

Hayek's transformation

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Though at one time a very pure and narrow economic theorist, I was led from technical economics into all kinds of questions usually regarded as philosophical. When I look back, 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 overall order which is formed as a result of his responding, within the limits imposed upon him by those abstract rules, to the concrete particular circumstances which he encounters. It was only through a re-examination of the age-old concept of freedom under the law, the basic conception of traditional liberalism, and of the problems of the philosophy of the law which this raises, that I have reached what now seems to be a tolerably clear picture of the nature of the spontaneous order of which liberal economists have so long been talking.

—FRIEDRICH A. HAYEK (1967, 91-92)

I. Introduction

The passage above is excerpted from a paper written by Nobel laureate Friedrich von Hayek and first published in 1964. Hayek reminisces about an important change in the direction of his research, and he links this transformation with his famous essay, 'Economics and knowledge.' The latter essay constituted his 1936 Presidential Address for the London Economic Club and was published the following year in *Economica*. According to Hayek, it was in 'Economics and knowledge' that he first realized

that “the task of economic theory” was to explain how coordination, or an “overall order,” might spontaneously emerge in a social system in which knowledge is dispersed among many agents.

Clear though his statements are, Hayek’s reminiscences still raise a number of questions. What sort of “technical economics” was he doing before his transformation took place? What led him to the belief that “the coordination problem” was the central problem for economics to solve? Hayek’s reputation as an economic theorist had been established by the early 1930s, and he states that it is the task of economic theory to explain how to solve the coordination problem. Why then did he turn away from the study of economics, conventionally defined, to seek a solution? What sorts of “philosophical questions” did Hayek begin to investigate? What role did ‘Economics and knowledge’ play in Hayek’s transformation? And why did all of this happen when it did?¹

To answer these questions, this article will examine certain texts published between 1928 and 1941, the time during which Hayek was working on technical economics. During the period, three distinct phases can be discerned. The phases are distinguished according to Hayek’s treatment of the concept of equilibrium.

(1) Even in his earliest work Hayek is not sanguine about the use of equilibrium constructs. In his first major paper he criticizes the notion of timeless, stationary equilibrium. Nonetheless, Hayek consistently maintains that any legitimate *economic* explanation must employ *some* form of equilibrium construct. He makes this claim both in his positive contributions to economic theory and in his critique of alternative theories of the business cycle.

(2) In ‘Economics and knowledge’ Hayek advances a new definition of equilibrium, one which explicitly links the concept of equilibrium with an assumption concerning knowledge and its acquisition (hence the title ‘Economics and knowledge’). That Hayek chose to focus on an assumption concerning knowledge was very much in keeping with the times: other theorists in the 1930s were also grappling with the problem of how to incorporate propositions concerning information, expectations, and knowledge into their models. In addition, Hayek’s emphasis on subjectivism in the article made it a uniquely Austrian contribution. But most important, it is in ‘Economics and knowledge’ that Hayek first makes the claim that the coordination problem is *the* central problem, not just for economics, but for all of social science. This is followed by the equally

1. Hutchison (1981), Chapter 7 addresses some of these questions. One of his major conclusions is that Hayek’s “U-turn” was chiefly methodological in nature, consisting of an abandonment of Misesian a priorism and a turning towards Popperian falsificationism. I criticize Hutchison’s interpretation in Caldwell (1988b). The present piece completes the task by offering an alternative account of the nature of Hayek’s transformation.

significant assertion that standard equilibrium theory, because it assumes perfect foresight, is incapable of providing any insights concerning the solution of the problem. Hayek admits in the article that he is unsure about the implications of this dilemma for future work in the field.

(3) The final phase of Hayek's technical economics period culminates with the publication of his last major work in economics, *The pure theory of capital*, in 1941. In the book Hayek makes use of the dynamic equilibrium construct that he had developed in 'Economics and knowledge.' But beginning in the Preface and continuing in the text, Hayek repeatedly apologizes for using the new construct. Though he considers his new definition of equilibrium an advance over those found in stationary equilibrium models, Hayek suggests that equilibrium analysis in general is at best *preparatory* for a more advanced, causal analysis of economic phenomena.

To summarize: Hayek's transformation refers to his movement away from the study of technical economics. It took place as Hayek came to realize the magnitude of the limitations confronting the major tool of economic analysis, the equilibrium construct. Though he was long aware of certain deficiencies in equilibrium analysis, its inability to shed any light on the problem of coordination was decisive. In his early work, Hayek had virtually defined doing economics as doing equilibrium theory. Having discovered that equilibrium theory was incapable of solving the coordination problem, it was only natural that Hayek should turn away from economic theory in search of new solutions.

Yet such an explanation is still, in certain ways, incomplete. It does not tell us why Hayek chose to replace the perfect knowledge assumption with the assumption of subjectively-held and dispersed knowledge. Nor does it explain why, given this new assumption, Hayek chose to emphasize the coordination of knowledge as being the central problem to be solved within the new system. At the most basic level, the above explanation fails to tell us why all of this happened when it did.

To answer these questions, this article will examine another area of Hayek's work. Beginning in the early 1930s and culminating in the war years, Hayek engaged in a sustained and multifarious attack on central planning. Thus at the same time that his transformation was taking place, he was involved in an intense debate on a wholly separate set of issues. As it turns out, the separateness of the issues was only apparent. In the latter part of this essay, I will argue that it was his participation in the socialist calculation debate which helped lead Hayek to realize the centrality of the question of coordination, and of its links with specific assumptions concerning knowledge.

The article begins with a brief discussion of Hayek's early career. Various books and articles written in his technical economics period are then analyzed, with an emphasis on Hayek's assertions about the role of equi-

librium models in economics. Because 'Economics and knowledge' played such a big role in Hayek's transformation, it will be the subject of careful scrutiny. Having established the nature of Hayek's transformation, I will turn to an investigation of Hayek's role in the socialist calculation debate. Though I will not claim that his participation in the debate *caused* Hayek's transformation, a knowledge of his role will be helpful in understanding why events unfolded as they did. In the conclusion, certain ironies of this episode in the history of ideas will be revealed.

II. *Vienna and London—Hayek's Early Career*

Hayek was educated at the University of Vienna and received two doctorates, one in law (1921) and one in political science (1923). For the next five years Hayek worked for Ludwig von Mises; he was also a regular participant in Mises' *Privateseminar*. In 1927 he helped to found and later became director of the *Institut für Konjunkturforschung*, an institute dedicated to the study of the business cycle and economic policy. He also lectured at the University on economics from 1929 to 1931. This period was important for three reasons. First, Mises was able to convince him that Hayek's sympathies for Fabian socialism were misplaced. Next, he met a number of English economists. Finally, Hayek began to publish papers on economics.²

Hayek's early work covered various topics: United States monetary policy, the theory of imputation, interest rate theory.³ His first book was published in German in 1929; it was translated into English and published in 1933 as *Monetary theory and the trade cycle*. The book was the first of a series of translations of foreign works in economics, and carried a series introduction by Lionel Robbins.

In 1929 Robbins had begun what was to become his long tenure as head of the Economics Department at the London School of Economics (LSE). Robbins invited Hayek to London in January 1931, and the next month the young Austrian delivered a series of lectures on the business cycle. The lectures were published later that year (with an effusive foreword by Robbins) under the title, *Prices and production*. Hayek's lectures, though at times opaque, caused quite a stir. By the fall of 1931, Hayek had been appointed the Tooke Professor of Economic Science and Statistics at the University of London. He was thirty-two years old.

Sir John Hicks was at the LSE from 1926 to 1935 and remembers well the impact of Hayek's arrival. Indeed, he divides his own stay at the University of London into a pre-Hayekian and a Hayekian period (Hicks 1982,

2. Butler (1983, 2–3); cf. the 'Biographical introduction' in Nishiyama and Leube, eds. (1984). For more detailed descriptions of interwar Vienna, see Boehm (1984) and Craver (1986).

3. These essays are collected in McCloughry (1984).

3–4). In his article, ‘The Hayek story,’ Hicks reflects on the importance of Hayek’s early work.

When the definitive history of economic analysis during the nineteen-thirties comes to be written, a leading character in the drama (it was quite a drama) will be Professor Hayek. Hayek’s economic writings—I am not concerned with his later work in political theory and sociology—are almost unknown to the modern student; it is hardly remembered that there was a time when the new theories of Hayek were the principle rivals of the new theories of Keynes. Which was right, Keynes or Hayek? [Hicks 1967, 203]

Ludwig Lachmann writes of Hayek’s “triumphal entry on the London stage with his lectures on *Prices and Production*,” and recalls that when he (Lachmann) arrived at the LSE two years later, “all important economists there were Hayekians” (Lachmann 1982, 630).

All of this was to change dramatically over the course of the decade. The fall from prominence of the Austrian program at the LSE and elsewhere was precipitous. (As Lachmann sadly remarks, “At the end of the decade Hayek was a rather lonely figure, even though he remained editor of *Economica* throughout the war” [ibid., 630].) What led to this decline in Austrian influence?

First, Austrian theories of the trade cycle and of capital were lambasted from a number of quarters. The first antagonist was Piero Sraffa, whose review of *Prices and production* appeared in the *Economic Journal* in 1931. Many English economists had had a hard time understanding *Prices and production*. It was not because the ideas expressed there were new: as Mised repeatedly insisted, Austrian cycle theory was grounded in the work of the currency school. It was the mode of presentation that baffled the English economists.⁴ As such, a review of the work, especially by such a prominent economist as the young Italian from Cambridge, surely must have been viewed as a welcome occurrence. But what really caught the attention of the profession was the *tone* of the article. Sraffa cudged Hayek’s book. His scathing review was unprecedented in the polite world of English academia. Whatever the merits of Sraffa’s points about “own rates of interest,” the style of his presentation must have taken the young Austrian by surprise.⁵ This was quickly followed by an equally vigorous offensive against Austrian capital theory by the distinguished economist Frank Knight (Knight 1933, 1934, 1935). As in the case of Sraffa,

4. I thank one of the anonymous referees for pointing this out.

5. Sraffa (1932a, 1932b), Hayek (1932). The careful reader will note that I have declined to address the question of whether Sraffa’s criticism was correct. For two engaging assessments of the issue which reach different conclusions, see Lachmann (1980) and Lawlor and Horn (1987).

Knight's own views concerning capital were at best obscure. Indeed, Nicholas Kaldor (1937) later found it necessary to provide an interpretation of the American economist's position. For his part, Hayek throughout the 1930s continually tried to answer his critics (e.g., Hayek 1939a), but his efforts were to little avail.⁶

At the same time that the Austrian advance was grinding to a standstill, the Keynesian onslaught was gaining momentum and, to change metaphors, it was also gaining apostolic converts. What was the nature of Keynes' relationship with the Austrians?⁷ In a fascinating retrospective, Ludwig Lachmann notes that relations between Keynes and Hayek and Mises "from the late 1920s onward, were never cordial, and at times they were really bad" (1983, 369). Mises never forgave Keynes for his 1914 review of the German edition of *The theory of money and credit* in the *Economic Journal*, a review that was at once cavalier and biting (ibid., 369–70). Hayek first met Keynes in 1928, and though they frequently disagreed concerning economics, their relationship was initially friendly. Things became a bit strained when Keynes responded to Hayek's critical reviews (1931–32) of the *Treatise on money*, first by attacking Hayek's own *Prices and production*, and later by remarking that he had "changed his mind and no longer believed what he had said in that work." (Hayek 1966, 284). Hayek's response was one he would come to regret.

This was one of the reasons why I did not return to the attack when he published his now famous *General Theory*—a fact for which I

6. One can trace the waning influence of Hayek's work by examining certain of the publications of Nicholas Kaldor. Kaldor began the decade as a Hayekian; he was one of the translators of *Monetary theory and the trade cycle*. In his 1937 review of the Knight-Hayek debate, Kaldor bent over backwards to be polite to Hayek while at the same time openly criticizing Knight. Yet it is evident that he found more truth in Knight's views than in Hayek's. By 1942, in 'Professor Hayek and the concertina-effect,' the transformation is complete, with Hayek's views respectfully dismissed as simply wrong. "The term 'fascination,' though perhaps slightly unacademic, aptly describes the effect of the *first impact* of Professor Hayek's ideas on economists trained in the Anglo-Saxon tradition (and the present writer has no wish to conceal that he was among the fascinees). . . . This was the first impact. On second thoughts the theory was by no means so intellectually satisfying as it appeared at first. . . . one was driven to the conclusion that the basic hypothesis of the theory, that scarcity of capital causes crises, must be wrong. These 'second thoughts' produced a remarkable crop of critics of *Prices and Production* in the pages of English and American journals the number of which could rarely have been equalled in the economic controversies of the past. Professor Hayek himself took an active part in this controversy and some eight years later produced a new version of his theory which in many ways departed from, and contradicted, the first" (Kaldor 1942, 359; emphasis in the original).

7. Very little has been written on this subject. The correspondence that has been published so far is invariably polite on both sides, and unrevealing. See Moggridge (1979, 207–8; 1980, 385–88). Both Hayek (1966) and Lachmann (1983), cited in the text, are retrospective views. Perhaps more will be learned when the compilation of Hayek's archives, now being undertaken at the Hoover Institution by philosopher W. W. Bartley III, is completed.

later much blamed myself. But I feared that before I had completed my analysis he would again have changed his mind. [ibid.]

Hayek must also have been taken aback that Keynes, as editor of the *Economic Journal*, would permit the publication of so harsh a review as Sraffa's.⁸

Another factor was the adamant refusal by the Austrians to participate in either the formalistic or econometric revolutions. It will be shown in my review of *Monetary theory and the trade cycle* that Hayek was deeply suspicious of the widespread use of statistical techniques. In the first chapter of the book, he attempts to establish as a methodological principle that theoretical work always takes precedence over empirical work. Given this view, it is not surprising to find that the Austrians did not join the econometric revolution. But why did they also decline to present their theories in a more formal, rigorous, mathematical form?

An easy answer is that Hayek and other Austrians lacked the mathematical skills to do so. There is certainly some evidence for such a claim. Hayek admits in the preface of *The pure theory of capital* that writing the book taxed his mathematical skills, yet his analysis is almost exclusively graphical. Could it be that lack of mathematical sophistication is the basis for the Austrian disdain for formalism?

Such an answer might explain why men like Hayek and Mises rejected formalism. But it does not explain why their verbal models were not formalized by later generations of theorists. We will see that Hayek's major complaint against the models existing in the 1930s was that they failed to capture the notion of dispersed, subjectively-held information. Significantly, that problem has yet to receive adequate mathematical representation.

Whatever caused the Austrians to reject formalism, the act cost them dearly. Especially in later decades, the use of mathematical models and econometric techniques became synonymous with doing real science. Those who failed to conform were dismissed as antiquarians or primitives.⁹

A final cause of the decline of Austrian influence must be mentioned.

8. At least one Austrian, Ludwig Lachmann, finds much to lament in the bad relations between Keynes and the Austrian leadership of the 1930s. In Lachmann's view, the Austrians failed to carry the mantle of subjectivism forward in the 1930s. Instead it was their opponent Keynes who accomplished this task, when he applied subjectivism beyond its usual realm (the valuations of agents) to the question of expectations formation. In this sense, Lachmann views both Keynes and his follower, G. L. S. Shackle, as more through-going subjectivists than either Mises or Hayek. See Lachman (1976).

9. For a scathing and controversial revisionist examination of the development of formalism in economics, from its origins in the work of the marginalists through the high theory of the twentieth century, see Mirowski (forthcoming).

By the late 1930s the attack against socialism launched earlier by proponents of *laissez-faire* had been turned. Among academics it was widely perceived that Mises' assertion that rational calculation under socialism was impossible had been disproven, and that the Austrians had been forced into retreat. The belief was current that both the Great Depression and the rise to power of the National Socialists could be blamed on the failures of capitalism. In addition, the employment successes of the Nazis seemed to indicate that some form of state control was necessary for combatting the business cycle. Perhaps worst of all from the Austrian perspective, prior to the signing of the Non-aggression Pact many people viewed the socialists and communists as the most ardent and effective of the existing opponents of Naziism.

Though it was begun earlier, the Austrian counter-offensive picked up momentum during the war years. If some of the Austrian claims seem shrill and polemical to the modern reader, one would do well to read some of their opponents, who believed that the scientific planning of society was not only desirable but inevitable. For example, early in the decade the eminent philosopher Bertrand Russell confidently proclaimed, "No society can be regarded as fully scientific unless it has been created deliberately with a certain structure to fulfill certain purposes" (1931, 203). In *Man and society in an age of reconstruction*, the prominent sociologist Karl Mannheim wrote,

When the different chapters of this book were written its author was completely under the influence of experiences bred by the disintegrating tendencies of liberal democratic society. His attention was primarily directed to the failure of the liberal democratic machinery in the Weimar Republic; he had witnessed its impotence to solve the problems of modern mass society. He saw how, under certain social conditions, the planlessness of the liberal order turned into *anarchy*, how the principle of *laissez-faire*, which once maintained the balance of the social process, at this stage of development resulted in *chaos*, both in political and in cultural life.

Owing to these experiences he realized that *laissez-faire* in the old sense would no longer work; but that at the present stage of industrial society planning in some form or other was *inevitable*. [1940, 14, emphasis added]

In his review of Mannheim's book in *Economica*, F. Clarke likened it to Plato's *Republic*, describing it as "an epoch-making book" about which "it is devoutly to be wished that the teaching of the book may, through various channels, filter down from the specialist readers and seep into the popular mind, especially into the political mind" (1940, 330–31). Such were the forces arrayed against the Austrians.

For most economists in the late 1930s, then, the following perceptions would be commonplace. The antiquated verbal theory of the Austrians had been refuted. Serious scientific research involved the construction of formal, mathematical models. On the policy front, it was clear that the pursuit of laissez-faire had led to the social, economic, and political debacles of the decade. If the world was to survive, some form of rational planning for society was necessary. Keynesian analysis seemed to provide the first step towards such rational planning. All of these perceptions were anathema to the Austrians, and had come about despite their best efforts to oppose them. What effect did all of this have on Hayek's own contributions to economics? To answer this, I will examine the evolution of his thought during his technical economics period, with an emphasis on his treatment of the concept of equilibrium.

III. *Economics as Equilibrium Theory*

If we examine Hayek's early writings, we find frequent references to the notion of equilibrium. Two ideas recur: that the equilibrium construct is a simplifying assumption that must be recognized as such, and that its use is necessary if one wishes to offer an *economic* explanation of any given phenomenon.

Thus in the introduction of his 1928 paper, 'Intertemporal price equilibrium and movements in the value of money,' Hayek notes that all economic activity takes place in time. Static equilibrium theory is a "methodologically valuable fiction" that allows one to abstract from that aspect of reality. Such a simplifying assumption does no damage when one is investigating economic activity that takes place at a given point in time. When one is concerned with explaining the functioning of a monetary economy with prices being set at different points in time, however, "the customary abstraction from time does a degree of violence to the actual state of affairs which casts serious doubt upon the utility of the results thereby achieved" (p. 72).

The point of Hayek's paper is to provide a theoretical basis for treating such intertemporal problems. His solution is the notion of an intertemporal price equilibrium, one in which the prices of technically equivalent goods will differ because they are available at different points in time. Crucially, Hayek insists that the use of an equilibrium construct is just as important in an intertemporal analysis as it is in treating a more standard problem. In his words:

The concept of equilibrium is just as indispensable a tool for the analysis of temporal differences in prices as it is for any other investigation in economic theory. Strictly speaking, *its field of application is identical with that of economic theory*, since only with its assistance

is it possible to give a summary depiction of the very great number of different tendencies of movement which are operative in every economic system at every point in time. [p. 75, emphasis added]

Hayek uses his model to criticize the “naive conception of the Quantity Theory” that asserts a stabilization of the aggregate price level is the correct policy response for avoiding the business cycle (p. 89).¹⁰

Though Hayek’s paper on intertemporal equilibrium was to influence other economists to study the problem further (see, e.g., Hicks 1967, 6–7; 1983, 358–59), his most important works during this period were *Monetary theory and the trade cycle* and *Prices and production*. These two books contain Hayek’s theory of the business cycle. In the former he endeavors to show that the *origins* of the cycle are monetary. In the latter he traces the effects of monetary disturbances on relative prices and the structure of production. These effects *constitute* the cycle. It is in *Monetary theory and the trade cycle (MTTC)* that Hayek asserts that any *economic* explanation of the cycle must employ equilibrium theory.

Hayek goes to great lengths in *MTTC* to criticize alternative explanations of the business cycle. The rivals are grouped in three broad categories. First are non-monetary theories of the cycle, which he divides into three groups: technique of production, savings and investment, and psychological theories. Next are alternative monetary theories, by which he means a number of versions of the quantity theory. All of these focus on the impact of monetary changes on the aggregate price level and assert that stabilization of the value of money will end the cycle. Finally, Hayek criticizes those who would abandon theory altogether and replace it with statistical investigations of series of data. It is in attacking these rivals to his own theory of the cycle that Hayek makes explicit the role of the equilibrium construct in economics. Let us first examine his treatment of non-monetary theories of the trade cycle.

Hayek emphasizes early that any adequate theory of the cycle must build on the foundations of the theory of equilibrium.

We cannot superimpose upon the system of fundamental propositions comprised in the theory of equilibrium, a Trade Cycle theory resting on unrelated logical foundations. All the phenomena observed in cyclical fluctuations, particularly price formation and its influence on the direction and the volume of production, have already been explained by the theory of equilibrium; they can only be integrated as an explanation of the totality of economic events by means of fundamentally similar constructions. [pp. 28–29]

He describes “equilibrium theories” as those “taking the logic of economic action as their starting point” (p. 30), or alternatively, as those which ac-

¹⁰ See Boehm (1986) for a valuable discussion of this article.

cept “the assumption that prices supply an automatic mechanism for equilibrating supply and demand” (p. 43).¹¹

Hayek notes that all prevailing non-monetary theories agree as to what constitutes the proximate cause of the cycle: a disproportionality between the production of capital goods and consumer goods which emerges during the boom phase (p. 56). He points out that a mere fluctuation in the production of these goods is not problematical in those instances in which their cause is an irregular change in the underlying economic data. Equilibrium theory is capable of explaining such adjustments. The problem of the cycle arises when adjustments are not smooth and are brought about by something *other* than a change in the underlying market data (pp. 55–56, 60).

The question naturally arises: If one accepts the results of equilibrium theory, if one assumes that prices automatically equilibrate markets, how could such a disruption take place? Hayek's answer is clear. No such disruption can take place, *unless* one is willing to temporarily abandon equilibrium theory to generate a cause of the cycle. But this implies that all theories of the trade cycle that postulate non-monetary origins of the cycle are caught in a contradiction. And indeed, they are caught in a double contradiction, for such theories must then revert back to standard equilibrium analysis for describing the trajectory of the cycle. “None of them is able to overcome the contradiction between the course of economic events as described by them and the fundamental ideas of the theoretical system which they have to utilize in order to explain that course” (p. 52, cf. p. 87).

How might one get out of this dilemma? The first alternative is to abandon the theoretical approach altogether, and to put in its place a purely empirical (i.e., non-theoretical) description of the cycle. Hayek notes that advocates of this approach emphasize “the complete absence of theoretical prepossession” in their work (footnote, p. 38). Interestingly, it is this group that Hayek chose to criticize first in *MTTC*; the entire first chapter of the work is devoted to showing the proper (and very limited) role of empirical studies in economics. According to Hayek, empirical studies “cannot, in themselves, provide new insight into the causes or the necessity of the Trade cycle” (p. 27). This can only be done by “widening the assumptions” of the current theory. Hayek goes on to say that “even these new assumptions cannot be established by statistical investigations” (p. 30). Nor can statistical studies serve as a “means of verification” of existing theories:

11. In a footnote (p. 42), Hayek adds another definition: “By ‘equilibrium theory’ we have primarily understood the modern theory of the general interdependence of all economic quantities, which has been most perfectly expressed by the Lausanne School of theoretical economics.” Of all the Austrians, Hayek was the most enthusiastic about general equilibrium theory: Indeed, one might reconstruct the argument of *MTTC* as stating that, in the absence of monetary disturbances, general equilibrium obtains.

the best they can do here is to show that there remains a “residue” left unexplained by the current theory (pp. 32–33). About all that empirical work can do is suggest new areas for study. The only other role that Hayek allows for it is the pragmatic one of aiding forecasters (footnote, p. 36).

It is evident that even in his early work Hayek embraces the well-known Austrian view that empirical studies have at best a circumscribed role to play in economics.¹² More important for our purposes is the rationalization he provides for holding the view. Simply put, empirical studies, because they lack any theoretical underpinnings, do not constitute *economic* explanations of the cycle. Any economic theory of the cycle must make use of standard equilibrium theory, albeit with some widening of assumptions to enable it to explain the cycle.

Having dismissed non-theoretical explanations of the business cycle, Hayek offers his solution to the dilemma of how to generate a cycle. His answer is to widen the assumptions of standard theory by introducing money into the system.

The obvious, and (to my mind) the only possible way out of this dilemma, is to explain the difference between the course of events described by static theory (which only permits movements towards an equilibrium, and which is deduced by directly contrasting the supply of and the demand for goods) and the actual course of events, by the fact that, with the introduction of money (or strictly speaking with the introduction of indirect exchange), a new determining cause is introduced. Money being a commodity which, unlike all others, is incapable of finally satisfying demand, its introduction does away with the rigid interdependence and self-sufficiency of the “closed” system of equilibrium, and makes possible movements which would be excluded from the latter. [pp. 44–45]

All that remained for Hayek to do was to show the superiority of the Austrian monetary theory of the cycle over various crude quantity theories.

Two points stand out in Hayek’s early views on the use of equilibrium theory in economics. First, he is fully cognizant of the limitations of a static equilibrium framework for handling *certain* problems in economics. It is for this reason that he recommends changing from a static equilibrium framework to a dynamic intertemporal one for explicating the behavior of relative prices in an economy that is moving through time. But it is also clear that Hayek believes that any legitimate economic explanation must employ *some* notion of equilibrium. In his 1928 paper he virtually identifies doing economics with employing an equilibrium model. He continues this theme in *MTTC*. Purely empirical studies of the business cycle are

12. One of the referees mentioned that Hayek studied with Mitchell when he visited the United States in the 1920s. This may have been the source of his antipathy towards purely statistical studies.

dismissed because they do not employ standard equilibrium theory. Non-monetary theories of the cycle are criticized because they must temporarily abandon the market-clearing results of a standard equilibrium theory in order to generate a cause of the cycle. Thus it is clear that although Hayek was ready to explore different conceptions of equilibrium in his early work, he was insistent that any economic explanation must employ an equilibrium framework.

IV. *Economics and Knowledge*

A. *Summary of Hayek's argument*

Hayek takes yet another look at the concept of equilibrium in his article, 'Economics and knowledge.' In the second sentence of that piece he states that his goal is to examine "the role which *assumptions* and propositions about the *knowledge* possessed by the *different* members of society play in economic analysis" (p. 33, emphasis added). He contends that formal equilibrium analysis consists of little more than the manipulation of tautologies, and as such is incapable of telling us anything about the real world. Formal analysis gains empirical content only to the extent to which economists are able to make "definite statements about how knowledge is acquired and communicated" (p. 33). He notes that the same question is implicit in that recent literature which discusses the assumption of foresight in equilibrium economic analysis. Indeed, the very "concept of equilibrium itself can be made definite and clear only in terms of assumptions concerning foresight" (p. 34). Thus the question of knowledge and its acquisition, the assumptions that are made concerning foresight, and the notion of equilibrium are all interrelated.

Hayek points out next that the use of the equilibrium construct is not problematical when it is applied, using the Pure Logic of Choice, to an isolated individual. An individual's actions are always based on a plan, and the plan is based on the individual's subjective perceptions of the objective facts. Of course, the individual may at some point discover that his perceptions are wrong (i.e., his knowledge may change), in which case the individual's equilibrium position would change. But in terms of the individual's subjective perceptions at any given point in time, equilibrium for the individual may be said to exist a priori; it follows trivially from the Pure Logic of Choice. Crucially, passing from this notion of individual equilibrium to the idea of equilibrium for society may be problematical. "I have long felt that the concept of equilibrium itself and the methods which we employ in pure analysis have a clear meaning only when confined to the analysis of the action of a single person and that we are really passing into a different sphere and silently introducing a new element of altogether different character when we apply it to the explanation of the interactions of a number of different individuals" (p. 35).

Pursuing this point, Hayek turns next to an examination of the concept of equilibrium as it applies to a competitive system. Since society is nothing more than an aggregation of individuals, it might first appear that societal equilibrium obtains when each member of society is in equilibrium. But this will not work. Hayek reminds us that individuals are in equilibrium only with respect to their own unique *subjective perceptions* of the external world, and that it is immaterial whether the perceptions are correct or incorrect. Societal equilibrium could exist only if all agents shared the *same* perceptions of phenomenal reality. That reality includes the objective facts concerning the state of the world as well as the intended actions of other agents. Stated in this way, the conditions that must be met for equilibrium to exist are obviously very strong. This difficulty is avoided in standard analysis by making the apparently innocuous assumption that the same objective data, the same knowledge, is *given* to all agents. Hayek notes that such movement from subjectively-given data (when an individual agent's equilibrium is at issue) to objectively given data (when equilibrium in a competitive society is examined) involves "an insidious change of meaning" of the word data (p. 39). Indeed, "the question why the data in the subjective sense of the word should ever come to correspond to the objective data is one of the main problems we have to answer" (p. 39).

Hayek finally defines equilibrium for society in terms of the compatibility of agents' plans—it exists when plans are compatible, and it will persist only as long as the expectations of agents correspond to the external data. When it is so defined, equilibrium simply implies that the foresight of various economic agents is in a special sense correct.

It must be correct in the sense that every person's plan is based on the expectation of just those actions of other people which those other people intend to perform and that all these plans are based on the expectation of the same set of external factors, so that under certain conditions nobody will have any reason to change his plans. Correct foresight is then not, as it has sometimes been understood, a precondition which must exist in order that equilibrium may be arrived at. It is rather the defining characteristic of a state of equilibrium. [p. 42]

Hayek asks next why economists have concerned themselves with the notion of equilibrium, a concept which obviously refers to a "fictitious state." Concern with equilibrium can only be justified if a "tendency toward equilibrium" exists, which Hayek views as "an empirical question" (p. 44–45). To explore it, we must try to discover under what conditions we might reasonably expect that the expectations of many individuals would come into agreement. Though Hayek admits that his present thinking has not taken him very far towards answering that question, he asserts that an adequate answer would have to involve considerations of the *process* by which knowledge is acquired and changes, the *kinds* of knowledge

that are relevant for decision-making, and the importance of the *division*, or dispersion, of knowledge among many minds. For Hayek, the “central question of all social sciences” is: “How can the combination of fragments of knowledge existing in different minds bring about results which, if they were to be brought about deliberately, would require a knowledge on the part of the directing mind which no single person can possess?” (p. 54).

Hayek closes by pointing out those approaches to this question which are inadequate. It seems that the worst offender is any approach which assumes that knowledge of the external facts is given to every agent. The use of such an approach is tantamount to permitting “that skeleton in our cupboard, the ‘economic man’” to return “through the back door in the form of a quasi-omniscient individual” (p. 46). Neither is the assumption of “constancy of data” (the very meaning of which is problematical given the above analysis) either necessary or sufficient for the existence of equilibrium (pp. 48–49). Hayek mentions in conclusion that the fact that the question of knowledge acquisition is an empirical one in no way implies “that there opens here and now a wide field for empirical research. I very much doubt whether such investigation would teach us anything new” (p. 55).

B. *Analysis of the argument*

‘Economics and knowledge’ was summarized in such detail because the article provides many clues to the later development of Hayek’s thought. The clues are often subtle. But the paper is revealing, and may even be more important than Hayek acknowledges in the quotation which opened this paper.

Hayek was to write in ‘Scientism and the study of society’ that “it is probably no exaggeration to say that every important advance in economic theory during the last hundred years was a further step in the consistent application of subjectivism” (1942–44, 52). It is evident in his treatment of both individual and societal equilibrium that his goal is to consistently apply subjectivism to economics.

Hayek makes a number of claims about the equilibrium of the individual. Equilibrium is, first and foremost, defined in terms of the subjective perceptions of the individual. Furthermore, the individual is always in equilibrium, given those perceptions: it follows a priori from the Pure Logic of Choice. The best way to grasp the implications of the Austrian view is to contrast it with the standard neoclassical approach to equilibrium for the individual.

In the neoclassical model, the consumer is also always in equilibrium. But the rationale is very different from that provided by the Austrians. The neoclassical consumer has full and objectively correct knowledge of both his subjective tastes and preferences and his constraints, as revealed in the relevant indifference curves and budget line. The Austrian consumer does

not have objectively given knowledge; all he has is his own subjective perceptions. He is in equilibrium at any point in time *given* those perceptions, but the perceptions may be *wrong*. Error is possible in the Austrian case. It is ruled out in the neoclassical case by the assumption of full, objectively correct information. This sort of distinction was not well appreciated at the time, of course. Indeed, Hayek often writes as if his description characterizes the starting point of standard economic analysis, rather than what was to become a uniquely Austrian perspective.¹³

Hayek states that the equilibrium of the individual follows a priori from the Pure Logic of Choice. Does this mean that the Hayek of 'Economics and knowledge' was a Misesian? Paradoxically, though Hayek unselfconsciously utilizes the Misesian Pure Logic of Choice in the paper, the case can be made that this article marks Hayek's first real *break* with his mentor. In his magnum opus, *Human action*, Mises was to assert that the fundamental axioms of praxeology are apodictically certain: they are known to be true a priori. He went on to claim that as long as the verbal chain of logic from the axioms to the derived propositions of praxeology is free from logical error, the conclusions of praxeological reasoning are irrefutable. Mises sought to distinguish praxeology from all other approaches to economics on these methodological grounds. In the soon-to-dawn era of positivist economics, Mises' strict a priorist approach was to be roundly denounced, even ridiculed, by mainstream economists.¹⁴

It is clear from what was said above that Hayek sees nothing wrong with characterizing the equilibrium of the individual as following a priori from the postulates of the Pure Logic of Choice. He does not invest the term a priori with the epistemological weight it was to carry in Mises' later analysis, however. As Hayek used it, the term a priori seems most similar to the term analytic: that is, the conclusion that consumers are always in subjective equilibrium follows analytically from the Logic of Choice. Nor, as was mentioned above, does Hayek use the term to distinguish the Austrian approach from standard economic analysis. When Mises began to do both of these things in *Human action*, Hayek was careful to politely distance himself from Mises' interpretation.¹⁵

The most damning evidence of Hayek's split with Mises is Hayek's

13. In just one of the ironies of this tale, it was Lionel Robbins whom the Austrians later accused of leading the profession away from a subjectivist approach to equilibrium for the individual. The man who brought Hayek to the LSE is credited with creating the "Robbinsian maximizer," an agent who is able to reach equilibrium only because he has full, objectively correct knowledge of all the relevant parameters in a choice setting. See, e.g., Mises (1963, 58); Kirzner (1976, 117ff); Kirzner (1982, 142ff).

14. See, e.g., Blaug (1980, 91-93). The claims of praxeologists and their critics are examined in Caldwell (1984).

15. Hayek's (1941b) book review of the German edition of Mises' *Human action* is cryptic. He praises Mises' sections on praxeology, using such terms as "original," "impress-

insistence that the movement from equilibrium for the individual to that of society is problematical. Hayek repeatedly emphasizes that the use of such terms as a priori, tautological, or necessarily *is only legitimate in reference to an individual's own subjective valuation process*. Indeed, on the first page of the article he states that the tautologies with which "formal equilibrium analysis" begins can tell us nothing about "causation in the real world" until they are given some empirical content concerning knowledge acquisition (p. 33). Such a position is radically at odds with the praxeological approach that Mises was to elaborate in his later work. Unlike Hayek, Mises never viewed the movement from an individual agent's equilibrium to societal equilibrium as problematical.

Let us now turn our attention to Hayek's treatment of equilibrium. We saw that in his early work Hayek virtually identified economic theory with equilibrium theory; he thought that any legitimate economic theory must make use of some concept of equilibrium. Hayek does not abandon this belief in 'Economics and knowledge,' for he seeks to define equilibrium for both the individual and for society. What has changed is Hayek's new emphasis on subjectivism: any adequate definition of equilibrium must now take into account the fact that knowledge is subjectively-held and dispersed. In his past attempts at defining equilibrium, even in his 1928 paper on intertemporal equilibrium, this subjectivist emphasis was not present.

How does one define societal equilibrium in the world of subjectively-held and dispersed knowledge? Hayek does it in terms of compatibility of plans. This is not entirely satisfactory. Hayek missed the importance of the subjectivity of expectations. His way of setting up the problem implies that there exists an objective reality which is independent of the subjective perceptions of agents. As such, the only important question is whether those perceptions can be brought into conformance with objectively existent reality. This ignores the fact that actions based on subjective expectations of the state of the world will cause external reality to *change*. Another criticism, long associated with the work of Ludwig Lachmann, is that in certain cases equilibrium requires not *compatibility* but *divergence* of expectations. Most recently, Austrian analysts also have questioned whether a tendency towards equilibrium should be identified with coordination.¹⁶

But I think that a scrutiny of Hayek's particular definition of societal equilibrium misses a fundamental point. Hayek the economist was, of

sive," "consistent," and "nearer the truth than the commonly accepted view." But he also states that it is "controversial" and that he would himself have "put many things differently." Compared to what others have said about *Human action*, Hayek's review is extremely favorable. It is lukewarm when we remember Hayek's special relationship with Mises.

16. See, e.g., Kregel (1986); Lachmann (1976); High (1986).

course, concerned very much with finding a definition of equilibrium. But it was as a *subjectivist* that Hayek encountered a new and vitally important problem. If knowledge is subjectively-held and dispersed, so that ignorance, error, inconsistency of plans and the like are always present, how is it ever possible that the plans of agents could be coordinated? If one associates a tendency toward equilibrium with the coordination of plans, how might such a tendency be brought about in a world of subjective knowledge? What could lead the subjective knowledge of agents to come into conformance with objective reality? Though he may not have been as thorough-going a subjectivist as some of his later followers would have wished, it is nonetheless clear that subjectivism was still a very important influence on the ideas developed in this paper.

Hayek states that he does not know the answer to the questions raised above. Coming from an Austrian, such a statement is a bit disingenuous. Hayek over his long career has never questioned the "empirical fact" that a tendency toward equilibrium exists; he has never wavered in his belief that the competitive market process tends to bring agents' plans into coordination. It is on this fundamental point that many modern Austrians differ from other subjectivists (dubbed by them radical subjectivists) like G. L. S. Shackle or, closer to home, Brian Loasby, or even closer, Ludwig Lachmann.¹⁷ No, it was not the existence of coordination by markets that troubled Hayek. It was how to use equilibrium theory to demonstrate the existence of that tendency. Or alternatively put, it was how to change economics so that it could reveal the coordinating function of markets in a world of subjectively-held and dispersed knowledge.

It was clear to Hayek that economics needed changing. The standard approach to economics totally ignored the subjectivism that was to play so significant a role in the Austrian worldview. And because it assumes that the same, objectively correct knowledge is given to every agent, the standard approach was totally inadequate for dealing with the central question of coordination. By assuming perfect knowledge, standard equilibrium theory assumed away the very question that is most important.

17. See Shackle (1972); Lachmann (1976); and Loasby (1982). That Austrians often assume as true that which they should prove, namely, the coordinative efficacy of markets, is a major theme in Dow (1985). Very recently, a split has occurred in the Austrian camp over this issue. On one side are those who would minimize the importance of subjectivism and who stress the coordinative function of the entrepreneur. On the other are those subjectivists who question whether markets always coordinate and who are now developing an alternative evolutionary framework, dubbed order analysis, to explain the workings of the market process. Each group has a name for the other: it's the radical subjectivists versus the neo-classical Austrians. It is not clear which one is worse for an Austrian (being called a radical or a neoclassical), but it is clear that neither label is intended to be flattering. For a review of the literature, see Boettke, Horwitz, and Prychitko (1986).

V. *The Pure Theory of Capital*

We have seen that Hayek came up with a notion of societal equilibrium in 'Economics and knowledge' that, in assuming that knowledge was subjectively-held and dispersed, went beyond the standard assumption of given, objective knowledge. Hayek attempted to use this new equilibrium concept in his last major theoretical work in economics, *The pure theory of capital*. In the opening pages of the book, Hayek makes it clear that his work in capital theory had led him to question even more strongly than before the usefulness of equilibrium analysis. The first two sentences of the Preface read:

This highly abstract study of a problem of pure economic theory has grown out of the concern with one of the most practical and pressing questions which economists have to face, the problem of the causes of industrial fluctuations. The attempt to elaborate a chain of reasoning which seems to throw important light on this question had made it painfully clear to me that some of the theoretical tools with which we are presently equipped are quite inadequate for the task. [p. v]

Hayek is not simply repeating his criticisms of standard equilibrium theory here. To be sure, in his introductory chapters he takes the concept of stationary equilibrium to task for the familiar reason that, in models which employ the notion of stationary equilibrium, many important problems in capital theory simply disappear (pp. 4, 8, 14–18). But in his book Hayek proposes to use a non-stationary equilibrium construct in which equilibrium is defined as the full compatibility of agents' plans.

Crucially, Hayek is critical even of this more sophisticated notion of equilibrium. He apologizes for its use in the Preface (pp. vi–ix), and admits later that it refers to a "fictitious state" that can only serve "as a kind of foil" for analyzing what takes place in the real world (pp. 22–23). Perhaps most important, he asserts that his non-stationary equilibrium approach is but an intermediate step, a bridge between stationary equilibrium and a fully dynamic analysis. This last type of analysis would involve a study of historical sequences and would stress causality through time rather than mutual interdependence. Hayek describes this sort of dynamic model in the following way.

When it is used in contrast to equilibrium analysis in general, it refers to an explanation of the economic process as it proceeds in time, an explanation in terms of causation which must necessarily be treated as a chain of historical sequences. What we find here is not mutual interdependence between all phenomena but a unilateral dependence of the succeeding event on the preceding one. *This kind of causal*

explanation of the process in time is of course the ultimate goal of all economic analysis, and equilibrium analysis is significant only in so far as it is preparatory to this main task. [p. 17, emphasis added]

Note the explicit change in the direction of Hayek's views. Though he was increasingly cognizant of the limitations of equilibrium analysis as the 1930s progressed, Hayek never abandoned the belief (so strongly expressed in his early work) that economic analysis must make use of some concept of equilibrium. Now we find, to the contrary, that equilibrium analysis is only "preparatory" to the "ultimate goal" of causal-genetic explanations of economic processes as they take place in real time.

Did Hayek in his later years try to develop such a causal-genetic model? As Ludwig Lachmann observes in his article 'The salvage of ideas,' the first Austrian to suggest that a causal-genetic theory of price formation be developed to replace the neo-Walrasian functional price theory was Hans Mayer in 1932. But an explicit theory building on those foundations was never developed: in Lachmann's words, "the 'theory of the path' remains an item on the Austrian agenda" (1982, 6). Instead, Hayek was to turn away from the traditional study of economics to embark on a number of integrative studies of such areas as political theory, jurisprudence, social science methodology, and natural law philosophy. As mentioned in the introduction, his first contribution was to offer a host of critical studies of socialism. The critique of socialist planning was undertaken from a number of perspectives: economic, historical, philosophical, and political. He undertook next the positive task of describing in his theory of spontaneous order the set of economic, political, and legal institutions that he felt would have the best chance of solving the coordination problem. He was ultimately to conclude that a market system in a democratic state protected by a strong constitution is the best among many imperfect solutions to the problem of coordination.

We are finally in a position to understand the full dimensions of Hayek's transformation. Though always conscious of the limitations of equilibrium theory, the early Hayek insisted that one must use some notion of equilibrium in any legitimate economic analysis. In 'Economics and knowledge,' Hayek undertook to extend subjectivism by examining the implications of employing an alternative knowledge assumption. In place of the standard assumption of objectively-given knowledge, Hayek posited that the knowledge given to the various agents in the economy was not only different across agents, but was subjectively-held. This radical change in assumptions brought to the foreground a problem that was ignored in the previous analysis: how might the subjective knowledge held by agents ever come into conformance with the objective facts, how might coordination ever occur in the system? Hayek viewed his new definition of non-stationary

equilibrium (one based on compatibility of plans) as an advance over its stationary, full knowledge predecessor. But he found in *The pure theory of capital* that his new definition did not get him much further towards answering the question of *how* such an equilibrium might be reached. In his last major work in technical economics, Hayek was brought to the view that equilibrium analysis was at best preparatory for answering the question. He then turned away from the study of equilibrium economics to a broader investigation of the formation of institutions to answer the central question of economics, how a spontaneous order might emerge to solve the coordination problem.

VI. *The Socialist Calculation Debate*

A final set of questions remain. Why did Hayek take the coordination problem as a theme for so much of his later work?¹⁸ Why, for example, did he not seek instead to extend subjectivism (since, as was shown, subjectivism was a major theme of 'Economics and knowledge') to such areas as expectation formation, as certain other Austrians would do? Why did the specific path that he was to follow emerge, rather than some other? To answer these questions, we must examine Hayek's role in the socialist calculation debate.

Though Karl Marx insisted that socialism would inevitably replace capitalism, nowhere did he offer a systematic description of a functioning socialist economy. The gauntlet was thrown down in a 1920 article (followed two years later by a book) by Ludwig von Mises in which the claim was made that rational calculation was impossible under socialism. This article, the opening salvo in the socialist calculation debate, provoked a series of exchanges between proponents and opponents of central planning. Hayek's first published criticism of socialism and planning occurs in a remarkably neglected 1933 article, 'The trend of economic thinking.'¹⁹

18. O'Driscoll (1977) advances the thesis that the coordination problem provides the unifying theme for Hayek's work.

19. See Caldwell (1988a) for a brief discussion. The article is remarkable because numerous passages preview themes developed in Hayek's later work. He describes the market system as a complex organism whose institutions emerge spontaneously; he advocates a compositive and individualistic method for modeling the system; he criticizes the view that an institution must be planned to be functional; he links planning with the Historical School tradition.

As one of the referees pointed out, Hayek was working on a review of Menger's work at this time. It is therefore not surprising that some of the ideas expressed in his essay have a distinctly Mengerian ring. What is missing is the idea he would hit on three years later: that of subjectively-held and dispersed knowledge, and its importance for developing a theory of coordination. One may thus view 'Economics and knowledge' as providing the theoretical springboard for carrying out a program that was already enunciated, albeit in a rough and polemical way, three years earlier. If this is true, it might be argued that 'The trend of economic thinking' should share equal billing with 'Economics and knowledge' as Hayek's seminal article of the 1930s.

Two years later he edited the volume *Collectivist economic planning* which contains, among other contributions, two papers by the editor and an English translation of Mises' original German article. In 1940 Hayek published a third article on the topic in *Economica*.²⁰

As recently pointed out by Israel Kirzner (1988), Mises' original argument against socialist planning, as well as most of what Hayek wrote in *Collectivist economic planning*, could easily be mistaken for the work of standard neoclassical economists. The criticisms found there primarily focus on the question of allocative efficiency in the face of scarcity. The basic argument is that under a socialist regime a price system is absent, and thus rational calculation by consumers and firms cannot take place. But it must be mentioned that even here Hayek warned that an "excessive preoccupation with the conditions of a hypothetical state of stationary equilibrium" could lead economists to the false belief that costs could be precisely and definitely measured (1935, 226).

In the 1930s, Oskar Lange, Abba Lerner, E. M. F. Durbin, H. D. Dickinson and other advocates of market socialism came up with a simple but dramatic counter to the Austrian position. The essence of their argument is that the standard static equilibrium model can be used to represent either a socialist or a market economy. For example, one result of the model when it is applied to a market system is that perfect competition leads to an equilibrium state in which prices equal marginal costs. But the same result could be achieved in a centrally planned economy in which managers are given a directive to price at marginal cost. Formally, there is no logical difference between a market economy and a planned one; both can be represented by the standard equilibrium model. This insight is what led the planners to assert that Mises had been refuted. Rational calculation under socialism was possible after all, at least at the theoretical level.

It was in response to the arguments of the market socialists that Mises and Hayek began to develop their own insights concerning information and discovery. And most significantly, this is when the Austrians began to articulate more clearly their misgivings about the use of equilibrium theory, and to move towards a process view of markets. Professor Kirzner summarizes the point very well.

There seems to be little doubt that what led Mises and Hayek to emphasize these dynamic aspects of markets at the close of the thirties was the position taken up by their opponents such as Lange, Lerner and Dickinson in the calculation debate. . . . It was in restating their

20. Three excellent discussions of the debate are Vaughn (1980); Lavoie (1985); Kirzner (1988). Though not directly on the subject of the debate, an excellent counterpoint to these studies is Durbin's (1985) history of the development of democratic socialism within the British Labor Party.

case in the face of the arguments of these economists that the Austrians were led to make explicit some of the “process” elements in their understanding of markets, which they had hitherto not been impelled to emphasize. [1988, 7–8]

Hayek's response to his critics is found in his 1940 paper ‘Socialist calculation: the competitive “solution.”’ The paper is a review of two books, *On the economic theory of socialism*, edited by Benjamin Lippen-cott, and *Economics of socialism* by H. D. Dickinson.²¹ Hayek attacks the claim that the formal solution of the allocation problem can be shown to be identical under either a socialist or market system with the following words:

There is of course, no *logical* impossibility of conceiving a directing organ of the collective economy which is not only “omnipresent and omniscient,” as Dickinson conceives it, but also omnipotent and which therefore would be in a position to change without delay every price by just the amount that is required. When, however, one proceeds to consider the actual apparatus by which this sort of adjustment is to be brought about, one begins to wonder whether anyone should really be prepared to suggest that, within the domain of practical possibility, such a system will ever even distantly approach the efficiency of a system where the required changes are brought about by the spontaneous action of the persons immediately concerned. . . . [I]t is difficult to suppress the suspicion that this particular proposal has been born out of an excessive preoccupation with problems of the pure theory of stationary equilibrium. [Hayek 1947, 187–88]

During the war years Hayek was to continue his forays against socialism and planning. His attacks, however, were from a variety of new perspectives. In ‘The counter-revolution of science’ (1940), he showed the common roots of socialism and positivism, two doctrines that have been denounced by Austrians ever since. In ‘Scientism and the study of society’ (1942–44), he launched a methodological attack against all forms of scientism. His specific targets included historicism, collectivism, objectivism, and planning. In his 1944 book *The road to serfdom*, Hayek even tried his hand at a political argument that ultimately reached a larger audience when

21. The book edited by Lippen-cott contains two reprints of articles, one by Fred Taylor and one by Oskar Lange. In his article, ‘On the economic theory of socialism,’ Lange quips that a statue of Mises should be erected in “the great hall of the Ministry of Socialization” for his bringing to the attention of socialists “the prime importance of sound economic accounting” (1938, 57). If my thesis is correct that the socialist calculation debate led the Austrians to many new insights concerning the workings of the market process, they might consider erecting some statues of their own!

it was condensed for *Reader's Digest*. The book carries the dedication, "To the Socialists of All Parties." Hayek returned to economics in his 1945 paper, 'The use of knowledge in society.' The coordinative function of markets with respect to subjectively-held and dispersed knowledge is emphasized, and this is used again in an explicit criticism of planners. The final blow against the misuse of equilibrium economics is contained in his 1946 paper, 'The meaning of competition.' There Hayek contrasts the model of perfect competition with the Austrian notion of competition as a rivalrous process, and laments the misuses of the former in its application to public policy. Having completed his critique of socialism, Hayek was ready to begin the positive task of elucidating those institutional structures that offered the most promise for solving the coordination problem.²²

Starting in the early 1930s and lasting for about ten years, Hayek turned his intellectual efforts toward a thoroughgoing critique of socialism. In the process he discovered that standard equilibrium theory could be used in a defense of socialist planning. A necessary assumption for such a defense is that the planners have complete and objectively correct knowledge about the state of the economy. What better way to defeat them than to challenge such an assumption, and to put in its place the thoroughly Austrian assumption of subjectively-held and dispersed knowledge? Because no equilibrium models of the time could handle such an assumption, it is understandable that Hayek felt it necessary to leave economics in his attempt to address the question of how plans could be coordinated in a world of subjective knowledge. And it is no wonder that by 1942 Hayek could write that all the significant advances in economics over the past hundred years had involved the consistent application of subjectivism. It is in this sense that the rejection of the perfect knowledge assumption, the emphasis on subjectivism, and the attack on socialism found in Hayek's work in the late 1930s all went hand in hand.

VII. *Conclusion*

The analysis presented above helps us to understand better the contemporary Austrian position regarding the market process. As Israel Kirzner notes in his recent article, the modern Austrian portrayal of the workings

22. It could even be argued that much of Hayek's later work may also be viewed as a response to his socialist critics. Note, for example, the following challenge offered by H. D. Dickinson in his review of Hayek's *Freedom and the economic system* (1939b): "[T]he liberal opponents of collectivism have not so far entered the field with a positive programme. Can they suggest any workable set of institutions in the realm of property, inheritance, contract, money, and business organization which will be compatible with private property and the free market and which will at the same time guarantee the ordinary man a reasonable security of livelihood and prevent the accumulation of wealth (and, what is still more important, the concentration of power over wealth) in the hands of a minority of the community?" Dickinson (1940, 437). The search for such a "workable set of institutions" has preoccupied Hayek for decades.

of the price system contains three distinct elements. First, Austrians emphasize that markets provide an economically effective response to the problems caused by *scarcity*. Next, they claim that prices serve to convey efficiently *information* concerning the relative scarcity and abundance of goods. Finally, Austrians point out that a market system provides incentives for entrepreneurs to *discover* as-yet unknown information concerning either existing or potential techniques or products (Kirzner 1988, 4).

A recurring criticism found in the modern Austrian literature is that neoclassical economic theory does not adequately explicate these three functions of a market system. To be sure, Austrians readily admit that the standard models are capable of fully incorporating arguments concerning scarcity. But it was not until the last twenty years, and even then only in models at a relatively high level of abstraction, that neoclassicals began to take into account the information-coordination function of markets. Furthermore, no neoclassical models have yet incorporated the notion of an entrepreneurial process of discovery. This is not to say, of course, that neoclassicals in their intuitive explanation-sketches of the functioning of a market system ignore these insights. It's just that in their *formal models* these important elements are neglected.²³ Crucially, the inability of modern neoclassicals to formally isolate these important functions of markets is due, according to the Austrians, to their preoccupation with utilizing equilibrium models.

The above analysis also helps us to understand certain ironies in the later development of Austrian thought. If the thesis advanced in this article is correct, the modern Austrian contributions concerning the information-coordination and entrepreneurial-discovery functions of the market process, though possibly *implicitly* present in earlier Austrian writings, first began to receive explicit articulation during the calculation debate. Yet the context in which these ideas developed was subsequently forgotten, even by some Austrians. The context had to be rediscovered some fifty years later. This strange turn of events is easily explainable. Though the Austrian suspicions about the misuse of the equilibrium construct and their emphasis on the market as a process initially was a response to their opponents in the socialist calculation debate, their arguments also constituted an attack on standard economic theory. To the chagrin of the Austrians, the construction of ever more sophisticated equilibrium models proliferated in the decades following World War II. Their opponents were no longer the socialists, but mainstream economic theorists, and in particular general equilibrium theorists. Though the Austrian Carl Menger is credited as one of the founders of the marginal revolution, a revolution which led to the ascendancy of neoclassical economics, one hundred years later his fol-

23. My distinction between explanation-sketches and formal theories mirrors that drawn in Nelson and Winter (1982) between formal and appreciative theories.

lowers were perceived as just another fringe group that was critical of mainstream practices. In an odd twist of fate, other members of the critical heterodoxy included their old enemies the Marxists and the neo-Ricardians.

The Austrians found themselves in a similar position with regard to methodology. Both Mises (in *Human action*) and Hayek (in his methodological essays on scientism) opposed positivism because of its links with socialism and with the concept of the scientific planning of society. But after the publication of Friedman's famous essay, 'The methodology of positive economics,' various positivist doctrines became part of the official methodology of mainstream economics. (This is all the more paradoxical given that Friedman's position is closer to instrumentalism than it is to positivism.) As a result modern Austrians have frequently criticized the methodology of the Chicago School, even though on policy issues the two groups are often in agreement. Their opposition tends to baffle outsiders, not to mention Chicago economists! And again, Marxists have joined the Austrians in deriding the positivist elements in neoclassical methodology.

The final irony involves the recent invocation by certain rational expectations theorists, as documented in Butos (1985), of Hayek's early work on the business cycle. As was shown earlier, Hayek had argued in *Monetary theory and the trade cycle* that any adequate theory of business fluctuations had to build upon standard equilibrium theory, a proposition that modern rational expectations theorists heartily endorse. Hayek abandoned this position once he began to consider more seriously the problems arising from assumptions about knowledge, foresight, or in modern jargon, expectations formation. For Hayek, the fact that knowledge is dispersed and subjectively-held meant that a preoccupation with equilibrium would prevent one from reaching any understanding of the central problem of economics, the coordination of information. It is perhaps the cruelest irony of all that rational expectations theorists should choose Hayek's defense of the equilibrium approach for citation. Hayek believed that equilibrium theory was useful for modeling only certain economic phenomena. He found it least useful in situations in which information, expectations, and the problem of coordination were important. Because he felt that the coordination problem was so crucial, Hayek ultimately turned away from technical economic theory to search for solutions. It has taken the leading lights of the profession fifty years to reach the conclusions Hayek had reached in 1929. Whether they will ever appreciate what he was saying in 1936, or even more dramatically, in 1941, remains to be seen.

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