of change that call for rationality. This is, of course, reminiscent of my portrayal of Schumpeter's views. The agent's behavior is governed by rules (habits, institutions) to the extent that no change or adaptation is required, and governed by conscious rationality (to the extent that such rationality is up to the task) when change — whether endogenous or exogenous — occurs. In either case, the postulates about behavior are empirical rather than strictly logical ones. But that should not be particularly troubling unless one insists on some form of apriorism as a methodological position, since, in the modern philosophy of science,⁷ there are few other methodologies that worry about the *source* of the hypotheses in a theoretical system, that is, about whether a hypothesis is *a priori* or *a posteriori*.

Hayek's views are similar to Schumpeter's in another sense as well. Although the details of their systems differ, both, I would argue, ultimately rely on selection arguments in discussing how the actions of individuals are tied together in an orderly fashion. For Hayek, these arguments are couched in terms of what he calls the phenomenon of spontaneous order — a notion in many ways as fundamental in the Austrian tradition as that of subjective

long been talking” (Hayek, 1967, pp. 91-92.)

⁷ The literature here is, of course, extensive. For some relevant summary discussion see Langlois (1982) and Langlois and Koppl (1991).

interpretation. (Hayek, 1967, p. 101.). It is clear that Hayek intends this logic to apply to economic theory in a more general way.

Of theories of this type economic theory, the theory of the market order of free human societies, is so far the only one which has been systematically developed over a long period and, together with linguistics, perhaps one of the very few which, because of the peculiar complexity of their subject, require such elaboration. Yet, though the whole of economic theory (and, I believe, of linguistic theory) may be interpreted as nothing else but an endeavour to reconstruct from regularities of the individual actions the character of the resulting order, it can hardly be said that economists are fully aware that this is what they are doing. The nature of the different kinds of rules of individual conduct (some voluntary and even unconsciously observed and some enforced), which the formation of the overall order presupposes, is frequently left obscure. (Hayek, 1967, p. 72.).

In essence Hayek is chiding economists for not seeing economic theory as a matter of rule-following behavior. Moreover, it is clear that, for Hayek, the translation from individual rules of conduct to the overall order of the system must involve a selection mechanism — that order cannot be deduced solely from a consideration of individual actions alone (Hayek, 1967, pp. 70-71).

[323]

Israel Kirzner.

Another present-day writer in the Austrian tradition is Israel Kirzner. An “Austrian” by intellectual affiliation rather than by nationality, Kirzner studied and wrote his dissertation under the elderly Mises at New York University in the 1950s. An outgrowth of that dissertation was a book, called *The Economic Point of View* (Kirzner, 1976 [1960]), which traces the way in

which the definition of economics has changed in the history of economic thought. One of the book's principal foci is the late Lord Robbins's well-known treatment of economics as a “science which studies human behavior as a relationship between ends and scarce means which have alternative uses” (Robbins, 1932, p. 16). Unlike earlier definitions that saw economics as dealing with a particular subset of human activities, Robbins's definition cast the economic as an aspect of all human behavior, *viz.*, that aspect having to do with economizing, with allocating scarce resources to competing ends. This is obviously closely related to Mises's approach. It casts economics as a wholly logical, and not at all a psychological, enterprise, thus carving out, in Kirzner's view, a separate and autonomous discipline.

This “Robbinsian” definition of economics, based on the principle of economizing or maximizing, is clearly at the base of the modern neoclassical research program. But, for Kirzner, Robbins's definition, although Misesian in spirit, misses the full breadth of Mises's notion of human action. It is not until *Competition and Entrepreneurship* (Kirzner, 1973) that Kirzner fully isolates what he sees as the crucial difference between Robbinsian economizing (as he calls it) and human action in its fullest sense: for Kirzner, economic rationality embraces not only the optimal allocation of means to ends but also the very perception of the ends and means themselves. Such perception is part of the process of Kirzner associates with entrepreneurship.

As I suggested earlier, Kirzner's analysis is a response to the problem of an open-ended world or, more precisely, to the dilemma that the fact of an open-ended world poses for a conception of economics based on the rationality of means and ends. In an open-ended world, means-ends frameworks are not given to the agent. Thus the agent's choice cannot be explained only by "rationality," if rationality is limited to mean the optimal choice of means to satisfy given ends.⁸ Kirzner's solution to the problem is to broaden the conception of rationality to include the "alertness" to potential profitable opportunities. Thus, in effect, Kirzner attempts to close a logical loophole. He does not broaden the strict conception of rationality to destroy or supplant that conception; rather, he broadens it precisely to defend it from attack.

Kirzner's analysis becomes most interesting when he uses this approach to solve what I called Hayek's problem: how do the individually rational actions of individuals fit together to form coherent market patterns?

Like Mises, but unlike Hayek, Kirzner wants to be able to arrive at market outcomes solely by considering the rational actions of individuals. By [324] Kirzner's broadened definition of rationality, rational individuals seek to perceive and seize previously unknown profit opportunities, whether spontaneously or as a response to changing circumstances or to the

⁸ The attempt to explain the choice of means-ends frameworks by means of higher-level means-ends frameworks leads, of course, to infinite regress. See Kirzner (1973, p. 34).

recognition of their own earlier mistakes. It is possible for an agent — Robinson Crusoe, for example — to change his means-ends framework and to seize opportunities in a way that affects no one else. But in a market context, Kirzner asserts, such opportunities are always essentially opportunities for arbitrage, opportunities to transfer resources to uses that the market values more highly. As a result, says Kirzner, entrepreneurship as a logical matter tends to reduce market ignorance and to bring markets into a state of greater coordination (Kirzner, 1979 p. 30). This is an extremely clever and closely reasoned argument. But in the end, I fear, it claims too much.

Kirzner's argument does indeed rest in part on an "extraeconomic" factual consideration, that is, on the institutional setting in which the market trades are taking place. It is certainly possible to imagine markets in which entrepreneurial discovery is in fact coordinating. It is even plausible to believe that this is the case in the overwhelming majority of the markets we observe. But there is nothing in the tendency to entrepreneurial discovery itself that guarantees this. As a logical matter, statements about aggregate behavior cannot be deduced solely from propositions about individual behavior is to be aggregated. Very often in microeconomics, these considerations are rather unobtrusive, so we are inclined to forget about them entirely. For example, we must at the very least introduce a notion that the quantity demanded in a market is the sum of individual quantities

demanded. This may be a trivial fact, but it is logically necessary, and its validity derives in no way from a consideration of individual behavior.

The problem, of course, arises when we consider the more complex problems of aggregation in a disequilibrium market process animated by entrepreneurship. Here, absent some specification of the institutional setting, it is impossible to assert that a tendency to discover profitable opportunities guarantees market coordination. As many of Kirzner's critics have suggested, this tendency may be frustrated as entrepreneurs make mistakes and suffer losses (Littlechild, 1979, p. 43; 1986, p. 35). To put it another way, considerations of rationality can tell us that entrepreneurs have a tendency to discover what they think are profitable opportunities; but such considerations cannot by themselves tell us the extent to which those perceived opportunities will in fact prove profitable.⁹

More important, even if entrepreneurs do discover and seize true profit opportunities, we still have no guarantee that this will lead to overall [325] market coordination.¹⁰ Indeed, Kirzner's assertion that "the entrepreneur is the equilibrating force whose activity responds to the existing tensions and provides those corrections for which the unexploited opportunities have been

⁹ One could, of course, define entrepreneurial opportunities as only those perceived opportunities that ultimately prove profitable. But this would evacuate the concept of most of its interest.

¹⁰ This is certainly not an idea foreign to the Austrian tradition. The Austrian theory of the business cycle is precisely a story about how, in the presence of misleading signals

crying out” (Kirzner, 1973, p. 127) is as much an assertion about the (systematic) nature of “existing tensions” as about the (individual) nature of entrepreneurial discovery. In general, we cannot say whether the tendency to notice and exploit profitable opportunities will lead to coordination without considering the systematic interaction among agents. What Axel Leijonhufvud (1979) calls coordination failures are always a logical possibility.

The radical subjectivists.

We finally arrive at a group of writers for whom a concern with the theme of this essay, the problem of an open-ended world, is a principal distinguishing characteristic. The preeminent figure among these radical subjectivists, as they are called, is G.L.S. Shackle (1969, 1972). Ludwig Lachmann (1976, 1982) has long argued that Shackle's work can be seen as part of the development of “Austrian” thought. As we saw, Mises's great contribution was the completely subjective definition of rationality in terms of the logical relationship of means to ends. To Lachmann, Shackle simply took the next step — from the subjectivism of wants to the subjectivism of expectations. I would argue that, in many ways, radical subjectivism is indeed a logical extension of Misesian subjectivism; but it is an extension that nonetheless does violence to much of Mises's program.

attendant on monetary inflation, the profit-seeking activities of entrepreneurs lead to a misallocation of resources and a recession.

Kirzner dealt with the problem of open-ended world by attempting to allow the unknown into the Misesian system. For Kirzner, dealing with the unknown became an aspect of rational conduct. By contrast, dealing with the unknown is for Shackle and his radical-subjectivist followers an activity with aspects that are inherently non-rational.

The subjectivism of expectations, for the radical subjectivists, involves a recognition that agents vary not only in their tastes but also in their expectations — their visions of the future. “In this view, the future is not so much unknown as it is non-existent or indeterminate at the time of decision. The agent's task is not to estimate or discover, but to create. He must therefore exercise imagination” (Littlechild, 1986, p. 29). The key point is that, for Shackle and his followers, imagination cannot be brought under the cover of reason: “expectation undermines the view of conduct as purely rational” (Shackle, 1972, p. xvii).

To take this position is immediately to reject the Mises-Kirzner program. For if the response to the open-ended world involves an irrational element, then we cannot build a theory solely on human rationality; we must somehow take account of the “irrational” process of expectation-formation.

[326]

Thus we might say that Kirzner and the radical subjectivists have solved “Kirzner's problem” in quite different ways. Kirzner attempts to bring

the unknown within the province of reason; Shackle consigns it to the extra-rational. But what is extremely striking, and seldom noticed, is that Kirzner and Shackle have an almost identical attitudes toward “Hayek’s problem,” that is, toward the role of individual rationality in bringing about market order. Both Kirzner and Shackle are rationalists: both believe that individual rationality is what holds the system together and that one can expect a tendency toward coordination in the market only if all conduct is always rational.¹¹

For Shackle, the “kaleidic” nature of the world — that is, the tendency for frequent equilibrium and discoordination — arises because of the “originary” and unconstrained nature of choice when imagination is possible. It is certainly true that, for equilibrium and coordination, choice must somehow be constrained and bounded. But it does not follow that a tendency at the individual level for unconstrained choice implies that choices (or their effects) are unconstrained in fact. To believe otherwise is evidence of the sort of rationalist compositional principle discussed earlier. Under other compositional principles, unconstrained choice might be viewed as fully compatible with an orderly and coherent process. One can imagine a selection mechanism that sorts among wildly imaginative and originary choices such that a coordinated pattern emerges. It is, for instance, no threat to

¹¹ Indeed, Shackle’s conception of rationality is significantly narrower than Kirzner’s. For Shackle, it is clear, rationality means logical ratiocination not mere reasonableness.

Darwinian biology that the process of mutation is spontaneous, unconstrained, and “irrational.”

From this perspective, the debate within Austrian circles between followers of Kirzner and followers of Shackle misses the point. If one is willing to abandon what is, in effect, the neoclassical compositional principle along with the neoclassical portrayal of individual behavior, then the question of whether the agent “creates” the future merely “discovers” it becomes rather less interesting.

To put the matter another way, the question of whether entrepreneurial or imaginative action leads to overall coordination cannot be answered in an institutional vacuum. We may even be able to interpret in this light some of the radical-subjectivist critiques of Kirzner.¹² That is, one can view the radical subjectivist claim that unconstrained expectations may lead to overall discoordination as a claim that, under certain circumstances and in certain institutional settings (e.g., certain kinds of asset markets), individual action may lead to discoordination.¹³ [327]

Summary and Conclusions.

This article has surveyed the thought of a number of key figures in the Austrian school of economics, with a view toward understanding the

¹² Especially that of Lachmann, in light his discussion of the nature and role of institutions in Lachmann (1971).

conception of knowledge and rationality each employs. To accomplish this, I examined the way in which each writer incorporates the fact of an open-ended world into his approach to economics.

Specifically, I looked at how each writer discusses two problems: “Kirzner's problem” and “Hayek's problem.” The first is the problem facing a conception of individual rationality in an open-ended world; the second is the problem of fitting individual rationality into an overall market pattern as involving logical deduction from explicit premises, usually involving the optimal selection of the means to ends, or as a somewhat broader notion that I associate with “reasonableness” from the perspective of ex post reconstruction. I discussed the approaches these writers take to the second problem in terms of the compositional principle they (often implicitly) adhere to, specifically, whether they adhere to a “rationalist” compositional principle, according to which they seek to derive market patterns solely from a consideration of individual (rational) behavior, or whether they allow for the possibility of alternative compositional principles, including selection mechanisms.

Menger, the founder of the school, took an Aristotelian approach that doesn't fit well within this schema, but his writings were in many aspects attentive to the problems of knowledge in an open-ended world and to

¹³ This is also consistent with the “coordination failure” interpretation of Keynes (Leijonhufvud, 1979) and of Hayek (O'Driscoll, 1976).

evolutionary selection mechanisms. Schumpeter and Hayek, I argued, ultimately held similar views, involving a loose conception of rationality and an attention to alternative compositional principles and selection mechanisms.

Mises was a rationalist both in his conception of human action and in the compositional principle implicit in his program. Kirzner builds on Mises's system, expanding the conception of human action to deal with an open-ended world by including a concept of entrepreneurial discovery within the definition of rationality. Kirzner's attempt to deduce the coordinative nature of the market process solely from this definition of rationality is not, in my view, ultimately successful. The radical-subjectivist followers of Shackle differ from Kirzner in that they see the open-endedness of the world as introducing an element of the irrational. But the radical subjectivists share with Kirzner (and Mises) a rationalist compositional principle, which leads them to see this "irrational" element as troubling for market coordination.

My own argument is that the rationalist compositional principle is untenable, and its abandonment obviates a debate that has attracted much attention within Austrian circles. One can say very little about the tendency to coordination in an institutional vacuum. My preference for the Schumpeter-Hayek program as an approach to the problem of an open-ended world has throughout this essay received only the thinnest of disguises.

References

- Boland, Lawrence. 1982. *The Foundations of Economic Method*. London: Allen Unwin. [327]
- Hayek, F. A. 1937. "Economics and Knowledge," *Economica*, N. S. 4: 33-54, reprinted in Hayek (1948).
- Hayek, F. A. 1945. "The Use of Knowledge in Society," *American Economic Review* 35(4): 519-530, reprinted in Hayek (1948).
- Hayek, F. A. 1948. *Individualism and Economic Order*. Chicago: University of Chicago Press. (Gateway Edition, 1972).
- Jaffé, William. 1976. "Menger, Jevons, and Walras De-homogenized," *Economic Inquiry* 14(4): 511-24.
- Kauder, Emil. 1965. *A History of Marginal Utility Theory*. Princeton: Princeton University Press.
- Kirzner, Israel M. 1973. *Competition and Entrepreneurship*. Chicago: University of Chicago Press.
- Kirzner, Israel M. 1976. *The Economic Point of View*. Kansas City: Sheed and Ward. (First published in 1960).
- Kirzner, Israel M. 1979. *Perception, Opportunity and Profit*. Chicago: The University of Chicago Press.
- Koppl, Roger. 1983. *Carl Menger on Prices*. Unpublished M. A. thesis, New York University.
- Lachmann, Ludwig M. 1971. *The Legacy of Max Weber*. Berkeley: The Glendessary Press.
- Lachmann, Ludwig M.. 1976. "From Mises to Shackle: An Essay On Austrian Economics and the Kaleidic Society," *Journal of Economic Literature* 14(1): 54-62.
- Lachmann, Ludwig M. 1982. "Ludwig von Mises and the Extension of Subjectivism," in Israel Kirzner, ed., *Method, Process, and Austrian Economics: Essays in Honor of Ludwig von Mises*, Lexington, MA.: D. C. Heath.

- Langlois, Richard N. 1982. "Austrian Economics as Affirmative Science," Israel M. Kirzner, ed. *Method, Process, and Austrian Economics: Essays in Honor of Ludwig von Mises*. Lexington, MA: D. C. Heath.
- Langlois, Richard N. 1983. "Systems Theory, Knowledge, and the Social Sciences," in Fritz Machlup and Una Mansfield, eds., *The Study of Information: Interdisciplinary Messages*. New York: John Wiley.
- Langlois, Richard N. 1986. "Rationality, Institutions, and Explanation," in R. N. Langlois, ed., *Economics as a Process: Essays in the New Institutional Economics*. New York: Cambridge University Press, pp. 225-55. [329]
- Langlois, Richard N. 2003. "Schumpeter and the Obsolescence of the Entrepreneur," *Advances in Austrian Economics* 6: 287-302.
- Langlois, Richard N., and Roger Koppl. 1991. "Fritz Machlup and Marginalism: A Reevaluation," *Methodus* 3(2): 86-102 (December).
- Latsis, Spiro J., 1976. "A Research Programme in Economics," in S. J. Latsis, ed., *Method and Appraisal in Economics*. Cambridge: Cambridge University Press.
- Lavoie, Don C. 1985. *Rivalry and Central Planning*. New York: Cambridge University Press.
- Littlechild, Stephen C. 1979. "Radical Subjectivism or Radical Subversion?" in Mario J. Rizzo, ed., *Time, Uncertainty, and Disequilibrium*. Lexington MA: D. C. Heath.
- Littlechild, Stephen C. 1986. "Three Types of Market Process," Richard N. Langlois, ed., *Economics As A Process: Essays in the New Institutional Economics*. New York: Cambridge University Press, pp. 27-39.
- Machlup, Fritz. 1978. *Methodology of Economics and other Social Sciences*. New York: Academic Press.
- Martin, Dolores Tremewan. 1979. "Alternative Views of Mengerian Entrepreneurship," *History of Political Economy* 11(2): 271-285.
- Menger, Carl. 1963. *Problems of Economics and Sociology*. Trans. F. J. Nock. Urbana: University of Illinois Press. [First published in 1883.]

- Menger, Carl. 1981. *Principles of Economics*. Trans. James Dingwall and Bert F. Hoselitz. New York: New York University Press. [First published in 1871.]
- Mises, Ludwig von. 1949. *Human Action*. New Haven: Yale University Press.
- Nelson, Richard R., and Sidney G. Winter. 1982. *An Evolutionary Theory of Economic Change*. Cambridge: The Belknap Press of Harvard University Press.
- O'Driscoll, Gerald P. 1976. *Economics as a Coordination Problem*. Kansas City: Sheed and Ward.
- O'Driscoll, Gerald P., and Mario J. Rizzo. 1985. *The Economics of Time and Ignorance*. Oxford: Basil Blackwell.
- Popper, Karl R. 1967. "La Rationalité et le Statut du Principe de Rationalité," in Emil M. Claassen, ed., *Les Fondements Philosophiques des Systèmes Economiques*. Paris: Payot. [330]
- Robbins, Lionel. 1932. *An Essay on the Nature and Significance of Economic Science*. London: Macmillan.
- Schumpeter, Joseph A. 1908. *Das Wesen und der Hauptinhalt der theoretischen Nationalökonomie*. Leipzig.
- Schumpeter, Joseph A. 1934. *The Theory of Economic Development*. Trans. Redvers Opie. Cambridge: Harvard University Press.
- Schumpeter, Joseph A. 1954. *History of Economic Analysis*. New York: Oxford University Press.
- Shackle, G. L. S. 1961. *Decision Order and Time in Human Affairs*. Cambridge: Cambridge University Press.
- Shackle, G. L. S. 1972. *Epistemics and Economics*. Cambridge: Cambridge University Press.
- Streissler, Erich. 1972. "To What Extent Was the Austrian School Marginalist?" *History of Political Economy* 4(2): 426-41.
- White, Lawrence H. 1977. "The Methodology of the Austrian School." New York: Center for Libertarian Studies.