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Takashi Negishi

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The Editors

To my Aiko,
for our silver wedding anniversary

CONTENTS

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PREFACE

As a book in the series of Advanced Textbooks in Economics, this volume aims to interest students of modern economic theory in the history of economics. For this purpose, past economic theories are considered from the point of view of current economic theories and translated, if possible and necessary, into mathematical models.

When he reformulated Wicksell's theory of capital mathematically, R. Frisch tried to justify his purpose by emphasizing that nowadays the younger generation of economists are not induced to spend time and trouble discussing problems in economic theory unless the details of the problem are rigorously formulated in mathematical terms, while in the days of Wicksell, on the contrary, one had to write literally if one wished to be read by more than a very minor group of specialists.[1] What was true for Wicksell in this respect is all the more true for much earlier economic theories, i.e., those of the mercantilists, physiocrats, classical economists, Marx and the Marxians, and some economists of the marginal revolution. While Wicksell merely explained literally what he himself considered mathematically, some earlier economists did not employ mathematical method at all. Those economists used at best numerical examples not only for explanatory purposes but also as the only weapon available to analyze their problems. The result is that they sometimes insisted on the unwarranted generality of their propositions derived from numerical examples, since numerical examples, unlike the mathematical method, cannot reveal the implicit assumptions on which the derived propositions are based.

In view of these circumstances, it is necessary to use mathematical models of contemporary economic theory to explain the problems economists had to face in the past and to analyze the theories they developed to solve them in their own ways, i.e., literally and by using numerical examples. By doing so we can see their historically celebrated and still interesting problems in a new light and the problems they could not solve by their techniques are easily solved using modern techniques. We should not, however, indulge ourselves in an easy victory like a modern army in a science fiction, slipping through time to overcome a band of medieval knights. We hope we can find in the works of past economists clues to questions of present interest or theories and techniques of analysis that might be applied to modern problems. It is this possibility that is

[1] See R. Frisch, "Wicksell", in *The Development of Economic Thought*, H.W. Spiegel, ed., John Wiley, 1952.

the motivation for our studying the history of economics from the point of view of contemporary theory. Although it cannot be denied that, by studying mathematical models, we can understand more easily what economists in earlier times really meant, we must admit that something of the original content is always lost by the mathematical translation of the classical works of past economists. Translation is treason. We have to study critically and carefully, therefore, those mathematical models of classical works constructed by contemporary economists, by always referring to the content of the original literature.

After a brief discussion of why we have to study the history of economics from the point of view of contemporary economic theory, a bird's-eye view of the historical development of economics is given in Chapter 1 so that readers can see the significance of the topics to be discussed in subsequent chapters from a proper historical perspective. These topics are carefully chosen to show not only what great economists in the past contributed to the development of economics, but also what suggestions for solving our own current problems we can obtain by reworking the problems they had to face. It is our great pleasure if readers can find there some useful hints for their researches to develop modern theories further. Alternatively, we are also happy if some readers conclude that something is wrong with the current mainstream theory and that economics should be developed under different paradigms.

This book can be used in advanced undergraduate as well as graduate classes on the history of economics, since each chapter is developed from my undergraduate lectures for senior students at the University of Tokyo and the International Christian University and from my hand-outs for graduate seminars at the University of Tokyo and Kyoto University. Mathematical techniques used can be easily understood by advanced undergraduates of economics major, since some models constructed originally by contemporary mathematical economists are carefully reformulated without losing their essence, so that only basic calculus and the rudiments of linear algebra are necessary to understand them[2].

Since this is a text book, we tried to be as objective and eclectic as possible, at least in the introductory chapter and in the introductory parts of all the chapters. In this respect, we owe greatly to standard and authoritative histories of economics, such as those of Schumpeter, Blaug, Ekelund and Hébert, as well as to other secondary literature on the history of economics. It is our pleasant

[2] Readers of, for example, J.M. Henderson, and R.E. Quandt, *Microeconomic Theory, A Mathematical Approach*, McGraw-Hill, 1958, can understand the techniques used in this book, and readers of the first half of M.D. Intriligator, *Mathematical Optimization and Economic Theory*, Prentice-Hall, 1971, will find them easy.

duty to acknowledge our debt to them, although, of course, it is possible that we misunderstood some of their arguments. Materials developed in our articles published in *Manchester School*, *History of Political Economy*, *Economic Studies Quarterly*, and *Zeitschrift für Nationalökonomie*, as well as those in our three collections of essays[3] are used freely in completely revised and abridged forms. We are grateful to the editors and referees of these journals and the reviewers of these books.

We owe thanks for valuable comments and warm encouragement to our colleagues in the University of Tokyo, members of the Japanese History of Political Economy (HOPE) Association, and participants of seminars where some of the chapters were read. Although some of them are mentioned in the relevant chapters below, we regret that we cannot include the names of many others to whom we are greatly indebted. Our research activities have been supported financially by the Foundation for Promoting Economics of the University of Tokyo, and by Grant-in-Aid for Scientific Research of the Japanese Ministry of Education, Science and Culture. Last, but not least, we would like to thank Professors C.J. Bliss and M.D. Intriligator, and the North-Holland editors for their valuable suggestions and editorial efforts, and Miss Tomoko Kiyama, Miss Toshiko Hutatsuishi and Miss Keiko Mizuno for their excellent typing.

Tokyo, December, 1987 Takashi Negishi

[3] *Kotenhakeizaigaku to Kindaikeizaigaku* (Classical Economics and Modern Economics), Iwanami-shoten, 1981, *Economic Theories in a Non-Walrasian Tradition*, Cambridge University Press, 1985, and *Keizaigaku niokeru Koten to Gendairiron* (Classics and Contemporary Theory in Economics), Yuhikaku, 1985.

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CHAPTER 1

A BIRD'S-EYE VIEW OF THE HISTORY OF ECONOMICS

1. Why do we study the history of economics?

Of course, it is interesting to learn how several men of genius and many earnest scholars faced the economic problems of their days and what kind of economic theories have been developed in the past to solve them. However, we now have our own economic problems which are more diversified and more complex than theirs, and contemporary economic theories to be applied to them are highly developed, so that they are very difficult and time consuming to learn. One may naturally feel that there is no time left to study old problems and old theories. Why, then, do we study the history of economic theory?

To reply to this question, let us first consider how theories should be, or have actually been, developed in economics as a positive science. A standard explanation may run as follows. To explain phenomena which are either collective or recurrent, a theoretical model is constructed. It is a system of hypotheses in which we introduce only such elements or factors as can be considered essential. By the use of the model, we logically derive predictions or conjectures on phenomena to be explained. It is, then, necessary to see whether conjectures obtained from the theoretical model can explain the behavior of phenomena actually observed. This is the test of the theory through experiments or observation. A theory which is not refuted in the test is retained for the time being, to obtain further conjectures and to be tested again by new experiments and new observation. If a theory is refuted in the test, it implies that the hypotheses adopted are wrong and the factors or elements introduced in the model are not properly chosen. Through such a cycle of the construction of a model, the making of conjectures, the empirical test, the refutations, and the construction of a new model, economic theories are developed, step by step, toward the truth.

If economic theories have actually developed in this way, however, the history of economics is not necessary to study theories of present day economics. Economic theories of the past which are no longer included in the theoretical system of contemporary economics are those theories which have

once been refuted by the empirical test in the past. Revisiting past theories which are false is not necessary either to understand contemporary theories which are currently regarded as valid, or to develop them further into more generalized or refined ones. Consideration of why economists made mistakes in the past may be left to psychological or sociological studies of research activities.

The continuous process of conjectures and refutations described above is a popularized text-book version of Popper's theoretical model of the development of sciences. As Popper himself recognized, however, the actual development of a science has never been such a rational process even in the case of natural sciences, let alone the case of economics. Even if a theory is refuted by the test, "it is always possible to say that the experimental results are not reliable, or that the discrepancies which are asserted to exist between the experimental results and the theory are only apparent and that they will disappear with the advance of our understanding" (Popper [27, p. 50]). Refuted theories have not been continuously replaced, since it is not so easy to construct new theoretical models. Although *ad hoc* assumptions are added, such theories are retained without any changes being made in the essential part.

From his study of the Copernican revolution in astronomy [14], Kuhn [15] developed a theoretical model of the development process of sciences which describes the real history of science faithfully, rather than insisting on rational rules of scientific discovery. The history of science is not the history of continuous conjectures and refutations à la Popper. It is marked by long periods of steady refinement, normal science or problem-solving activity in the context of an accepted theoretical framework, a paradigm, interrupted on occasion by scientific revolutions, discontinuous jumps from one ruling paradigm to another, with no bridge for communicating between them. It should be emphasized that a paradigm cannot be overthrown by one single empirical refutation. It is overthrown as a consequence of repeated refutations and mounting anomalies only when a competing, alternative paradigm is ready.

As the study of Ptolemaic astronomy is not necessary to understand the modern theory of astronomy, however, Kuhn's theory of scientific revolution does not persuade us that the study of the history of economics is necessary to understand the modern theory of economics. In the history of economics there were several revolutions, such as the marginal revolution and the Keynesian revolution. If these revolutions in the history of economics are scientific revolutions in the sense of Kuhn, the study of a pre-Keynesian paradigm, say, is not necessary to understand a post-Keynesian paradigm, since there is no

bridge for communicating between two paradigms. Fortunately, however, Kuhn's theory cannot be applied to the case of economics.

A typical reaction of economists to Kuhn's theory can be seen in Bronfenbrenner's [2] interpretation that Kuhn's theory is a catastrophic theory. Bronfenbrenner does not deny the existence of scientific revolutions in the sense of Kuhn, but thinks that the catastrophic theory of Kuhn does not explain the facts very well in the history of economics, because some special features distinguish the history of economics from that of other sciences. Firstly, the catastrophic theory maintains that paradigms, once displaced, are displaced definitely. But, according to Bronfenbrenner, outmoded ideas are never definitely displaced in economics. Secondly, advances in economics tend to be major accretions without a rejection of existing paradigms, which Bronfenbrenner argues is inconsistent with a catastrophic theory. Two examples given by Bronfenbrenner of outmoded and displaced ideas that still continue to exist in economics are elements of the medieval notion of just price, on which modern income policy proposals are based, and mercantilist notions, which continue to exist in spite of their displacement by classical economics.

Mehta [24, pp. 198–201] defends Kuhn and criticizes Bronfenbrenner to the effect that Kuhn's theory is not the catastrophic theory that Bronfenbrenner claims it to be. Kuhn's theory is not a theory of scientific revolutions that are complete and unaccountable breaks with the past, since Kuhn himself admits that new paradigms usually preserve a great deal of the most concrete parts of past achievement. In other words, in the later and weaker version of Kuhn's theory, any period of scientific development is marked by a large number of overlapping and interpenetrating paradigms, some of which may be incommensurable but certainly not all of which are (Kuhn [15, pp. 199–200]. Paradigms are not considered to be replaced by each other immediately. In economics as well as in other sciences, then, outmoded ideas continue to exist, since outmodedness can be defined, as was emphasized by Mehta, only relatively to a given paradigm. From this point of view, the study of the history of economics is very important to promote the progress of economics, since an idea that is outmoded relative to one of the currently dominating paradigms may be useful for the development of another, possibly new, paradigm. The study of mercantilism, which has been outmoded since the dominance of classical economics, may suggest to us a perspective on the current problem of frictions among trading nations which classical and post-classical economics cannot (Schmitt [29]).

Perhaps it is the theory of Lakatos [17, pp. 91–196] which explains the development process of economics best. It is a halfway house between Popper and Kuhn. Lakatos [17, p. 155] considered that "*the history of science has been*

and should be a history of competing research programs (or, if you wish, 'paradigms') but it has not been and not become a succession of periods of normal sciences," the monopolies of a research program. All scientific research programs may be characterized as having an immutable hard core that is irrefutable and that is surrounded by a changeable protective belt of refutable auxiliary hypotheses that has to bear the brunt of tests. Let us note that scientific research programs are not competing theories but competing series of changing theories. If changes increase content, they are called progressive, whereas if they are *ad hoc* and decrease content, they are called degenerating.

When two research programs, R_1 and R_2, compete, their first models usually deal with different aspects of the domain. As the rival research programs expand, however, they gradually encroach on each other's territory. In other words, they are commensurable. This overlapping of R_1 and R_2 eventually results in the first battle between the two programs in which, say, the nth version of R_1 will be bluntly, dramatically inconsistent with the mth version of R_2. Suppose the battle is won by R_1, as the result of an experiment. But the war is not yet over, since any research program is allowed a few such defeats. All it needs for a comeback is to produce an $m+1$ content-increasing version and a verification of some of its novel content (Easlea [5, pp. 21–22]). It is difficult to see why an apparently defeated research program cannot make a triumphal return with its hard core the same as before but with a better articulated or different protective belt. But, to make a triumphal return, there must be some scientists seeking to develop it while it is in a state of hibernation. In other words, it is necessary to study theories that are regarded as past ones from the point of view of other research programs.[1]

We may perhaps consider that Marxian and non-Marxian economics are different research programs. In the latter, of course, there are several different competing research programs. From the Keynesian point of view, the theories of mercantilism, Malthus, the underconsumptionists, Kalecki and Keynes are a series of theories which belongs to the same research program with the common hard core of the possibility of general glut (overproduction) and deficiency of effective demand. Similarly, the pre-Keynesian quantity theory of money and the recent theory of monetarism belong to the same research program, which has the reliable automatic market adjustments as a hard core. The latter theory has, however, a new protective belt, that is, a new theory to explain changes in employment which the former did not have. This is the reason why the quantity theory made a triumphal return from its state of hibernation after the Keynesian revolution. The so-called neo-classical, or

[1] For further development of recent theories of science "beyond positivism", see Feyerabend [7] and Caldwell [3].