STATIC AND DYNAMIC ECONOMICS

Static economic theory is primarily a decomposition of the social phenomenon into units of individual activity. Such decomposition constituted the essence of traditional economics, which has used this analysis as a means of passing ethical judgments, of evaluating changes, and sometimes of forecasting future development. But this analytic essence of traditional theory is of little use in dynamic economics which deals with changes of social phenomena in time.

The quantitative method is of small value to the essential task of static economics. But it is of cardinal importance in dynamic economics, since it permits the study of a variety of continuous manifestations which, upon preliminary analysis, form the materials to be utilized in the future systematic theory of economic changes.

I

Ever since the golden days of undisputed classical economics, economic theory has been a battleground of widely divergent views. True of the most important problems such as value and price, this perennial impasse was still more so in the realm of methodology. The early clash between the classical and the historical schools was followed by a no less acrimonious discussion between the adherents of the inductive and of the deductive methods. At present, statistically minded economists are lumped together into the quantitative school as opposed to the neoclassical. And recently, both on the continent and in this country, the by now venerable dichotomy of static and dynamic economics has been revived. It is to the significance of the latter pair of concepts that this paper addresses itself.

The distinction was first introduced into economic theory by J. S. Mill, who in his turn took it from Comte. It played an important part in the arrangement of Mill's principles, and was still more important with Cairnes, whose work may be considered the apex in the development of the classical school. In the early stages of the marginal utility approach, the distinction receded in importance and was relegated to the "introduction," there confined to the proposition that economic theory is to devote itself for the time being exclusively to statics. This change was obviously due to the nature of the unifying principle laid down by the marginal utility school at the base of its theoretical system. This principle, much less than an element such as labor cost, allows of any discussion of processes of change, even if a conjectural historical generalization like the Malthusian law of population is to be used. The like is also true of the mathematical school, in whose work the gradual disappearance of any material substance in the unifying principle has reached its culmination. The unity came to reside not in any substance of value, but in the mechanism of exchange itself.

The distinction between static and dynamic economics reappeared when the development of the marginal utility system brought out clearly the limitations of that theoretical body. J. B. Clark, whose work resulted in a highly unified marginal utility economics, saw clearly the

limiting conditions under which the system worked and pointed out the factors which made such limitations unreal. But it was J. Schumpeter who, having presented the most abstract outline of static economics, indicated the problems which were not solved by it, and proceeded to solve them within a tentative system of dynamic economics. His writings influenced most the European economists who now express dissatisfaction with conventional economic theory.

This renewed claim for dynamic economics, combined usually with a demonstration of the unsatisfactory character of traditional theory, has been stimulated lately by two developments. One was the study of business cycles, a problem never well incorporated in the body of economic theory. The development of both the inductive and the theoretical scope of this problem brought more and more critical pressure to bear upon the system of theoretical economics. The other factor was the generally expanding study of economic changes at large. This growth of inductive study brought to the fore many problems of change, besides those of the cyclical type, which found neither specific explanation nor principles of elucidation in the body of conventional economic theory. As a result, one observes currently in the United States and in Germany a demand for a system of dynamic economics, a demand stated either explicitly or as one for a reformulation of the concepts of economic theory so as to make them suitable weapons in the inductive study.[1]

Thus there is need to clarify the relation of the two bodies of economic generalizations signified by these two names. This is not a matter of stricter definition of concepts. Economists agree that static economics deals with relations and processes under the assumption of uniformity and persistence of either the absolute or relative economic quantities involved. In contrast, dynamic economics deals with relations and processes under the assumption of change in either the absolute or the relative economic quantities. A narrower distinction is suggested by the analogy which Jevons employed so conspicuously, *viz.*, static and dynamic mechanics. In this sense, statics would study the relation of forces at the equilibrium level, while dynamics would deal with the same relations in the changes that lead towards equilibrium. But these two categories of Jevons are both types of static economics under the broader definition above. For our purposes, this broader definition is to be preferred.

But if there is considerable agreement as to the definitions of static and dynamic economics, there is a great deal of confusion as to the actual scope and relation of these two bodies. According to the econo-

[1] See among others, the recent discussion, *Proceedings*, American Economic Association, March, 1930, pp. 30-39.

mists of the past and to most of their modern followers, static economics is a direct stepping stone to the dynamic system, and may be converted into the latter by the introduction of the general element of change. Or, putting it technically, we have first to establish the factors and conditions of economic equilibrium, and only then can we study both the transitory and the secular changes as deviations from that equilibrium. According to other economists, the body of economic theory must be cardinally rebuilt, if dynamic problems are to be discussed efficiently. The method of organization and possibly even the factors to be considered in the economics of change are entirely different from those of traditional economic theory. All attempts to adapt the latter to the study of changes are likely to be intellectual waste. It is to this question of the proper relation between traditional theory and the problems of economic dynamics that the discussion below is devoted.

II

This relation might be gathered from an inspection of the exact function which economic theory, *i.e.*, static theory, has heretofore performed. What has been the scope of the discussions, what has been the precise nature of the analysis and explanations which have constituted theoretical economics? If we answer this question, we shall be in a position to define the probable services which static economics may render in elucidating problems of change, and consequently to define the proper relation between the two disciplines.

Traditional economic theory is primarily an analysis of social phenomena into the individual factors or actions of which they are comprised. Economic theory picks out such social phenomena as prices, wages, interest, capital, wealth, profits, etc., and says: Here are social phenomena which we observe and distinguish because each of them possesses characteristics which do not repeat themselves in the others. What are the factors that determine these social phenomena? In answering this last question static economics looks either to some other social phenomenon or, eventually, to the activities of individuals. Thus, with the marginal utility theory the social phenomenon of prices is explained largely in terms of the individual's valuation of sacrifices and satisfaction. With the labor value theory it is productive efforts of individuals that lie at the base of the price relations and serve to explain the social phenomenon. Wages are explained in terms of the individual's subsistence cost; interest, in terms of reward for abstinence or waiting, and so on. In the more recent variants, welfare economics leads directly from the social phenomena to individual choices and valuations, while price economics in its circle of reasoning from present to past prices emphasizes the individual's activity as the important link.

Two features of this type of explanation should be noted in order to

present a fuller picture of at least the kernel of static economics.

(1) Out of the three groups of factors which actually go to make up any economic-social phenomenon—man, nature, and the state of arts —only man and his activities are given a prominent place in the actual derivation of the social phenomenon. This is a direct consequence of the fact that nature and the state of arts are assumed to be unchanged and inanimate, and that man is the active unit in social phenomena. But with this reference to land and the state of arts as unchanged, even in variegated conditions, static economics becomes essentially: (a) a science of human behavior, which in its generalizations deals with matters so vague as to be susceptible to interpretative distortion and not subject to exact inductive study; (b) a social philosophy, or social metaphysics, since its main task is the decomposition of the complex and often incomprehensible social phenomena into the much more comprehensible terms of the activity of each and every individual. The Robinson Crusoe tales of classical economists, against which some of the more historically minded economists inveighed so much, were naïve because they overlooked the socially conditioned character of the individual's actions; but they represented truly the main function of static economic theory, the reduction of the social phenomenon to the level of the individual.

(2) Further, the use of individual activity as the unit underlying social phenomena was developed in such a way as to show how the different social phenomena, so various on the surface, are directly related. The same active element of individual activity which made a determinate social event possible within the assumed fixity of goods and of the state of arts, also bound together the various social phenomena, such as wages, profits, interest, amount of capital, number of workers, and every other factor in the problem. The great service of the mathematical school particularly consists in bringing out clearly this interdependence of the various social phenomena.

In addition to the enumeration of different social phenomena and the demonstration of their reducibility to the factor of individual activity which binds these phenomena together, static economics deduces or assumes certain features of these phenomena, which it treats as self-evident. Such features are, *e.g.*, the equality of prices, and the mobility of capital and labor. One of the reasons for the intricacy of static economic theory is the reconciliation of a single principle of individual activity with the variety of social phenomena, under conditions in which the constituent factors possess definite traits. Consider the ingenuity which had to be expended in reconciling the labor theory of value with the equality of the rate of profit in the various industries. Or the task of squaring the theory of pleasure and pain with the behavior of prices of reproducible goods.

The decomposition of social phenomena into the individual activities which determine them, the demonstration that the various phenomena are all interconnected through this individual activity, and are marked by persistent characteristics in the variety of their concrete manifestations—this analysis is the kernel, the essence of static economic theory. It is primarily an intellectual construction which shows how the "social" arises from the "individual."

Of course, the treatises that have appeared as books on theoretical economics have not confined themselves solely to this analysis. Without attempting to present an exhaustive summary of the contents of the various "principles," we suggest that the other parts of the discussion, in so far as they constituted theory (*i.e.*, excluding historical introduction, concrete illustrations, etc.), consisted mostly of the application of the schemes worked out. Of these uses to which the schemes of economic statics have been put, three groups may be distinguished.

(1) Estimating the significance of certain "interventionist" changes, as taxes, tariffs, etc. These forms of "conscious" disturbances of the equilibrium might find a definite evaluation in terms of different individuals or groups of individuals, if the theoretical scheme of static economics is conceived as a picture of essential forces and relations. It will be recollected that one of the earliest systems of static economics, the Physiocratic *tableau économique*, had as one of its major purposes the location of the source from which taxes might properly be drawn, and the estimate of the significance of both internal and external barriers of trade. And taking a jump in time, one might say that the primary application of the schemes of mathematical economics has been in connection with the problems of tariffs, taxes, and monopoly prices. Also, one must not forget the rôle which the discussion of probable effects of the repeal of the Corn laws in England played in working out the integrated theoretical system of Ricardian economics.

(2) The problem of ethical estimation. Since the distinguishable social phenomena are expressions of activity of various social groups, and the problem of distribution is a problem of apportionment of the social product, the ethical significance of the analysis of static theory is obvious. For, in the reduction of the social phenomena to the individual or group efforts which go to create it, there lies implicit a judgment as to the ethical rightness of the social order under discussion.[2] The value of this consideration in the Marxian analysis is quite important, even though the analysis is supposed to be a scientific system, *i.e.*, a system oriented only to the stable elements defined as truth by the rules of scientific inquiry. The obvious usefulness of the static analysis

[2] This does not apply to static systems which stay completely on the level of prices (H. J. Davenport or some of the Mathematical School).

from the ethical point of view is stated explicitly by J. B. Clark in his *Distribution of Wealth.*

(3) The problem of changes. This use of static schemes is especially interesting in the present connection, because it constitutes an approach to dynamic economics by a direct complication of the theoretical system heretofore developed. This is usually attempted in the form of postulating the source and some general features of a process of change, and then working out the implication of this change within the static system. The most widely known example of such an attempt is probably the analysis of the long-run economic development undertaken by Ricardo with the help of the Malthusian principle of population. Malthus' law of population growth (and possibly the accumulation of capital as a subordinate) was almost the only general notion of change which Ricardo had explicitly in view, although in the process of reasoning out its consequences he had to pass judgment as to other probable changes to the extent of declaring them subordinate to this one important principle of population growth. But this type of procedure is typical of a number of other attempts. Thus the numerous single factor explanations of business cycles are of the same logical nature: they postulate the existence of the static system on one hand, the influence of one disturbing factor on the other, and "deduce" the cyclical swings as the working out of this one disturbing factor. And, as Ricardo declared all other secular tendencies subordinate to the significance of the growth of population according to the Malthusian law, so these business cycle economists declare all the other factors making for cyclical oscillations subordinate to the one disturbing factor they choose to emphasize. Closer analysis will show, however, that in any such case they depart from some of the cardinal principles of static economics. Just so does Ricardo distort reality when he assumes the movement of only one of the factors in the economic system, without considering that this implies also changes in the relations between the social and individual phenomena assumed by him as fixed.[3]

It is important to note that exactly these uses of the static scheme in which there was an attempt to apply it to the solution of problems of change, have been among the earliest and most thoroughly discredited. The long-time forecast of Ricardo is one of the glaring examples of failure which are likely to follow any application of the scheme to dynamic problems in the only way in which a static scheme can be applied with definite results, by positing the changes of one and only of one factor. The inadequacies of business cycle explanations, which have resulted from attempts to modify static theory so as to make it agree better with a changing and fluctuating reality, have long since become patent.

[3] See the article by the present writer, "Equilibrium Economics and Business Cycle Theory," *Quarterly Journal of Economics,* May, 1930, pp. 381-415.

Whatever may be said of the success of the other uses, that is, attempts to estimate interventionist changes or ethical import, the failure of the attempts to use static economics as the base and stepping stone for treating dynamic problems, indicates that the conventional approach to dynamic economics as a modified static scheme is not likely to be the proper one.

If traditional economic theory is essentially a study of the relations between individual activity and the resulting social phenomena, both of them taken at a given instant of time (or in stable conditions), what is the exact content of dynamic economics? We can say much less about dynamic than about static economics, since the former is not as yet developed. A tentative description, however, may be attempted.

The major preoccupation of dynamic economics is the study of changes in the social phenomena which take place in the course of time. It begins with the social phenomena, and deals only with them, without descending to the level of individual activity, unless it can be established that changes in individual behavior are important factors in the movements of social phenomena in time. The task of dynamic economics is first and foremost that of ascertaining the exact course of social changes, and of arriving, if possible, at some general traits of these changes whether in one and the same social phenomenon in the course of time, or in the relations among the various social phenomena. Of course, there follows the task of accounting for the changes which have occurred. It is at the point of these explanations that dynamic economics may reconsider some of the factors which statics uses to explain how a social phenomenon "arose" or was "determined," and thus it may again consider the element of individual activity. But in dynamic economics, as far as one can see at present, this recourse to explanation in terms of individual activity is not the essence of the theoretical scheme as it is in traditional economic theory, since instead of being the unifying principle, individual activity (human nature) becomes only one of the factors in social change.

The question now arises as to what will be the use in discussions of change of the relations between the individual and society established in static economics? Also, of what use will be the static interconnections among the various groups of social phenomena? We refer here, as we did in the preceding discussion to static economics as it has developed up to the present, since, of course, future static theory can be only surmised rather than discussed.[4]

This question has been raised and answered in a more specific connection in the article referred to above. A restatement of the answer may be given here adjusted to the preceding discussion.

[4] See, however, below, pp. 435-6.

We saw that static economics picks out only the activity of men as the factor which goes to determine social phenomena, since it is this activity which cumulates into a social phenomenon, even if conditioned by the given state of nature and the technical arts. But in the discussion of changes in time, the state of the arts and of nature, *i.e.*, the conditions in which individual activity develops, do not remain stable, and the study of these changing conditions becomes in itself one of the major tasks of dynamic economics. It is not enough to point out, as is done in static economics, the qualitative variations in land or in the state of technical arts as among the various industries. One has to consider these factors of land and technique in greater detail in order to see whether something in their nature may not in a way determine the course of changes which take place in them. In dynamic economics it is important to grasp clearly the congeries of conditions of activity formed by what might be broadly called the technological elements in the economic system. This means going beyond the mere mention of these factors as is the practice of traditional theory.

This study of the conditioning factors is, however, only supplementary to the discussion of static economics, and it is exactly as such a treatment of the change in the conditioning factors that traditional economists conceive dynamic economics. In such a use the static scheme remains the base of the study of changes, for the rules of human behavior and the interrelations retain their character, and what changes there are take place only in the technical conditions of human activity.

When the question of human behavior arises, we see that we can hardly use the kind of rigid generalizations about individual behavior which static economics evolves in order to make its problem of decomposing the social phenomena a soluble task. For the latter, just as one has to have the other factors (land and state of arts) inert and stable, one has to posit that individual activity is ruled exclusively by motives that make it extremely mobile, allowing it to fill out the space left by the conditioning factors, thus making possible an unequivocal determination of the social phenomena. If one reduces social phenomena to individual activity, one may not allow any significant variations in the motives and types of response of the latter, unless one wants to leave the analytic work incomplete by reducing social phenomena to unconnected units of social groups rather than to the mobile, all-connecting, individual unit (see Cairnes's "non-competing" groups, as an example of an incomplete analysis).

This rigidity which must be attributed to the factor of human behavior in static economics, makes its scheme unsuitable for anyone interested in explaining changes in social phenomena. With its full acceptance the sources of change would have to be looked for in the non-human factors exclusively, since the behavior of the individuals within

society is assumed to be ruled by unchangeable social habits in responding to the stimuli provided by the changing reality.

This stricture relates to the human element as presented by the static scheme. There is still greater objection to the assumption of close interdependence among the various social phenomena—the "closed" character of the static system. It is essential in dynamic theory not only that the absolute economic quantities change, but also that their relations change. Just as it would be impossible to accept a rigidly defined norm of human behavior when one attempts to find out changes made in the pattern of economic behavior by changing environment, just so impossible is it to accept the cardinal assumption of rigid interdependence among social phenomena in a study which will presumably establish changes in this dependence. Such an acceptance would mean that the dynamic movements themselves can take place only in the conditioning constants, a misleading limitation of the scope of dynamic economics.

Thus far we have considered the confining influence of the static scheme when used as a base for the explanation of problems of dynamics. But the discussion assumed tacitly that while decomposing the social phenomena into individual activities, static economics has succeeded in describing and analyzing all important varieties of social phenomena, especially all the important varieties of the human factor, including the habits of the various social groups. Even though in its analysis it is confined to the acceptance of only one type of economic behavior, static theory may have encompassed the variety of social behavior in its qualifications. We assumed that static economics has done a complete and exhaustive job, and pointed out limitations to its use in dynamic theory only on the score of the essential rigidity assumed in its analysis, not on the score of incompleteness.

But static analysis is necessarily incomplete, since it cannot exhaust the varieties of individual behavior of even the most important social groups. This is in a way an unavoidable consequence of the static point of view. The demand for realism requires the consideration of the outstanding, most important differences in the economic-social phenomena, and the explanation of these differences either as differences in human behavior or as differences in conditions, or as both. But the type of exposition and analysis dealt in by static economics is essentially a social philosophy, upon whose propositions there is no definite check. The central problem is to reduce the complex known to the simple familiar. The usual practice is to take that which is known by direct observation only, certain traits of social phenomena that stand out unmistakably and clearly, and light them up as compositions of very familiar, indisputable tendencies in human behavior.

The certainty of incompleteness in such a performance is patent,

since the static character of the problem does not permit exact observation. Any exact observation of reality is necessarily a measure of change, and it is impossible to derive a definite measurement of the static picture of a complex reality.[5] The analysis of the static scheme will present only a meager list of factors for explaining an exactly observed course of changes. Static economics offers not only a misleading weighting of the factors from the point of view of their importance in dynamic analysis, but a woefully inadequate one.

So far we have discussed present economic theory. But what of the static theory of the future? One hesitates to say anything definite. Static theory may develop a broader conception of economic behavior and may succeed in distinguishing the habits of various socio-economic groups. It is possible that mathematical economics in its current phase will work out various types of equilibration and help to take account of differences in response both to given stimuli and to future prospects. This will mean a considerable enrichment of present theory with empirical data derived from the observation of reality, and may therefore make the static system of greater relevance to the problems of change. But as long as static economics will remain a strictly unified system based upon the concept of equilibrium, and continue to reduce the social phenomenon to units of rigidly defined individual behavior, its analytic part will remain of little use to any system of dynamic economics.

Current criticism of economic theory often takes the form of pointing out its inadequacy as compared with present reality, and it is suggested that a closer observation of actual life and the utilization of additional inductive materials will remedy the situation. It goes without saying that a considerable enrichment of static theory can be attained in this fashion. But it is important to realize that as long as static theory remains a *system* (as distinct from a set of descriptive chapters) centered in the concept of equilibrium, with individual activity as the unit, it will remain necessarily an unsatisfactory explanation of changing reality. It might be made more plausible but it will always remain a scheme of social philosophy or of evaluation of disturbances in a system assumed to be persistent and timeless. For the realistic diversity of social groups and of types of conditions is hardly compatible with the rigidity and analytic value of an equilibrium scheme.

To repeat: it is true that the element of empirical generalization and analysis which is contained in traditional economic theory is of some value for the purpose of explaining problems of change. The singling out of the most important groups of social phenomena, the attempt to show their interconnection, the broad generalization about human behavior and the interaction of individuals, the groups of conditioning

[5] See discussion below, also in the article quoted above.

factors singled out, all these parts of a static scheme are usually presented, not on the basis of observing a simultaneous state of affairs, but as observations of economic life which extend beyond a moment of time and which are thus likely to yield results of some value. It is true that in the analysis itself the assumption of stability is made, and thus the validity, for practical application, is confined only to each given moment of time. But the various social phenomena picked out for discussion are suggested by a changing reality; and, undoubtedly, the static system contains a number of factors and relations which may be utilized in a dynamic discussion.

But it is important to keep in mind that the static scheme in its entirety, in the essence of its approach, is neither a basis, nor a stepping stone towards a proper discussion of dynamic problems. At best, static economics, under the conditions in which social and individual phenomena may be studied in social life, is a plausible social philosophy. Dynamic economics is on the way to become, and can become a science in which changes are closely observed and precisely measured. Statics may provide some clues for dynamics, but its list of factors is incomplete, its emphasis is misleading, and its essential analytic part, its principle of organization must be discarded if the otherwise difficult problems of change are not to be made more difficult by the dead weight of an unsuitable intellectual factor.[6]

III

The distinction drawn above between static and dynamic economic theory is important by itself, as distinguishing sharply between two types of approach, two different sets of problems, dealing sometimes with different sets of phenomena. But it is still more important for its implications. These implications concern questions about which a great deal of discussion has developed lately, and it is hoped that the distinction drawn may clarify matters somewhat. The first implication

[6] In a penetrating article in the *Economic Journal* (June, 1930, pp. 192-214) Professor Lionel Robbins distinguishes two concepts of the stationary equilibrium: one in which the constancy of economic quantities is assumed as the condition of equilibrium (J. B. Clark), the other in which such constancy is the result of the equilibrating process (the Classical concept). In distinction from the Clarkian approach, the Classical one permits the discussion of processes tending towards an equilibrium, and therefore a treatment of changes in factors of supply and demand.

This distinction of two types of statics is of little significance for the limited character of static theory in its application to dynamic problems. For even in the Classical approach changes are discussed only under the condition that there is no disturbing factor which would prevent the balancing of forces at a stable equilibrium. The significance of distinguishing these two types of static approach is, as Professor Robbins points out, in the implications for the socio-philosophical problem of the ultimate nature of costs and for the imputational aspects of the problems of wages, rent and profits.

concerns the use of the quantitative method;[7] the second, the seemingly unsatisfactory service of quantitative studies in throwing light on social problems.

Each theoretical system contains empirical elements drawn into certain relations by statements whose general validity is of a higher order than that of the inductive elements themselves. Static economics contains a considerable empirical part, in the form of distinction of groups of phenomena, of generalizations about certain of their features (such as equality of prices, mobility of capital and labor), and of some empirically derived qualifications of these features. But owing to the general character of its statements about reality, inductive and especially quantitative study can have only a limited significance for static economics.

Statistical studies have often been characterized, especially by the adherents of the mathematical school, as complements to economic theory. If by economic theory we understand the static scheme, then it can safely be said that statistical study may provide certain starting points for the static scheme, certain qualifications of its general statements about social phenomena, but it can never be a complement, and very rarely a check. It is obvious that the basic performance of static economics, the resolution of a given set of prices into the individual valuations that underlie them, is impossible as a problem of inductive quantitative research. The curves of supply and demand that are deduced from statistical data are summaries of historical experience, and are not freed from the dynamic changes, so that it can never be said that we measure the manifestations of the balance of supply and demand with which static theory deals. Even if it were possible to isolate exhaustively the dynamic elements in a time series, or in any other set of data, in order to provide either a measurement or a test of the static scheme, we obviously have to know fairly definitely what the dynamic elements are. This is a self-evident conclusion from the fact that all our quantitative data refer to a changing reality, and therefore any possibility of their use in the static scheme, beyond the use of illustration, is contingent upon our precise knowledge of dynamic processes. This, to repeat, does not apply to the purely descriptive or illustrative material, which may be gathered from both statistical and other inductive research, for the purpose of specifying and qualifying the general statement of economic reality with which static economics may start. But as far as the connections and relations drawn by static economies, *i.e.*, as far as the analytic part itself is concerned, quantitative research can be neither a complement, nor a test, nor a basis of application.

The situation with dynamic economics is almost exactly the opposite.

[7] See *e.g.*, The round table discussion, *Proceedings* of the American Economic Association, no. 1, March, 1928, pp. 28-46.

While in the conventional economic theory of the past, the theorist generalized about phenomena which were fairly well within the scope of his individual observation, and bore, at least on the surface, all the marks of self-evidence, in the study of changes unarmed observation is of minor importance. One can observe in a general fashion the growth of industry, the fluctuations of business conditions; one can sense the existence of broad change: but all too soon it becomes obvious that the projection of a few broad movements which an economic student may observe during his generation is a scanty basis for the study of changes. One may arrive at the theoretical need for dynamic economics by an armchair analysis of the static scheme; for its limitations are obvious in comparison even with a generally observed reality. But in order to make any advance in dynamic economics, it is necessary to measure precisely and as exhaustively as possible the changes about which generalizations are later to be made.

This task of establishing general tendencies, a task which has been taken so easily in traditional theory for the reason that only the obvious was accepted as the object of explanations, is much more formidable in dynamic economics. The latter had to wait until the methods of establishing the stable and recurring elements in the manifold variety of everyday facts have developed sufficiently to yield that inductive material with which the dynamic economic theory has to deal. It is in this aspect that the importance of the quantitative method in dynamic economics comes out most clearly. For were we deprived of the possibility of measuring the changes involved, dynamic economics would be reduced to a search for the laws of history similar to those of which the early Historical School sought. The study of qualitative changes, important as it is, can deal only with the broad tendencies and clearly distinguished fields of activity. It can never measure the exact degree of change, and thus bars any attempts at establishing general movements within fields where there is a definite degree of homogeneity, and where therefore the promise of valid generalizations is the greatest.

The quantitative approach therefore not only enriches the body of inductive knowledge with which dynamic economics has to start, but it also opens up a promise of a preliminary transformation of the variegated stuff of changing reality into more or less established inductive generalizations. No wonder, therefore, that the development of dynamic economics had to wait upon the creation of a body of analytic methods for dealing with quantitative data, and that in distinction from static economics, it seems to lay an overwhelming emphasis upon the advantages of statistical research.

In the discussion that has developed about the quantitative method, the adherents of the classical or mathematical approach are right in so

far as they dwell upon the limited significance of the method in the present stage of development of economic theory. It is true that inductive knowledge counts in the broad generalizations with which static economics begins and especially in the qualifications of the validity of any conclusions that are arrived at in static economics. But to the essential function of the latter, that of showing the individual factors underlying social phenomena, and the interrelations which the activity of individuals driven by certain motives imposes upon the various fields of economic activity, quantitative research is of little relevance. If one deals with a social philosophy, one may derive from precisely measured facts the starting points and a notion as to the limited character of the conclusions, in so far as an application to reality is concerned. But one should not expect a system of social philosophy to base itself upon the precise results of specific inductive statements. It is in dynamic economics that the latter are important, for there they are a significant form of observed reality.

This throws light upon the other implication—the unsatisfactory character of quantitative method from the point of view of conventional economic theory. It is clear that to the economists of the past century and to most of the economists of today, the static scheme of economics provides a tool which no quantitative research can replace. The system of social philosophy which is built up in the form of a theoretical economic system answers questions as to the probable effect of interventionist changes, allows the discussion of ethical implications, permits the passing of judgment upon the desirability of this or the other public measure. It is true that the basis of these judgments is precarious, for the simple reason that they concern proposed changes in real life, and that the theoretical scheme upon which such judgments are based is no more exhaustive of real forces than many a social philosophy of the past. But with all the limitations of validity, the possibility of giving definite answers is there. In connection with any practical question, the professor of a scheme of static economics, is capable of building up *ad hoc* the necessary amount of specific inductive data, and by applying his laws of interconnections among phenomena and of response of individual activity to certain problems can obtain definite results. In his economic theory he has a complete system capable of providing definite answers.

But the satisfaction which may follow upon this use of a theoretical scheme, be it of awarding the social order a verdict of moral rectitude, or of telling that a definite tax will be shifted in a certain way, or of declaring that the burden of foreign debts is borne in such and such a way, this satisfaction is so far lacking in studies produced at present by the application of quantitative methods. Dynamic economics is as yet in the stage in which it is more important to establish facts, and to

bring out broad tendencies underlying them, than to attempt to arrive at definite persistent relations which might be used for such purposes as estimating the future, establishing social implications, etc. So far quantitative research is mostly the process of arriving at inductive inferences, and the body of the theoretical system of dynamic economics is being built up only bit by bit. Within certain fields there has already accumulated a sufficient body of generalizations to make possible tentative applications. But even in the oldest of them, the field of business cycles, the body of organized inductive materials is very far from sufficient. In other fields accumulation has hardly begun.

The theoretical economists of today are therefore right when they attack the quantitative approach, both in its relevance to static theory and in reference to its doubtful fruitfulness. It is an unsatisfactory approach if one wants to have a basis, unreal as it may be, for providing definite answers to questions of social desirability or social effects of a certain change. In such a criticism, however, two considerations are overlooked. (1) In preparing the ground for solving practical problems, the quantitative method cannot be neglected. Many an economist would profit by knowing the different factors at play, the various groups of changes already marked out by quantitative investigators to look for in any analysis of original data. (2) The potential fruitfulness of the method will materialize only after the body of inductive data has been accumulated and analyzed, after the ground is prepared for whatever systematic construction is to take place. It is in the future that the system of dynamic economics will be evolved by a concerted effort of both the inductive workers and of the theorists, probably combined in one and the same group of students.

In conclusion one may be permitted a glance into this future. There are already some attempts to build the foundation of dynamic economics by distinguishing groups of social phenomena in their varying propensities towards change. The work accomplished by business cycle investigators has already served to enrich the knowledge of the type of reality of which the static economist speaks *i.e.*, the broad groups of social phenomena. We have become aware that the conventional references to economic behavior are not only incomplete, that the division between land, capital, wages, etc., is not only a scanty list of economic groups at action, but actually misleading in tempting one to generalize about them. Already we begin to realize that attempts to make the static scheme in its mathematical form more realistic by certain transformations of data are likely to be unsuccessful at present, because the variables are too numerous and too little known to be eliminated. In other words, the studies in dynamic economics, whether quantitative or qualitative (like the study of overhead costs), bear directly upon the

validity of the static scheme. They begin to fill out the ground which static theory once preëmpted.

One would like to hope that this process of developing a tested theory of social evolution will proceed at a faster tempo. One may hope also for a clearer realization that in so far as static economics is not merely a description of a typical economic system, but a body of interrelated factors, it is a species of social philosophy, whose conclusions are approximate judgments, most of them colored by certain preconceptions; that while it includes an element of empirical generalization, that element is so broad as to make it dangerous for practical application. Finally, one may hope that in dynamic economics, the theory of change, will gradually be evolved a firm basis for judgments about the stable and unstable elements of our economic system.

It seems safe to say that while this development of dynamic economics will restrict the validity and the field of static economics, the restriction will be legitimate. Moreover, the body of static economics proper will be immeasurably enriched. The description of economic behavior will not confine itself to the rigidities of the *homo oeconomicus;* the types of interrelations will not be merely rigid relations of interdependence. The static scheme may be lost as a system, but it will gain in wisdom as a social philosophy.

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