

A Note on the Keynesian Revolution and the Paradigm of Kuhnian Scientific Revolution

İsmail Tuncer

*Doç. Dr.
Mersin Üniversitesi
İİBF, İktisat Bölümü*

Abstract: *In this paper firstly the sociology of knowledge theories about progress in sciences is reviewed. Then whether or not the Keynesian departure that took place in the nineteen twenties in macroeconomics was a revolution in the sense of Kuhn's historiographical framework is examined. Moreover, the framework of Kuhnian scientific revolution which is better in hard sciences such as physics than the others is outlined. Finally, a discussion on whether the Keynesian departure that took pace in 1920's fits in the Kuhnian framework of a scientific revolution is presented.*

Keywords: *Paradigm, scientific revolution, Keynesian revolution*

Keynesyen Devrim ve Kuhn'un Bilimsel Devrim Paradigması Üzerine Bir Not

Özet: *Bu çalışmada önce bilimlerin gelişmesi ile ilgili teorilere işaret edilmiş ve daha sonra Thomas S. Kuhn'un teorisinin genel çerçevesi çizilmeye çalışılmıştır. İkinci bölümde 1920'lerde filizlenen, çok hızlı yayılan ve hakim paradigma haline gelen Keynesyen İktisadın Kuhn'cu anlamda bilimsel devrim özellikleri gösterip göstermediği tartışılmaktadır. Son olarak, Keynesyen İktisadın Kuhn'cu anlamda bilimsel devrime ne derecede yakın özellikler gösterdiği ortaya konmaktadır.*

Keywords: *Paradigma, bilimsel devrim, Keynesyen devrim*

Introduction

Since the aim of scientific thought is to grasp reality or at least to discover wider and wider aspects of reality, then it must be natural, to ask the following questions: "What do scientists and/or economists know?" And "How do they know that what they know is right?" In answering these questions, men think whether there is an ultimate truth? Or there is no underlying truth? Believing that an ultimate truth exists raises the problem of deciding when and how one discovered it (Landreth and Colander, 1994: 10-11)

At the beginning of the twentieth century, the methodology of science carried on the development of logical positivism, which provided the scientific method with philosophical foundations. According to the logical positivists, scientists develop a logical theory that leads to empirical testable propositions. However, a logical theory is true, only after it has been empirically tested and verified. The role of the scientist in this context is to develop these logical theories and then to test them (Landreth and Colander, 1994: 11).

The first departure from this verification notion is made by Karl Popper, who asserted that empirical tests do not establish the accuracy of a theory. According to Popper it is never possible to "verify" a theory since one cannot perform all possible tests of the theory (Landreth and Colander, 1994: 12). Popper begins with the distinction between science and non-science and asserts that the criteria in distinguishing science and non-science must be the falsification not verification of hypotheses (Blaug, 1992: 12). Moreover, the main goal of any science should be to develop theories with refutable hypotheses and then to try to falsify them. According to Popper, science progress by accumulation of non-refuted hypotheses, on the other hand logical positivists believed that science progress by accumulation of verified hypotheses. That is, both Popper and logical positivists share the proposition that progress in sciences occurred by accumulation of knowledge without discontinuities and departures. As Schumpeter state that: "When we use the concepts and theorems that we have inherited from our predecessors, these concepts and theorems change in our hands. We add here and correct there and so this apparatus slowly develops into a different one" (Schumpeter, 1954: 1141). Consequently, in discovering the "truth" a continuous linear progress was taking place in the sphere of knowledge.

In this fashion, the history of economic doctrines has been written as a chronological story of progress by accumulating analytical improvements in a field of inquiry with a largely fixed set of questions (Leijonhufvud, 1976: 65-66). This conception of scientific progress is being challenged by a 'catastrophist' view which suggests that the process has been subject to periodic breakdowns, discoveries, changes of directions, and discontinuities, obscured by historians who have unconsciously interpreted the past in the light of their own epistemological preconceptions (Coats, 1969: 289).

In this view; various growth of knowledge theories have been developed after the 1950's, which have combined the philosophers' traditional preoccupation with epistemology and the historical study of the actual evolution of the sciences (Leijonhufvud, 1976: 67). These developments in the growth of knowledge theories for natural sciences have been employed by economists to the developments in economics. In the history of economic thought, the history of science paradigm provided by T.S. Kuhn is very likely to demonstrate the departure called Keynesian revolution.

Kuhn's Structure of a Scientific Revolution

Kuhn`s framework is concerned with developments in established sciences and he tried to answer the question, of "what is the impetus that encourages discovery and progress in sciences?"

Science may be regarded as an institutional mechanism for sifting warranted beliefs. Kuhn maintains that (normal) "science is dominated by paradigms whose functions are regulative as well as cognitive, since it provides the scientist not only with a map but also with some directions essential for map making" (Kuhn, 1970: 109). According to Kuhn normal science is based on paradigm which expresses the unity and the coherence of a system of ideas (normal science). A paradigm may be regarded as a set of tricks or insightful devices that is used by scientists to solve problems. Moreover, it encompasses the social vision, methodological principals and categories, theories, techniques and stereotyped examples, all of which together make up a particular system of ideas, the contend of which reflected in textbooks (De Vroey, 1975: 419). In other words, a paradigm, at least in its initial stage constitutes a new and particular way of looking things, 'gestalt,' which promises to be fruitful in the solutions of scientific problems. The basic stages of Kuhn's history of science paradigm are the following: pre-paradigm; normal science; crisis and possibly extraordinary science; and normal science again-once the crisis is resolved.

Pre-paradigm Stage: in this stage there are several competing schools of thought; each of which offers a potential paradigm, but none of them are persuasive enough to gain the (near) universal acceptance associated with normal science. In short, although those in each school may be practicing science, taken as a whole, the sum of these schools does not form a science (Stanfield, 1974: 98-99). Once one of the competing schools, begins to attract ever larger shares of practitioners, the transition to normal or mature science is begun.

Normal Science: Science can be considered as a system of ideas. The concept of normal science and paradigm are virtually synonymous. However, normal science constitutes the 'actualization of the promise' provided by the paradigm. The main purpose of the normal science is to force nature into the pre-formed and relatively inflexible box that the paradigm supplies. Normal science is puzzle solving; these activities, within a normal scientific tradition, will normally encounter three classes of problems:

- ♦ The determination of significant facts;
- ♦ The matching of facts with theory;
- ♦ The articulation of the theory (Pheby, 1988: 38-39).

In this stage when an experiment fails to produce the anticipated result, the puzzle solver (scientist), not the puzzle (paradigm), is considered

inadequate. This point is important because scientific revolutions are rejections of paradigms which cannot anymore prove their hypotheses.

A *situation of crisis* is the interruption of this normal science pattern. It began with anomalies in both fact and theory. An anomaly may be associated with conflicting experimental or empirical discoveries or with a theoretical ambiguity, which defies resolution by paradigm articulation. When an anomaly recognized as a more than merely a difficult problem, the transition to crisis and extraordinary science occurs. The period of *extraordinary science* is similar in many ways to pre-paradigm stage. There occurs a relaxation of the rules of normal science and more speculative, random research. This pattern often leads to an increase in discoveries and a shift in philosophical analysis or explicit methodological debates on the rules of the paradigm. The period of extraordinary science ends in one of three ways. The anomaly may be resolved by normal science, it may resist all offered approaches, in which case the discipline accepts it as insoluble given the state of the arts, or the last case, the rise of a new paradigm which is, of course, a scientific revolution (Stanfield, 1974: 100-101). This is basically the Kuhn's schema for progress of sciences without details.¹

The Transition from the Classical to Keynesian Paradigm

Now, let us consider how feasible Kuhn's approach is likely to apply for economics. Before the 1930's the dominant paradigm in economics was the classical paradigm². The classical theory was based on the simple version of the Say's law, whereby supply is said to create its own demand and people demand money only for transaction purposes, thereby serious possibility of market gluts and depression were eliminated. They also assumed that all prices in both labor and goods market were flexible and the economy automatically achieves the equilibrium at full employment level. Since the classical economists based their theory on full employment equilibrium they focused on growth and allocation of fully employed resources but not on employment itself. According to the classical theory, economic downturns were always caused by non-economic events such as wars or crop failures. Moreover, the self adjusting nature of the market would quickly restore full employment (in the short run) via flexible money wages and prices, that is their policy implication would therefore relate to removing obstacles to free adjustment. The classical paradigm was not without problems. One problem came from ignoring the institutional environment that wages and prices are set. The classical theory was based on perfectly competitive markets with

1 Since the aim is to discuss whether the Keynesian departure is a revolution in Kuhnian sense, I only outline the Kuhn's theory without any detail.

2 The term "Classical" in this study is used not only to include A. Smith, D. Ricardo and J.S. Mill but also to include (as Keynes put it in his *General Theory* p.3) those who adopted and perfected the theory of Ricardian economics.

flexible wages and prices but in practice, the wages and prices are sticky and not flexible.

Another problem was rooted in the neoclassical theory was the *ceteris paribus* assumption. This assumption is useful when studying single entity or market. But, this assumption haunts us while studying the economy as a whole. For example, if wages fall, employers will be willing to hire more people, all other things stay constant. The problem here is, all other things cannot remain the same. Since wages make up the major component of income, falling wages will reduce demand for goods and services, hence employment. Malthus, Marx and few other heretics (Snowdon et al., 1994: 5) point out the problem of deficient demand which can be thought as an anomaly to the classical paradigm. As Kuhnian theory suggest the puzzle solver (Malthus and others), not the puzzle (classical paradigm), is considered inadequate.

By the 1930's these features of the classical paradigm became increasingly anomalous. The persistence and worsening of unemployment in the early 1930's in the United States destroyed the equilibrium in the market in such a way that couldn't be restored back by the market forces without interference by the state (Patinkin, 1991: 14-15). Moreover, unemployment had become a worldwide phenomenon. Thus the unemployment of the 1930's which the classical theory could not explain, called for a new theory. Therefore, crisis began in theory and practice. This crisis elicited a great variety of solutions from businessmen, engineers and others who claimed to know what was wrong with the classical approach. According to Kuhn, in a crisis the puzzles of normal science do not come out right (Mehta, 1979: 154). Hence there is a debate over fundamentals and the exchanges between the proponents of the old paradigm and those who opposed the paradigm. None of these attacks on classical paradigm could provide a new gestalt. It was left to Keynes to develop a systematic theory which proved that unemployment was a natural consequence of deficient effective demand.

Having said all this, in the *General Theory* and the *Treatise*, Keynes intended to deal with two things. The first one was to show that the existing orthodoxy was inappropriate for dealing with any economic situation other than the special case of the full employment of resources. Second, he aimed to provide an alternative theory of the working of a monetary production economy which would be general, in the sense that it would demonstrate that the system could be in equilibrium at any level of employment, and that the special case of full employment equilibrium would require the components of aggregate demand, consumption plus investment, to stand in a particular relationship to each other. And by doing this Keynes provided a new 'gestalt' to the economic sphere. For example, he argued that an increase in saving may not be offset by a corresponding act of investment. Therefore, excess

saving has led to a fall in employment.³ Another facet of the Keynesian departure is the practical achievements in governmental policies. Government intervention, which had been regarded as an obstacle to the achievement of full employment, was now to be a necessary condition of it. That is, the "state" is explicitly written into the economic equations (Fletcher, 1987: 186-187). Moreover, demand management become a policy tool to restore full employment equilibrium and another novelty was the so called socialization of investment. Keynes in his general theory (1980: 322) asserts that:

"If two-thirds or three quarters of total investment is carried out or can be influenced by public or semi-public bodies, a long term programme of a stable character should be capable of reducing the potential range of fluctuations to much narrower limits than formerly, when a smaller volume of investment was under public control and when even this part tended to follow, rather than correct, fluctuations of investment in the strictly public sector."

In this sense the socialization of investment is filling the gap left by private investors and encouraging investment by reducing uncertainty.⁴ Most of the classical economists flatly rejected Keynes's claim that he had revolutionized economic theory. The reaction to Keynes was almost completely negative as far as the older neo-classical economists were concerned. On the other hand, the younger economists like Lerner, Kahn and Robinson accepted Keynesian new paradigm, and they proceeded to articulate and refine the new paradigm. Consequently, the Keynesian paradigm became dominant and turned to a normal science in the Kuhnian sense (Mehta, 1979: 157). In Keynesian normal science 'demand' is the dominant concept while the 'supply' was dominant factor, in the classical system. Since demand became a dominant factor in Keynesian system, research has been devoted to the determinants of demand namely consumption, investment and government spending if not to mention the foreign sector. Keynesian normal scientists have been working with models in which the economy responds to disturbances not by price but by quantity adjustments. These could be seen as the concrete novelties of the Keynesian revolution.

Conclusion

3 Classical economists believed that, what is spent in one direction must be spent in another. But Keynes argued that, an increase in savings has lead to the loss of the entrepreneurs who produce consumption goods. Therefore, the prices and output fall down in these industries increasing unemployment.

4 The socialization of investment later became one of the main touch-stone of Post Keynesian Economics. For a better understanding of its role in Post Keynesian way of thinking, see Arestis, 1990.

Some economists, for example, Mehta (1977 and 1979) and Stanfield (1974) believed that the Keynesian revolution is a good example of a Kuhnian scientific revolution, Whereas others like, Bronfenbrenner, Gordon, and Blaug, argued that Kuhnian revolutions in economics do not occur. Because it is hard to obtain observational and empirical evidence and the link between theories and reality is tenuous in social sciences. So it is difficult to obtain a clear cut between theories and there always be a tendency for debates over methodological questions (Mehta, 1979: 158). For example, Bronfenbrenner (1971), believed that in economics it is difficult to see one paradigm as completely replacing the other. What we have experienced is a synthesis emerging between different perspectives; this means that both continuity and discontinuity can be features of the history of economics (Pheby, 1988: 44-45). According to some other economists, the structure of a paradigm is very rigid and it makes itself un-refutable and does not enable puzzle solving and corrective mechanism to function. But it is usual for a paradigm to resist revolution. And the progress in social sciences should be evolved as an increase precision in matching facts with theories (Stanfield, 1974: 105). Moreover, there is a considerable body of evidence that shows Kuhn's theory illuminate some new facts about the Keynesian departure in economics. Additionally, these new growth of knowledge theories are based on the behavior of the scientists not on the absolute scientific truth, and this enables economists to apply these theories to the progress in economics.

In brief, the departure made in the 1930's by Keynes in economics is roughly similar to the Kuhnian scientific progress scheme. The (classical) paradigm couldn't offer fruitful solutions to the scientific problems of the time.⁵ Consequently, an anomaly arose and some fresh discoveries began. Many economists worked in the anomaly area and but no one could offer a new theory. Then, Keynes provided a new gestalt and started to attract new practitioners who worked to refine and develop this new gestalt and this new gestalt became the dominant paradigm. Moreover, this new paradigm has led to new extensions and fruitful developments of knowledge in economics, such that, growth theories, problems of inflation, open economy and IS-LM analysis.

⁵ The paradigm concept especially in social sciences is ambiguous. But this definitional difficulty creates no more fundamental problems for social scientists who deal with instruments.

References

- Arestis, P., 1990, "Post-Keynesian Economics: Recent Developments and Future Prospects", in *New Thinking in Economics* (ed.) Shackleton, J. R., Edward Elgar, Bill and Sons Ltd., Worcester.
- Blaug, M., 1992, *The Methodology of Economics*, Second Edition, Cambridge University Press, Cambridge.
- Coats, A. W., 1969, "Is There a Structure of Scientific Revolutions in Economics?", *Kyklos*, 22.
- De Vroey, M., 1975, "The Transition from Classical to Neoclassical Economics: A Scientific Revolution", *Journal of Economic Issues*, IX (3), September.
- Fletcher, A. G., 1987, *Keynesian Revolutions and its Critics*, St. Martin Press, New York.
- Kuhn, T. S., 1970, *The Structure of Scientific Revolutions*, The University of Chicago Press, Chicago.
- Landreth, H. & Colander, D. C., 1994, *History of Economic Thought*, Houghton Mifflin Company, Boston, USA.
- Leijonhufvud, A., 1976, "Schools, Revolutions and Research Programmes in economic Theory", *Latsis*, 22.
- Mehta, G., 1979, "The Keynesian Revolution", *International Journal of Social Economics*.
- Patinkin, D., 1991, "On the General Theory", in *Economics, Culture and Education*, ed. Shaw, G. K., Edward Elgar.
- Pheby, J., 1988, *Methodology and Economics*, M.E. Sharpe Inc., New York.
- Schumpeter, J. A., 1954, *History of Economic Analysis*, Oxford University Press, Inc. New York.
- Snowdon, B., Vane, H. & Wynarczyk, P., 1994, *A Modern Guide to Macroeconomics: An Introduction to Competing Schools of Thought*, Edward Elgar Publishing Ltd.
- Stanfield, R., 1974, "Kuhnian Scientific Revolutions and the Keynesian Revolution", *Journal of Economic Issues*, VIII (1), March.