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The five essays collected in this issue are part of the materials presented at the Conference on "Sraffa's *Production of Commodities by Means of Commodities* after 25 Years", promoted by *Political Economy* and held in Florence in August 1985. Some more papers from the Conference will be included amongst the contributions to be published in the third issue of *P.E.*

# Sraffa's Return to Classical Theory: Change and Equilibrium \*

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## Introduction

In the preface to his *Production of Commodities by Means of Commodities*, Sraffa struck a rather perplexing note: "The investigation is concerned exclusively with such properties of an economic system as do not depend on the changes in the scale of production or in the proportions of 'factors'". He proceeded to add: "This standpoint, which is that of the old classical economists from Adam Smith to Ricardo, has been submerged and forgotten since the advent of the 'marginal' method. The reason is obvious. The marginal approach requires attention to be focussed on change, for without change either in the scale of an industry or in the 'proportions of the factors of production' there can be neither marginal product nor marginal cost"<sup>1</sup>. And yet, notwithstanding this essential dependence on change, there has been growing uneasiness, ambivalent admissions or even vocal protests against the sterility of mainstream economic theory, in particular, its incapacity to handle effectively even descriptive interpretations of historical experience, let alone predictions based thereupon.

Although approaching the same conclusion, the various critiques have had very different bases. An attempt is made here to suggest a line of critique of marginalism discerned from Sraffa's writings. Sraffa was engaged, continuously and simultaneously, in a two-fold task in economic theory. His critique of the marginalist theory, dominant since the 1870s,

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<sup>1</sup> P. SRAFFA, *Production of Commodities by Means of Commodities*, Prelude to a Critique of Economic Theory, Cambridge, CUP, 1960, p. V.

was coupled with elucidation and reconstruction of the long-submerged approach to the theory of the classical writers<sup>2</sup>. An attempt is made here to follow certain suggestive hints in the critique and its constructive role.

Criticisms of the dominant neoclassical theory have come from various quarters and viewpoints. A feeling that economic theory is in crisis has been strong enough to warrant title-lines of articles<sup>3</sup> and of even a book<sup>4</sup>. An open assault occurred in the 1970s when three Presidents of prestigious Associations expressed their profound uneasiness about the state of economic theory and the directions it was taking<sup>5</sup>. Prof. Leontief referring to the lack of relevance or immediate practical import of theory<sup>6</sup>, attributed it to "the weak and all too slowly growing empirical foundations" which failed to support the proliferating superstructure of pure-and-speculative-theory. He also criticized the attempts in econometric work to compensate for the glaring weaknesses of the data base by the widest possible use of more and more sophisticated statistical techniques. Phelps-Brown too struck a similar chord when he criticized economic theory for resorting to behavioral assumptions chosen *a priori* without the possibility of verification. He vigorously criticized the widely prevalent practice of seeking to justify assumptions on the basis of "testing" the validity of their implications. "Basically we can not get more knowledge of causality out of a statistical fit than we put into behavioral equations that are fitted. Those imply a certain flow of forces and the outcome of identification procedures depends on what the flow has been assumed to be *a priori*". He continued to argue that, for "the knowledge of the

<sup>2</sup> Sraffa writes in the preface: "As was only natural during such a long period, others have from time to time taken up points of view which are similar to one or other of those adopted in this paper and have developed them further or in different directions from those pursued here. It is, however, a peculiar feature of the set of propositions now published that, although they do not enter into any discussion of the marginal theory of value and distribution, they have nevertheless been designed to serve as the basis for a critique of that theory" (P. SRAFFA, *Production of Commodities*, *op. cit.*, p. VI). The critical function was more prominent in the 1925 and 1926 articles, the review of Hayek (1932) and in his comment on increasing returns and the Representative Firm (1930); while the interpretation of Ricardo in the monumental edition of Ricardo's *Works* involved delineating, in clear terms, the basic theoretical framework that was being developed in the classical theory to explain the generation, distribution and accumulation of surplus. While Sraffa's focus on earlier critical writings was on the relative price determination in marginalist theory, attention centred directly on the theory of profit in *Production of Commodities*.

<sup>3</sup> J. ROBINSON, "The Second Crisis of Economic Theory", *American Economic Review*, May, 1972.

<sup>4</sup> O. BELL, I. CRISTOL (eds.), *The Crisis in Economic Theory*, New York, Basic Books, 1981.

<sup>5</sup> See W. W. LEONTIEF, "Theoretical Assumptions and Nonobservable Facts", *American Economic Review*, March, 1971; H. PHELPS BROWN, "The Underdevelopment of Economics", *The Economic Journal*, March, 1972; G. D. N. WORSWICK, "Is Progress in Economic Science Possible?", *The Economic Journal*, March, 1972.

<sup>6</sup> "The palpable inadequacy of the scientific means" and the "consistently indifferent performance in practical applications indicating the symptoms of a fundamental imbalance" (W. LEONTIEF, *op. cit.*, p. 1).

behaviour of economic agents, we must rely mainly on patient accumulation of direct observations". The major thrust of these and other similar criticisms has been at the empirical base of the assumptions of economic theory, their refutability and operational significance, the scantiness and limitations of their observational base as well as at the econometric techniques as "tests" for the validity of theory.

Another form the critique has taken concerns the "method" and hence the scope of theory. Objections have been raised by "fundamental Keynesians" (as Coddington christens them)<sup>7</sup> against the "method of equilibrium", arguing that, logically pursuing the notion the conditions of equilibrium connote a state of affairs either unapproachable or unattainable, unless the economy is already in it<sup>8</sup>.

Arguing along these lines, Joan Robinson questions<sup>9</sup> the legitimacy of the method of comparison of equilibria to analyse effects of changes in economic variables (we shall return to this below). J. R. Hicks too has been concerned with the limitations of the "static methods" and with the development of "methods of dynamic analysis"<sup>10</sup>. "One of the greatest changes which has come over economic theory in the last thirty years is the transformation of economic dynamics from a pious aspiration into a respectable body of principles". Despite this optimistic note, he adds, "It is however true that these principles do not quite fit together into a single coherent whole; they are still the points of different, though obviously related lines of approach"<sup>11</sup>. We shall return to this theme later but may note that Hicks' concern is primarily with *methods* and hence with suitable modifications required in the supply and demand equilibrium theory in terms of the particular assumptions regarding the period over which the supply and demand relations are activated and the specific forms which the price-quantity responses are hypothesized to take. Hicks too has increasingly stressed the significance of blending historical experiences with theory<sup>12</sup>.

The position that is taken in this paper is that the analytical inadequacies as well as the ahistoricity that appear to plague the theory

<sup>7</sup> A. CODDINGTON, "Keynesian Economics: the Search for First Principles", *Journal of Economic Literature*, N° 4, 1976.

<sup>8</sup> G. L. S. SHACKLE, *Epistemics and Economics*, Cambridge, CUP, 1972.

<sup>9</sup> JOAN ROBINSON returned recurrently to this theme in her later writings, counterposing in her characteristically pithy style, history vs equilibrium.

<sup>10</sup> Hicks gives a sketch of the evolution of his own ideas in "Methods of Dynamic Analysis" in J. R. HICKS, *Money, Interest and Wages*, Collected Essays on Economic Theory, vol. II, Oxford, Basic Blackwell, 1982. Hicks' "methods" are classes of models, considered "dynamic" in that they link up a succession of periods.

<sup>11</sup> See J. R. HICKS, *ibid.*, p. 219.

<sup>12</sup> "Economics if it is on the edge of science is also on the edge of history" (J. R. HICKS, *Causality in Economics*, Oxford, Basic Blackwell, 1979, p. 4).

arise from the specific structure of the marginalist theory of value and distribution based on demand and supply<sup>13</sup>. We also note, at the same time, that a number of writers with very different persuasions have acknowledged that Smith, Ricardo and Marx incorporated in their theoretical schemes elements of historical change, particularly in their analysis of accumulation, technical change and distributive relations. Our attempt would be to trace these differences in perspectives to differences in the structure of the classical, surplus-based theories and that of the neoclassical theories.

Here, our discussion on the distinctiveness of the two approaches concentrates on the issue of value and distribution—which was also the central theme in Sraffa's critical and constructive writings. It is the particular structure of the neoclassical theory of prices and distribution within which all quantities as well as all prices, including "factor prices" were sought to be determined *simultaneously* in equilibrium of demand and supply that led to the "value theory taking the centre of the stage" as Kaldor remarks (see fn. 13). The distinctiveness of the two approaches is thus best revealed in this basic part of the theory. Secondly, viewing the developments in the history of economic theories, we notice that a strong prime-mover that propelled them in new directions, leading to abandonment of the older frameworks—sometimes even prematurely—has been the explanation of capitalist profit: it has been the floundering rock on which theories have been overturned<sup>14</sup>.

In the following section, we shall briefly discuss some of the developments in the formation of neoclassical theory which radically departed from the earlier classical theory, while maintaining nevertheless a semblance of continuity and creating thereby a false appearance of gains in generality and rigour. It is important to note that these transitions and

<sup>13</sup> Prof. KALDOR remarks: "... it is the deep underlying belief, common to all economists of the so-called neoclassical school that general equilibrium theory is the one and only starting point for any logically consistent explanation of the behaviour of decentralised economic systems. This belief sustained the theory despite the increasing (not diminishing) arbitrariness of its assumptions—... which was forced upon its practitioners by the ever more precise cognition of the need of logical consistency" (N. KALDOR, "The Irrelevance of Equilibrium Economics", *The Economic Journal*, December, 1972). Kaldor considers that the setback in economic theory started when value theory took over the centre of the stage which "meant focussing on the allocative functions of the market to the exclusion of the creative functions — as an instrument for transmitting impulses in economic change". In the following it would be our concern to focus on the particular *structure* of the neoclassical value theory that led to such an outcome.

<sup>14</sup> Ricardo began his investigations, in part, dissatisfied with the explanation of the rate of profit given by Smith in terms of the "competitions of capital". Marx criticised Ricardo for his "neglect of constant capital" and his tendency to identify surplus value with profits. It was the controversy over the transformation problem that was used by his critics to abandon the whole surplus approach. Recent attacks on the neoclassical theory have emerged prominently against their explanation of profit and the connected capital-theoretic problem. The determination of distribution in the neoclassical theory is an integral part of the determination of prices and of outputs and a critique of its theory of distribution calls into question also its theory of outputs.

radical shifts increasingly rendered the theory rigid when dealing with the complexity and diversity of economic activities and historical changes in them. It is not our purpose to give a comprehensive account of all the changes in economic theory during the transition. We focus on those that relate to a radical alteration of the *structure* of theory.

A continuity in theoretical developments was vehemently asserted by Marshall<sup>15</sup>. It is also, in Marshall, that we see attempts at reconciling two very different structures of theory leading to contradictions. In him, we also note a conscious awareness of the alternatives being forged and sometimes recognition — even if implicit and cautious — of the theoretical troubles so concealed. The reason for Sraffa's critical attacks on Marshall's theory appears mainly due to the latter's strategic position in the theoretical transition while, on the constructive side of his work, Sraffa's editorial commentaries on Ricardo brought out in clear form the significant rudiments of the surplus approach that was being developed in the classical theory to value and distribution. For this reason, we too would have frequent references to Marshall in the following when we attempt to trace how the domain of the particular choice of theoretical model based on quantity-price responses and the reductionist approach of reducing all "market" ("collective") phenomena to individual choices got progressively extended to cover all economic spheres and consequently led to the dictatorship of the relative-prices-based-scarce-resource-allocational theoretical scheme noted above.

In Section III we shall trace some of the analytical consequences of such illegitimate extensions and attempts to construe symmetries on the very notion of "change" as well as others, such as "competition" and "equilibrium". In the last section we shall briefly consider the relatively more open character of the classical structure which renders it more flexible to deal with a wider range of historical changes and indicate along-with some of the misinterpretations that have crept in because of insufficient appreciation of the distinctive character of the classical structure.

<sup>15</sup> Other pioneers of marginalist theory, like Jevons, stressed the break with the past. What indeed is interesting is that this "continuity" view has been revived in some recent post-Sraffa discussions of the classicals. See, among others: J. R. HICKS, *Causality in Economics*, *op. cit.*, pp. 48-55; J. R. HICKS and S. HOLLANDER, "Ricardo and the Moderns", *Quarterly Journal of Economics*, August, 1977; S. HOLLANDER, *The Economics of David Ricardo*, Toronto, Hinneman, 1979; P. A. SAMUELSON, "Wages and Interest: A Modern Dissection of Marxian Economic Models", *American Economic Review*, December, 1957 and by the same author: "A Modern Treatment of Ricardian Economy", *Quarterly Journal of Economics*, February and May, 1959; "Understanding the Marxian Theory of Exploitation", *Journal of Economic Literature*, vol. IX, 1971; "The Canonical Classical Model of Political Economy", *Journal of Economic Literature*, December, 1978. The theories of the classical writers, Adam Smith and Ricardo have been viewed by these authors, mainly as partial models of the later marginalist theory. Marshall's views have thus made their reappearance.

## II

The classical approach to which Sraffa seeks a return is centred on the processes of generation, appropriation and distribution of surplus and its accumulation, mainly in the context of a competitive capitalist economy, where competition is characterised by the active tendency towards a uniform rate (or, a vector of rates)<sup>16</sup> of profit and wages. The theory of prices emerged in this approach as an important prerequisite for a consistent explanation of the rate of profit<sup>17</sup>. Proceeding to make an important distinction between “temporary” or “accidental” factors and “permanent” or “stable” economic forces influencing prices the classical writers maintained a distinction between the “market prices” (or the actually observed prices) and the “natural prices” (or the “central” prices around which market prices oscillate). The “natural prices”, or the “prices of production”, the form in which they occur in Sraffa’s *Production of Commodities*, are those prices compatible with the condition of uniform rate of profit and wage, under given “effectual demand”, the observed methods of production in use and given wage. Without going over what is already a rather well-known ground<sup>18</sup>, we may only point out some features relevant to our purpose. First it is the material and social conditions of production as reflected in the observed methods of production along with the level of wages determined by social and historical conditions that determine prices, consistent with the rule of surplus distribution (here, the rule of uniformity of the rate of profit) among the surplus sharers (here, the capitalists). The level and composition of social output as well as methods of production are determined prior to prices, in the sense, that it is acknowledged that factors determining output levels and composition, methods of production in use, the pace of accumulation are not entirely subsumed within the domain of price determination. This is not to deny or to undermine the interdependence and interaction among levels of output (and changes therein), distribution, and technology but to recognize that such interrelations are considered diverse and complex enough (so that historical specificities

<sup>16</sup> Adam Smith considered the possibility of stable differentials in wages and profits, not greatly or systematically affected by advances in output.

<sup>17</sup> The rate of profit explained as the distribution of the total profits over the value of capital necessitated consistent measurement of heterogeneous aggregates and required simultaneous determination of prices and the rate of profit, given wages (See P. SRAFFA, *Production of Commodities*, p. 6).

<sup>18</sup> See P. GAREGNANI, *Il Capitale nelle teorie della distribuzione*, Milano, Giuffrè, 1960 and “Value and Distribution in the Classical Economists and Marx”, *Oxford Economic Papers*, 36, 1984; K. BHARADWAJ, *Classical Political Economy and Rise to Dominance of Supply and Demand Theories*, Dutt Lectures, Calcutta, Orient Longmans, 1976 and “The Subversion of Classical Analysis: Alfred Marshall’s Early Writings on Value”, *Cambridge Journal of Economics*, 2, 1978.

and regularities may not be ignored) to require deeper analysis outside the domain of the price determination. This implies, in the first instance, a separation of the analysis — or, rather a sequential analysis — of quantities and prices. In contrast, the currently dominant supply and demand equilibrium theory explains prices of commodities as well as distribution (factor-prices) along with the quantities (outputs and factor utilisations which, in equilibrium, are fully utilised) *simultaneously* within the theoretical structure of given supplies of “factors of production”, given technological transformation possibilities and given the structure of preferences. Under certain assumptions, the required kinds of price-quantity relations are expected to be generated through a choice behaviour resting on the principle of substitution. All economic magnitudes are thus determined through the interplay of the forces of demand and supply leading to an equilibrium. Secondly, economic forces operating to determine these are taken to be reducible comprehensively and consistently to domains of individual choices.

Many proponents of the general equilibrium theory would consider their theoretical scheme as the most general and rigorous and the classical scheme as a subsystem. It would be interesting therefore to turn to the evolution of the present theory and its radical departures from the older framework.

The classical theory of rent (Malthusian in origin, adopted by Ricardo)<sup>19</sup> became the fountainhead for most basic marginalist ideas. The idea of differential rents, cast into the mould of “the principle of diminishing marginal returns” accruing to the “doses of capital and labour” applied to a fixed “factor”, land, was extended into directions and for theoretical purposes different from those envisaged by the classical originators of the theory. As Sraffa points out<sup>20</sup>, the theory of rent in the classical approach appeared under “distribution” where land, “a non-reproducible social asset, was taken as fixed in supply to the whole community”<sup>21</sup>. Further, “it had always been perfectly obvious that its operation [i.e. of diminishing returns] affected not merely rent but also the cost of the product; but this was not offered as a cause of variation in the relative prices of individual commodities”<sup>22</sup>. To the extent that diminishing returns was reflected in the difficulty of production, requiring higher labour input per unit of output, the value increased. *But no general*

<sup>19</sup> See D. RICARDO, *The Works and Correspondence of David Ricardo*, vol. IV, P. Sraffa ed., Cambridge, CUP, 1951.

<sup>20</sup> P. SRAFFA, “Sulle relazioni fra costo e quantità prodotta”, *Annali di Economia*, II, 1925 and “The Laws of Returns Under Competitive Conditions”, *Economic Journal*, December, 1926.

<sup>21</sup> Land was “fixed” in supply to the society as a whole while individual producers could vary the land under their command and its utilisation.

<sup>22</sup> See P. SRAFFA, “The Laws of Return...”, *op. cit.*, p. 182.



and functional association between output and cost was derived therefrom applicable to all the commodities<sup>23</sup>.

The general notion of the Law of decreasing returns appeared to have been derived in two steps: First was the near-elimination of the distinction between the "extensive" and the "intensive" case and the eventual dominance of the latter as a generalised principle of variable factor proportions. The classical theory, directed to the explanation of rents rather than the prices of individual commodities rested more predominantly on the extensive case of the simultaneous cultivation of lands of different fertilities or qualities. No doubt, the intensive case was also referred to but was so referred with some hesitation<sup>24</sup>. While the differential productivities of lands of different qualities were directly observable in a single situation, the "marginal product" of the marginal dose referred to an incremental output attributable to a potential additional "dose", requiring a hypothetical "change" in the situation. The marginal dose, no different from any other, was identified as such due to its ordered position in successive application, involving thus a change in the situation<sup>25</sup>.

This subtle shift towards intensive margins implied an important change in the method of analysis — a shift from "observable" to "potential" or hypothetical changes. This facilitated the illegitimate generalisation and construction of symmetry between land and other factors and an analysis in terms of potential changes and variable proportions of factors. *The generalisation proceeding from the case of land as a fixed "factor" led to the general assumption of given factor endowments, including "capital", extinguishing thus a distinction crucial to the classical writers between non-reproducible and reproducible resources.* "The Ricardian law of rent is the first great example of the marginal method later to become the key-stone of the entire, Austrian system of economic theory", remarks J. M. Clark<sup>26</sup>. Jevons who was critical of Ricardo's system and announced its closure conceded: "There are many portions in economical doctrines which appear to me as scientific in form as they are consonant with facts. I would especially mention the themes of population and rent,

<sup>23</sup> The first tentative attempt to relate unit costs to output occurs in J. S. Mill where, following a suggestion of Bailey's, Mill seems to have adopted a classification of commodities with their own respective Law of Value (See K. BHARADWAJ, "The subversion of Classical Analysis", *op. cit.* and G. DE VIVO, "John Stuart Mill on Value", *Cambridge Journal of Economics*, March, 1981).

<sup>24</sup> See D. RICARDO, *Works*, vol. IV.

<sup>25</sup> For this reason, Wicksteed considered the extensive case a spurious case of "marginal" analysis. (See P. SRAFFA, "Sulle relazioni fra costo e quantità", *op. cit.* and *Production of Commodities*, *op. cit.*, p. VI). The intensive margin also raised the question of what "equality of a dose" and its "marginal product" meant (See K. BHARADWAJ, *Classical Political Economy*, *op. cit.*).

<sup>26</sup> Quoted by Sraffa in D. Ricardo, *Works*, vol. IV, p. 6.

the latter a theory of a distinctly mathematical character which seems to give a clue to the correct mode of treating the whole science”<sup>27</sup>.

Another instance of altering an inherited notion so as to force it into the strait jacket of a supply schedule, *functionally linking unit costs and output*, was Marshall’s attempt to coopt and coordinate the laws of increasing returns along with that of decreasing returns. This process of coopting an idea into a different theory led to a drastic change in the content and scope of the increasing returns itself. As Sraffa comments: “The position occupied in classical economics by the law of increasing returns was much less prominent as it was regarded merely as an important aspect of the division of labour and thus rather as a result of general economic progress than of an increase in the scale of production”<sup>28</sup>. Division of labour for Adam Smith was an important source, as much as a consequence, of technical changes and of extensions of the market (or, of accumulation, putting it more generally). This meant that the notion of increasing returns could no more be confined to the scale of an individual industry but would be connected with a whole group of interrelated industries and the unit cost of output in an industry could not be linked to changes in its outputs alone. Marshall himself devoted much attention to this aspect of the problem in his early work, *Pure Theory*, where he saw the more significant economies arising from localisation and geographical conglomeration of industries but put increasing returns on a different footing in later work<sup>29</sup>. Marshall introduced the notion of externalities; Sraffa demonstrated how logic would then confine increasing returns to the implausible case where there were “external economies”, external to the firm and internal to the industry. The tortuous course of these attempts did not lead to satisfactory resolution and Sraffa’s trenchant critique of Marshall’s supply curve demonstrated the contradictions they ran into<sup>30</sup>. Furthermore there was the problem of irreversibilities: Economies once achieved through such general economic progress (or even expansion of the industry) could hardly recede, even if the output of the individual industry were to decline. This implied, as Marshall himself realized, the impossibility of moving backwards and forwards on the same supply curve and suggested a redrawing of the curve whenever “great additional economies are

<sup>27</sup> W. S. JEVONS, *The Theory of Political Economy* [1871], Harmondsworth, Penguin Books, 1970, p. 43.

<sup>28</sup> P. SRAFFA, “The Laws of Returns”, *op. cit.*, p. 182.

<sup>29</sup> See K. BHARADWAJ, “Marshall on Pigou’s *Wealth and Welfare*”, *Economica*, February, 1972.

<sup>30</sup> See P. SRAFFA, “Sulle relazioni fra costo e quantità...”, *op. cit.*, “The Laws of Returns...”, *op. cit.* and “A Criticism” and “Rejoinder” in Symposium on “Increasing Returns and the Representative Firm”, *Economic Journal*, March, 1930.

introduced”<sup>31</sup>. Were such advice to be followed, however, the supply schedule would have turned into a “historical curve”, describing events *ex post facto*<sup>32</sup> and not remain a predictive theoretical supply curve as required for the determination of equilibrium. Thus the phenomenon of increasing returns created a number of logical hurdles, jeopardising the assumption of competition, challenging the meaningfulness of the supply curve for the industry and endangering the mechanistic postulate of reversible movements along the supply curve. Marshall, aware of the troubles, remained more cautious about his supply curve than about his demand curve, on which too he had certain reservations<sup>33</sup>. In the theory of the firm, the notion of monopolistic competition attempted to meet the difficulty but, as is well known, the easier way adopted was to assume away increasing returns and postulate convexity conditions which Koopmans agrees: “Such assumptions can lay no general claim to realism... The principal reason for making a convexity assumption lies not in its degree of realism but in the present state of our knowledge... (it) enables us to state minimum assumptions for the validity of important parts of existing economic theory thus helping to reduce this part of our knowledge to its logical and mathematical essentials”<sup>34</sup>. Sraffa’s critique, we may note, is directed not so much against the unrealism of the theory but to its logical consistency.

#### SYMMETRICAL THEORY OF DEMAND

The notion of a demand schedule wherein, given the preferences of the consumer and his budget constraint, quantities of goods demanded are obtained as a function of prices, did not exist in classical theory. Adam Smith’s “effectual demand” was a “central” position depicting the average state of social demand in the economy. The first deviant but uncertain steps towards a functional relation between price and quantity demanded were taken by J. S. Mill when he tried to relate quantitatively use-values and exchange values, following the suggestion of De Quincy<sup>35</sup>. The demand schedule as representing the symmetric but opposite forces to that of supply in determining equilibrium provided a foundation for a new theory. While the principle of diminishing marginal utility appears to have

<sup>31</sup> A. MARSHALL, *Pure Theory of Domestic Value* [1879], London School Reprint, 1930, p. 13 and Appendix H of *Principles of Economics* [1890], London, Macmillan, 1920 (8th ed.).

<sup>32</sup> See K. BHARADWAJ, “Marshall on Pigou’s *Wealth and Welfare*”, *op. cit.*

<sup>33</sup> See K. BHARADWAJ, *ibid.*

<sup>34</sup> T. C. KOOPMANS, *Three Essays in the State of Economic Sciences*, London, Mc Graw Hill, 1957.

<sup>35</sup> See K. BHARADWAJ, *The Subversion of Classical Analysis*, *op. cit.*

been prompted by a recourse to individual's psychology, its use appears to have been strengthened, as by Marshall, by an appeal to an analogy with diminishing returns on land. For example, while Marshall held the demand function to rest on the "self evident", "fundamental and universal" principle of diminishing marginal utility, he wrote: "This law [of satiable wants or of diminishing utility] holds a priority of position to the law of diminishing marginal returns from land which however has the priority in time; since it was the first to be subjected to rigid analysis of semi-mathematical character. And if, by anticipation, we borrow some of the terms, we may say that the return of pleasure which a person gets from each additional *dose* of a commodity diminishes till at last a margin is reached at which it is no longer worthwhile to acquire any more of it."<sup>36</sup> The perception of a strict functional relation between unit costs and output in the form of a supply function seems however to have succeeded the conceptualisation of the demand function linking quantities demanded with prices; thereby, rendering the forces of supply symmetrically opposed to those of demand.

Marshall also claimed, however, that the tendency of diminishing utility had its roots in the qualities of human nature while, that of diminishing returns had in "technical conditions of industry"<sup>37</sup>. Sraffa questions the apparent dichotomy: Is it not strange, he asks, that two such heterogeneous elements as human nature and industrial technology should bring about results so similar and even more improbable that the tendency towards diminishing returns reflecting technical conditions should operate alike in a large number of very different industries and even in "production of utility"! The resemblance arises from the common premise about the behavior of the individuals and the presumed operation of the "substitution" principle<sup>38</sup>. Both the diminishing returns and diminishing utility presuppose the operation of the principle of substitution when the individual (producer or consumer) optimising his returns (profits or utility) ranks the alternatives open to him according to returns and allocates his limited, given resources. This ranking of alternatives does not arise owing to material/technical necessity for which the uses must follow a particular sequence. They call into question difficult problems of valuation. In fact, as Sraffa was to demonstrate no such ranking of methods of production according to "factor-intensities" could be made invariant with respect to distribution, as it involved reckoning of capital as a value magnitude<sup>39</sup>.

<sup>36</sup> A. MARSHALL, *Principles*, *op. cit.*, p. 93, fn. 1.

<sup>37</sup> A. MARSHALL, *ibid.*, p. 70.

<sup>38</sup> See P. SRAFFA, "Sulle relazioni fra costo e quantità", *op. cit.*

<sup>39</sup> See P. SRAFFA, *Production of Commodities*, *op. cit.*

In the introduction of the demand schedule, Marshall was not without his equivocation expressed in the text of *Principles* as well as, characteristically in footnotes or appendices. Unlike Jevons who declared the introduction of the utility-based demand as a break from the earlier tradition, Marshall tried to present a semblance of continuity. He explained: "Until recently, the subject of demand or consumption has been somewhat neglected". In the first edition, he continued on with the sentence (later dropped from the second edition onwards): "the prominent place which consumption has received in the programme of the science has not been justified by any attempt to examine it carefully. Nor has this neglect been altogether accidental"; and to this was appended the footnote: "James Mill indeed called a large part of his *Elements of Political Economy* by the title "consumption" but it is really occupied exclusively with an enquiry into the principles of taxation"<sup>40</sup>. We may here observe that this indicates that what dominated the classical analysis was the effects of changes in individual prices on consumption consequent upon, say, a tax, but there was no generalised theory of demand functionally linking demand to prices. Marshall explains the "comparative neglect" thus: "For important as is the enquiry how to turn our resources to the best account, it is not one which lends itself, so far as the expenditure of individuals is concerned to the method of economics". He believed that "the common sense of a person who has had a large experience of life will give more guidance in such a matter than he can gain from subtle economic analysis..."

In fact the three reasons that Marshall offers to explain the prominence acquired later by demand *theory* do not relate to this difficulty at all. The first is "the growing belief that harm was done by Ricardo's habit of laying disproportionate stress on the side of cost of production when analysing the causes that determine exchange value"<sup>41</sup>. Secondly, the growth of exact mathematical habits of thought is mentioned and, thirdly, Marshall writes: "The spirit of the age induces a closer attention to the question whether our increasing wealth may not be made to go further than it does in promoting the general wellbeing; and this again compels us to examine how far the exchange value of any element of wealth — whether in collective or individual use — represents accurately the addition which it makes to happiness and wellbeing"<sup>42</sup>. *It is this last question of welfare, through price-guided resource allocation, which was not the question before the classicals that appears to have been important to*

<sup>40</sup> A. MARSHALL, *Principles*, *op. cit.*, p. 86.

<sup>41</sup> Ricardo's onesided emphasis "on costs of production" and relative neglect of demand has been a favorite argument for those who see, in Ricardo, a partial resource-allocational model of general equilibrium. Hollander's recent attempt (S. HOLLANDER, *The Economics of D. Ricardo*, *op. cit.*) to attribute to Ricardo "demand mechanisms" are critically discussed in K. BHARADWAJ, "On a Controversy over Ricardo's Theory of Distribution", *Cambridge Journal of Economics*, 4, 1983.

<sup>42</sup> A. MARSHALL, *Principles*, *op. cit.*, p. 87.

*Marshall*. He was to suggest the doctrine of “maximum satisfaction” attained through the balancing of real costs and utilities by individuals. Thus the introduction of demand was an important element in the reductionist programme seeking to demonstrate that efficient resource allocation is achieved through individual choices by the profit-maximizing producers and utility-maximizing consumers. (We may note here that this formulation is entirely alien to Adam Smith — who had no such demand theory — and it is erroneous to read into Smith’s “invisible hand” a shared theoretical approach for demonstrating the optimality of a price-guided resource allocation of this kind). The theory was not based so much on observation and, if Marshall accepted the reduction of consumption behaviour to utility calculus, despite his strong reservations (see below) it was because of the theoretical need for constructing the demand schedule which in conjunction with the supply schedule would yield the equilibrium prices and outputs.

As in other instances, Marshall, nevertheless, was not very comfortable with this break with the tradition. He devoted quite a few pages to describing “the variety of human wants, considered in their relation to human efforts and activities”, where he was to make verbal obeissance to civilization’s “desire for variety for its own sake”, “craving for distinction and excellence”, wants resulting from activities, habits, customs and prompted by class distinctions etc. He also left an explicit warning against the tide sweeping in favour of the prominence of the “demand” side. “It is important still to assert the great truth on which they [the classical writers] dwelt somewhat too exclusively”; viz. “that while wants are the rulers of life among lower animals, it is to the changes in the form of effort and activities that we must turn when in search for the keystones of the history of mankind”. He was to repeat his warning again<sup>43</sup>, maintaining that much that is of chief interest in the science of wants is borrowed from the science of efforts and activities. But as was characteristic of Marshall, he proceeded with his theory of demand — “an elementary analysis of an almost purely formal kind”. Occasional warnings did ensue in short hints (e.g., in the appendix on notes on statistics of consumption) referring to the importance of variations in incomes rather than prices in explaining changes in consumption. It may well be remembered that the classical writers indeed put more emphasis on income changes<sup>44</sup>.

<sup>43</sup> “There is a special need to insist on this just now because the reaction against the comparative neglect of wants by Ricardo and his followers shows signs of being carried to the opposite extreme” (A. MARSHALL, *Principles*, *op. cit.*, p. 85).

<sup>44</sup> Marshall expresses his grave concern about Pigou’s overstepping the limits of the “statical method” and shows awareness of the deeper troubles which he had skillfully tried to contain and even conceal, even with regard to demand. See K. Bharadwaj, “Marshall on Pigou’s *Wealth and Welfare*”, *op. cit.*

Marshall's substantive contribution remained "the purely formal kind". For example, despite reservations, he proceeded to the construction of the notion of consumer's surplus. A rigorous extension of his theory of the doctrine of Maximum Satisfaction in the hands of Pigou could not but expose the vulnerability of the theoretical construction. Similarly, in the case of the extension of Marshall's "representative firm" into the "equilibrium firm" Pigou drew out the rigorous consequences of what Marshall had left tentative and vague. The latter's biological analogies could not be integrated with his theory which prompted Sraffa to conclude his debate (with Robertson) on the representative firm thus: "I am trying to find out what are the assumptions implicit in Marshall's theory: if Mr. Robertson regards them as extremely unreal, I sympathise with him. We seem to be agreed that the theory cannot be interpreted in a way which makes it logically self-consistent and, at the same time, reconcile it with facts it sets out to explain. Mr. Robertson's remedy is to discard mathematics, and he suggests that my remedy is to discard the facts. Perhaps I ought to have explained that, in the circumstances, I think it is Marshall's theory that should be discarded"<sup>45</sup>.

It would seem thus that the new theory of demand constructing the demand schedule symmetric and opposite to the supply schedule moved away from the richness and variety of consumption behaviour. Moreover the theory was not prompted so much by practical observation as by theoretical necessity. Akin to the redefinitions, modifications and increasingly restrictive assumptions that have grown into the supply side, similar developments are occurring in the demand theory in the form of "income effects", "demonstration effects", "hysteresis effects", "process of learning", "quality of life" and so on...

The marginalist theory created thus an altogether new structure for the explanation of value and distribution. Both relative prices of commodities as well as prices of "factors of production" resulted from the equilibrium between the forces of demand and supply which also determined, simultaneously with prices, the quantities of outputs and the (full) utilisation of the factors. The theory assumed as its data the factor endowments, technological possibilities and preferences. In conceiving such an equilibrium to exist, the theory had to stipulate appropriate restrictions on the supply and demand relations. The theory needed to hypothesize properties of the system at the equilibrium position in terms of "marginal" magnitudes of quantities and thus invoke hypothetical changes in the system which were supposed to be entirely governed by the economic principle of substitution. In particular, the substitution principle must so operate that "well-behaved" supply and demand relations are

<sup>45</sup> P. SRAFFA, "The Laws of Returns", *op. cit.*, p. 93.

generated. In some cases, such as the prevalence of increasing returns, the difficulty was assumed away by suitable assumptions or, in other cases, by hypothesizing particular conditions (such as the dominance of the substitution effects over income effects in demand). The difficulty could not be avoided in the case of the demand function for capital which, being heterogeneous, produced means of production, could not be conceived, as the neoclassical theory required, as a magnitude given independently of the distribution (or, the rate of profit). The operation of the principle of substitution among "factors" failed consequently to ensure a required demand function for capital, inversely relating the capital-intensity to the rate of profit. These difficulties on the demand side were sufficient to demolish the explanation of the rate of profit, even while ignoring additional difficulties that could also arise on the "supply side". The difficulty arose not only in the more obvious case (which has been conceded more readily in recent controversies) in the versions of marginal theory explaining distribution by means of an aggregate production function à la J. B. Clark but in the general case of many commodities and general equilibrium where a measurement of capital endowment as a value magnitude is equally required (as in Wicksell) to make the assumption of capital endowment as a datum consistent with long period equilibrium characterised by the uniform rate of profit<sup>46</sup>.

We shall not enter here into a detailed discussion of the subject but may mention — as germane to the theme of transitions in theory — the attempts by the Austrians and Fisher to resolve the question of the rate of profit, particularly, since some of the novel elements they introduced or highlighted within the overall structure of the marginalist theory have been used by later writers as a ground to introduce a further radical conceptual shift to a new notion of equilibrium (see below).

The Austrian approach was characterised by two elements: Firstly, the notion of the supremacy of demand as reflected in the hierarchical ordering of commodities in relation to final consumption; the explicit one-way-avenue of production. Essentially turning round the logic of the classical theory that the price of a commodity is built up from the requisites of production, the Austrians derived the value of intermediate goods (and "factors") from their contribution to final utility. Thus a "time structure" showed up in their valuation process. The other element was their attempt to reduce capital to invested land and labour which also introduced a time structure in the depiction of the production process. However the central question they addressed, was the determination of the rate of profit within the supply and demand framework and while the

<sup>46</sup> See P. GAREGNANI, *Il Capitale nelle teorie...*, op. cit. and "Changes and Comparisons: A. Reply" (to Joan Robinson), mimeo, published in Italian in *Valore e Domanda Effettiva*, Torino, Einaudi, 1979.



reduction of capital to invested land and labour (as did Wicksell) allowed an escape from the use of capital as a value magnitude in the representation of the production possibilities, the requirement of having to represent capital endowment as a datum independent of distribution could no more be avoided or consistently resolved, neither by Böhm Bawerk nor by Wicksell. Böhm Bawerk's attempt to isolate the period of production as a unit of time independent of distribution was simply a search for a proxy for capital-intensity. That such a measure could not be constructed even in the case of circulating capital alone<sup>47</sup>, is shown by Sraffa.

It was, however, in Fisher, that the attempt to represent all commodities and "factors" as congealing events or flows of incomes was fully extended to supplant the notion of costs of production altogether with each good merely a depository of income flow over time<sup>48</sup>. Fisher's view, like the Austrians', emphasized the subjective or "psychological" elements in value<sup>49</sup> and treated time as "the great independent variable of human experience"<sup>50</sup>. Fisher insistently denied the existence of "cost of production" in its objective sense at all and offered instead the principle of "present worth" which made the value of any article of wealth or property dependent alone on the future. He argued: "When prices find their normal level at which costs plus interest are covered it is not because the past costs of production have determined prices in advance, but because the sellers have been good speculators as to what prices would be"<sup>51</sup>. Thus Fisher shifted all economic accounting to the future. Fisher's concern, however, like the Austrians', was the explanation of the long run rate of profit as the rate of return and his attempt did not succeed<sup>52</sup>. In terms of the arena of supply and demand relations, this view extended their operation freely into the future: what needed to be anticipated here

<sup>47</sup> Hicks, quoting Sraffa among others, points out that fixed capital cannot be reduced to invested land and labour. However, while mentioning this difficulty he does not refer to the basic capital-theoretic difficulty that arises even in the case of circulating capital which Sraffa demonstrates. In fact, Hicks appears to pose the capital problem as one of stock-flow relations, having seen it as demanding "dynamical methods" (see below). (J. R. HICKS, *Money, Interest, op. cit.*, p. 98).

<sup>48</sup> "All wealth and property imply prospective services or desirable events. It is the desirability of these future expected services which gives meaning to all economic phenomena" (I. FISHER, *The Nature of Capital and Income* [1906], New York, Kelly, p. 41).

<sup>49</sup> "Wealth is wealth only because of its services; and services are services only because of their desirability in the mind of men and the satisfactions which man expects them to render... It is only in the interim between the initial desire and the final satisfaction that wealth and services have place as intermediaries".

<sup>50</sup> "When values are considered the causal relation is not from capital to income but from income to capital; not from present to future but future to present" (I. FISHER, *The Nature of Capital, op. cit.*, p. 328).

<sup>51</sup> I. FISHER, *The Nature of Capital, op. cit.*, p. 188.

<sup>52</sup> See L. L. PASINETTI, "Switches of Technique and the 'Rate of Return' in Capital Theory", *Economic Journal*, vol. 79, 1969.

was the entire stream of future incomes; equilibrium was envisaged as established through the substitution principle operating intertemporally<sup>53</sup>.

Our attention in the above rapid review aimed at indicating how the demand and supply approach was successively extended to be applied to economic activities and spheres of diverse kinds, and analytical symmetries illegitimately imposed through choosing assumptions, *not derived on the basis of historical observation but merely as postulates required for theory*. Not only was the choice problem of allocating given resources to alternative uses generalised to all spheres but the "reductionist" programme was adopted simultaneously. With the theory of distribution coopted within the relative-pricing, the choice model was presented entirely in terms of individuals' intentions and decisions and was presumed to generate consistent "market" (collective) behaviour and consequences at the macrolevel. The capital theory debate has brought out the fallacy of explaining the general rate of profit in terms of the supply and demand framework through merely inverting the "choice of technique" problem posed for the individual producer for whom prices and wages are assumed to be parametrically given. Keynes, as is well-known, exposed the "fallacy of composition" when he questioned the result that competitive equilibrium would necessarily lead to equalisation of savings and investment at full employment.

### III

Apart from these important problems that the theory faces in preserving its internal consistency, the new *structure* of the theory connoted changes in the *scope* of certain concepts now placed in a different theoretical structure, nominally and misleadingly suggesting an apparent identity or continuity with the classical theory. This has clouded a clearer understanding of the structure of classical theory and the constructive role of Sraffa's *Production of Commodities*, in particular. We shall take up here illustratively, two such notions: "competition" and "equilibrium".

#### THE NOTION OF COMPETITION

To the classicals, competition signified mobility of capital and to a certain extent of labour, manifesting itself in a tendency towards

<sup>53</sup> Another method of extending the scope of equilibrium analysis over time was to envisage complete future markets so that each commodity with the specific time suffix is treated as a separate commodity - a procedure adopted in G. DEBREU, *Theory of Value*, New York, Wiley, 1959.

uniformity of the rate of profit and wages. It was even allowed by Adam Smith that there could be a vector of rates of profit and of wages, with more or less stable differentials, not greatly or systematically affected by the advance of the economy. Furthermore it was seen as a tendency, it never being implied that in actual practice, one could observe the uniform rate of profit or that any individual industry would actually achieve it just as it was not envisaged that the natural price would be "attained" actually and necessarily<sup>54</sup>. It was in fact through the restless movements of capital (investment) that the tendency would manifest itself.

In marginalist theory, with its choice behaviour extended to demand and the collective market behaviour presumed to be reducible to individuals' (quantity-adjusting and price-taking) choices, the requirements of competition became more stringent. The stipulation of a large economy with agents who have no influence on prices, have perfect knowledge of commodities and markets, have unrestrained access to them and who do not interact, intervening directly in the choices of each other became the content of competition<sup>55</sup>. Not only such competitive conditions set the environment for the price formation of commodities but characterized "factor-markets", too. Given the availability of resources or factor-supplies the working of competition drove the economy towards full utilisation which becomes a consequence of the full play of competitive demand and supply forces. The classical notion of competition presumed only sufficient mobility of capital and labour to activate the tendency towards uniformity of the rate of profit and wage. Adam Smith would have no problem in recognizing "combination of masters", the unequal bargaining strength of labour and capital, nor could Marx have any difficulty in allowing a fluctuating but permanent reserve army of

<sup>54</sup> The following rather well-known passage from J. S. Mill illustrates the argument: "On an average of years sufficient to enable the oscillations on one side of the central line to be compensated by those on the other, the market value agrees with the natural value; but it very seldom coincides exactly with it at any particular time. The sea everywhere tends to a level; but it never is at an exact level; its surface is always ruffled by waves, and often agitated by storms. It is enough that no point, at least in the open sea, is permanently higher than another. Each place is alternatively elevated and depressed but the ocean preserves its level" (J. S. MILL, *Principles of Political Economy* [1848], New York, Kelley, 1961 [W. Ashley, ed.], p. 452).

<sup>55</sup> Morgenstern writes: "In identifying the economic phenomena certain primitive concepts and terms have to be used... However, because of the freedom with which mind can move, it happens frequently that the relation with reality is lost, and that purely hypothetical notions are introduced. In addition there is often a change in the meaning of words. Consider 'competition': the common sense meaning is one of struggle with others, of fight, of attempting to get ahead, or at least to hold one's place... In current equilibrium theory, there is nothing of this true kind of competition... there are only individuals, firms or consumers, *given* prices, *fixed* conditions, each firm or consumer for convenience *insignificantly* small and having no influence whatsoever on the existing conditions of the market (rather mysteriously formed by *tâtonnement*) and therefore solely concerned with maximizing *sure* utility or profits, the latter then being exactly zero. The contrast with reality is striking" (O. MORGENSTERN, "Thirteen Critical Points in Contemporary Economic Theory: An Interpretation", *Journal of Economic Literature*, December, 1972, p. 1164).

labour. Faced with the reality of persistent unemployment, the neoclassical theory, attempting to synthesise Keynes, has reverted to imperfections and rigidities in the system to explain deviations from the full employment equilibrium<sup>56 57</sup>.

#### THE NOTION OF EQUILIBRIUM

Another important notion that received reinterpretations and acquired changed connotations is that of equilibrium. While, strictly speaking, "equilibrium" would be a misnomer in the context of classical theory, the notion of a "central" or "natural" position as an organizing concept was used by the classical theory as much as the neoclassical theory<sup>58</sup>. The method lay in trying to identify a set of consistent relations which appear to be fairly stable so that they may be viewed as dominant tendencies at work in the economy<sup>59</sup>. Adam Smith's distinction between natural price and market price of a commodity illustrated this way of analyzing. The market price or the actually observed price could deviate from the natural price which was defined as the price which is just sufficient to cover costs, namely, wages, rents and profits all paid at their natural rates. Whenever the actual supplies in the market fell short of, or exceeded the effectual demand (itself defined as quantities demanded by those who are willing to pay the natural price) market prices would deviate from natural prices, setting up a tendency for supplies to adjust to the effectual demand. The effectual demand was thus a state or a position of demand which could itself be seen as a central or average position of social demand. A distinction would be made between "permanent" or "stable" shifts in

<sup>56</sup> See P. GAREGNANI, "Two Routes to Effective Demand", in J. KREGEL (ed.), *Effective Demand, Distribution and International Relations*, London, Macmillan, 1982.

<sup>57</sup> We may refer here to the theory of monopolistic competition which was seen as a partial solution to the problem of increasing returns. It helped relax the condition on the "large number of producers" required in the traditional case by removing the hypothesis of the infinitely elastic demand curve for the individual producer. But, as Joan Robinson herself pronounced, the modifications introduced were neither satisfactory nor far-reaching (J. ROBINSON, *Collected Economic Papers*, vol. II, Oxford, Basil Blackwell, 1960, pp. 221-38).

<sup>58</sup> See P. GAREGNANI, "On a Change in the Notion of Equilibrium in Recent Work on Value and Distribution", in M. BROWN, K. SATO and P. ZAREMBKA (eds.), *Essays in Modern Capital Theory*, Amsterdam, North Holland, 1976.

<sup>59</sup> Marx more than any other economist, recognized the importance of structuring theory on the basis of abstractions drawn from historical observations. He made a distinction between "qualitative" changes that occur in social formations and the "quantitative" changes that occur within the bounds of a particular formation; "The laws of motion" that propel these quantitative changes and transform them into qualitative transition were particular to the social formation or "the mode of production". Each mode of production is therefore characterized by the dominant relations and forms of production and its corresponding rules of surplus extraction and distribution and of exchange. The prices of production was the form of exchange under competitive capitalism.

effectual demand and "temporary" deviations. When the former are identified, the position of the effectual demand would be suitably altered. The natural price as a central position was thus obtained, given effectual demand, the dominant methods of production and wages. It was not essential that the actual observed positions of the system comply exactly with this position. Thus, in actual practice, methods in use could differ from firm to firm; the actual rates of profits could also differ from firm to firm or industry to industry. It was required however that there should be underlying tendencies for the system to move towards the "dominant" methods of production and towards uniformity of the rate of profit; or that the long period position should remain a central or average position; in the sense that the deviations did not cluster predominantly and systematically on any one side of the position.

It was not necessary therefore to view the long period position as a "static" position or to think that it is, in effect, *attained*. The temporary forces behind the market values were considered however, not suitable for *exact* analysis of a *general* kind; for, the actual forces at work and the manner of adjustments they invoked or entailed could be historically specific and diverse. This does not rule out short period analysis which, for example, was quite prominent in Marx's analysis of the various circuits of capital and their failure to be coordinated, giving rise to disproportionalities and periodic crises.

With a different theory explaining value and distribution, the explanation of the long period position, or "long period equilibrium" changed. The early writings of marginalist authors, particularly Marshall, maintained the significance of the classical distinction between temporary and permanent effects. However, Marshall turned the analysis of market prices into "short period equilibrium", introducing what he called the "statical method". By such a method, the market prices were themselves treated as if they were centres of gravitation, on which the forces of supply and demand, defined under *centeris paribus* clauses, were brought to bear<sup>60</sup>. Further, thanks to the partial equilibrium method, Marshall averted attention from the explanation of distribution (or, the explanation of the rate of profit), shifting the focus altogether on to the price-determination of commodities. Such a separation of distribution and commodity prices could not be logically compatible with the marginalist theory. Marshall's method could only conceal the problem and the difficulties for the theory of profit became more evident in the later multi-commodity and general equilibrium systems. (We have seen, however, that Marshall's attempt to construct appropriate supply curves within the partial equilibrium set up also faced contradictions).

<sup>60</sup> See K. BHARADWAJ, "The Subversion of Classical Analysis", *op. cit.*

What is germane to our immediate purpose is that Marshall's (or Wicksell's or Walras') long period equilibrium was not a "stationary state" as recent associations of equilibrium with the latter concept suggest. It was more akin to the classical notion in that it was neither presumed that the economy was in equilibrium already nor that equilibrium connotes absence of changes and in particular, a zero rate of savings. As Robertson explains: "tends in the long run to equal' does not mean equals... We must not think of the long run value of a thing as something which will be attained after so many months or years and then stay put. It is more nearly legitimate to think of it as a norm around which actual values oscillate... yet even that conception though helpful may be too clearcut for application to a changing world. It may be that in such a world, long run equilibrium is never attained. It is the state of affairs which *would* be attained if all the forces at work had time to work themselves out"<sup>61</sup>. Thus, the notion of equilibrium here did not imply that the economy would *achieve* equilibrium. However, that equilibrium may never be achieved in practice was not considered sufficient to deny a *tendency* towards it. Robertson also noted a growing tendency towards mathematical formalization that tended to make concepts such as perfect competition more precise than what Marshall himself intended. Harrod too noticed conceptual changes that have occurred: "An instance of the eroding process, tending to narrow down the static economics, taking the life out of it and departing widely from the intentions of its authors, may be cited the notion that it has to make such assumptions as perfect mobility, perfect knowledge and perfect foresight"<sup>62</sup>. He notes the tendency to narrow the scope of statics by imposing even more numerous and rigorous restrictions on the alleged sphere and validity of the branch, "making static assumptions so far reaching that a law based upon them seems incapable of having any application to the world of reality". However, this development seems to have been inevitable; not because of the mathematical formalization as such but because of the logical difficulties which the theory faced and to overcome which resort had been taken, more and more, to assumptions and axioms increasingly distanced from observed reality<sup>63</sup>. The theory met serious difficulties, in particular, in its determination of distribution which given its logical structure, forms an integral part of its simultaneous determination of output and prices. The capital-theoretic debate had also implications therefore for the neoclassical theory of employment and output, relying as it did on the role of the

<sup>61</sup> D. H. ROBERTSON, *Lectures in Economic Principles*, Fontane, London, 1957, vol. I, pp. 92-93.

<sup>62</sup> R. F. HARROD, *Towards a Dynamic Economics*, London, Macmillan, 1948, pp. 6-8.

<sup>63</sup> We have already noted how Pigou's efforts at rendering Marshall's representative firm and the principle of maximum satisfaction more rigorous exposed the inherent contradictions.

rate of interest as equilibrating savings with investment at full employment.

Modifications in the notion of equilibrium in the face of these difficulties reveals a history of its own. The first step of introducing a "short period equilibrium" was taken by Marshall. Marshall's converting "temporary" market values into short period equilibrium, referring to their difference from the long period equilibrium as based only on the "element of time" so that the interplay of forces of supply and demand was to be applied in all cases, helped to extinguish the *qualitative* distinction that the classicals had maintained between "causes" acting upon the market and natural variables and which, he, in earlier writings ascribed to, explicitly<sup>64</sup>. Attention was shifted thence to the "element of time". However, a peculiarity of Marshall's "statical method" needs to be noted here. Marshall's periods relate more to the distinction he makes in terms of what is held within the *ceteris paribus* clause rather than strictly to a duration of time or a chronological sequence of time. In actual history, the long and short period forces could well be active simultaneously. The trouble was precisely that in order to talk about the *short period equilibrium* in terms of the interaction of stable demand and supply forces, Marshall would have had to *necessarily* transcend the *ceteris paribus* conditionality.

The issue of "the element of time" and "dynamics", it would seem, entered the centre of discussion when the explanation of the rate of profit within the marginalist framework encountered difficulties<sup>65</sup>. While the difficulty raised by capital, as seen above, ensued from the *structure* of the neoclassical theory of distribution requiring capital as a datum measured independently of distribution, Hicks, in *Value and Capital*, viewed the difficulty as one concerning "method", the error, as seen by him, being that the earlier neoclassicals had no general "dynamic" theory in which all quantities are properly dated<sup>66</sup>. This view was a complement to his

<sup>64</sup> Marshall wrote to Edgeworth (1902) "You know I never apply curves or mathematics to market values. For I don't think they help much, and market values are, I think either absolutely abstract or terribly concrete and full of ever-varying (though individually vital) side issues" (See A. C. Pigou, *Memorials of Alfred Marshall*, London, Macmillan, 1925, p. 435). Even later he wrote: "The actual value at any time, the market value as it is often called, is often more influenced by passing events, and by causes whose action is fitful and short-lived, than by those who work persistently. But in long periods these fitful and irregular causes in large measure efface one another's influence so that in the long run persistent causes dominate value completely" (A. MARSHALL, *Principles*, *op. cit.*, p. 291).

<sup>65</sup> See P. GAREGNANI, "On a Change", *op. cit.*

<sup>66</sup> Hicks writes "People used to be content with static apparatus, only because they were imperfectly aware of limitations. Thus they would often introduce in their static theory 'a factor of production', capital, and its 'price', interest, supposing that capital could be treated like the static factors (cf. J. B. Clark's 'free capital' and Cassel's 'capital disposal'). That some error was involved in the procedure would not have been denied; but the absence of a general dynamic theory in which all

interpretation of their theories (particularly, of Wickseil and the Austrians) as implying stationarity of equilibrium arising from the static method. He saw Marshall's position as somewhat ambiguous. Hicks observes: "Although Marshall raises at least a part of the general dynamic problem it is curious to observe how reluctant he is to abandon static conceptions even in dynamic analysis. Statics and dynamics are very little separated in his work; his dynamics are not made easier by running in terms of a very static 'equilibrium', and by the fact that their central passage leads up to the introduction of that 'famous fiction', the stationary state". (Here, we note Hicks uses "static" and "dynamics" in his meaning where dynamics implies dating of quantities). As for the Austrians, Hicks considers their hall-mark to be the stationary state<sup>67</sup> which "is a dynamic state where tastes, techniques, and resources remain constant through time". The assumption of stationarity, Hicks argues, made it possible to ignore distinctions between price expectations and current prices. The crux of the dynamic theory, he held, lay in the fact that current supplies (and ultimately, demand too) are governed by expected prices as much as by current prices.

Initially, in *Value and Capital* Hicks proposed the route of "intertemporal equilibrium" wherein the analysis was in terms of plans and realizations during a single period within which prices were expected to be determined by the usual equilibrium analysis, i.e., prices varied adequately in the period so that demands over the period will be always equal to the supplies over the period in terms of quantity. The windfall gaps between expectation and realisation were to be entirely absorbed by price variations. Garegnani argues that this shift in method appears to have been prompted by the weakness of the underlying theory, being erroneously identified with another difficulty; namely, the influence of expectations. He argues: "This difficulty over the determination of the quantity of capital is independent of the divergence between current and expected prices. The same need to measure the capital would arise if we wanted to determine the long period equilibrium while assuming that tastes and techniques and resources are not going to change in the future"<sup>68</sup>. Hicks' solution appears to be to abandon the traditional method while preserving the theory unaltered.

Hicks himself sees the limitation of this model in a very different light. The model could work best only when there were two sorts of

quantities were properly dated, made it easy to underestimate how great the error was" (J. R. Hicks, *Value and Capital*, Oxford, OUP, 1939, p. 116 n.). Thus, in *Value and Capital* Hicks sought to lay the foundation of dynamic analysis, the error being seen by him as one of method.

<sup>67</sup> See J. R. Hicks, *Money, Interest...*, *op. cit.*, p. 287.

<sup>68</sup> P. GAREGNANI, "On a Change", *op. cit.*, p. 30.



commodities; perishable goods and personal services which could not be carried over in stocks and speculatively traded goods by merchants. Further it needs to be assumed that while prices are fully adjusted at the end of the single period, they remain constant throughout the period so that either the equilibrating forces work instantaneously or not at all.<sup>69</sup> Hicks' self-critical remarks thus remain focussed on the method and on the durability of stocks. The entire onus is now on "expectations" for which however no objective basis is provided for.

In his later work, Hicks adopts alternative "methods of dynamic analysis". He identifies the problem of capital as mainly its longlivedness which inevitably brings in the element of time. Capital is created with the expectations of future returns in the minds of the investors and, once formed as fixed capital goods, they generate a flow of services over time. Hicks distinguishes two approaches to the dynamic problem: one, based on the Lindahl-type, ex-ante-ex post forward accounting and another based on stock-flow relations. In the former approach, expectations play an active role, with the deviations between ex ante and ex post quantities and prices directing the dynamics. In the second, the role of expectations is somewhat subdued and the accent is on the time structure of the relation between the stock of fixed capital and the flow of services. Hicks suggests that alternative methods of dynamic analysis may be appropriately adopted to suit the problem at hand and may further be coupled with alternative assumptions regarding responses: one, with flexible quantities and fixed prices and another with flexible prices and fixed quantities.

While this gives a neat taxonomy of methods, Hicks himself admits that "these do not quite fit together into a single coherent whole"<sup>70</sup>. This disintegration of the theory into separate methods appears to be an indirect admission of the failure of the theory which attempts to be all-comprehensive in its scope. What Hicks is attempting is to salvage the theory by introducing special assumptions regarding the period over which the supply and demand relations are considered effective in establishing equilibrium or regarding lags in the price-quantity responses. *This shift to alternative methods does not in any way resolve the initial difficulty with capital.* Expectations acquire new importance although no new or objective basis is provided for them. The models also deal mainly with expectations about prices while those that influence investment decisions appear predominantly to relate to the general conditions of the state of the market and other systematic macro-level forces. These were the considerations predominant in the classical discussions, particularly those of Marx. The problems of dynamics of change, uncertainty and

<sup>69</sup> J. R. HICKS, *Money, Interest..., op. cit.*, pp. 218-235.

<sup>70</sup> J. R. HICKS, *ibid.*, p. 219.

expectations are important dimensions of economic processes that every worthwhile theory would have to aim to capture. This does not remove the question of what *theory* to adopt at the ground level; indeed, makes it paramount<sup>71</sup>.

#### IV

##### THE 'OPENNES' OF THE CLASSICAL APPROACH

In contrast to the structure of the neoclassical theory of value and distribution, the structure of classical analysis keeps open the possibilities of allowing for a number of historical and social influences to enter the analysis. The broad methodological point may be put in the words of Sraffa (in the context of his critique of Marshall<sup>72</sup>) which illustrate the meaning we may put on "openness". "This first approximation ['cost of production theory' of the classicals] as far as it goes is as important as it is useful; it emphasizes the fundamental factor, namely, the predominant influence of cost of production in the determination of the normal value of commodities, while at the same time, it does not lead us astray when we desire to study in greater detail the conditions under which exchanges take place in particular cases, for it does not conceal from us the fact that we cannot find the elements required for this purpose within the limits of its assumptions"<sup>73</sup>. Unlike the marginalist theory which, as we have seen, needed to presume *a priori* quantity-price relations to generate the

<sup>71</sup> This identification of equilibrium with the stationary state coupled with the importance uncertainty and expectations have gained in this context, have led to the rejection of equilibrium analysis by "fundamental Keynesians" who however draw their inspiration from Keynes' 1937 article which stressed the role of expectations and uncertainty in investment behaviour (see A. CODDINGTON, "Keynesian Economics", *op. cit.*, for a presentation of the view). Whereupon it is argued that equilibrium is never attainable if the economy is not already in one. Joan Robinson repeatedly raised a revolt against the ahistoricity of the equilibrium notion in theory and discounted the method of comparisons of equilibria for analysing change. However, we note that many of the criticisms validly made, such as the assumption of mechanistic reversibility (ROBINSON, *Collected Economic Papers*, II, *op. cit.*, p. 120) among others, are to be directed against the marginalist *theory* rather than the method of equilibrium as such. Similar is the case also of her strong critique of the way in which the choice of technique problem is traditionally handled. (See J. ROBINSON, *What are the Questions? And Other Essays*, New York, M. E. Sharpe Inc., 1980, p. 127). Moreover, the identification of equilibrium with a stationary state which is actually attained, or, which, if attained, permits no change, are restrictive characterisations not present in the original notion. We need "central positions" for theoretical analysis. The theory that determines them poses the crucial choice.

<sup>72</sup> It is worth recalling here that the 1926 article was directed mainly against Marshall's scheme of determination of prices of particular commodities in his partial equilibrium framework, although the point made here is more general. Sraffa, keeping to Marshall's terminology calls the classical theory of prices the cost of production theory. He warns explicitly against such a usage in his later work, *Production of Commodities*.

<sup>73</sup> P. SRAFFA, "The Laws of Returns", *op. cit.*

well-behaved demand and supply relations through the principle of substitution, no such strict general relations are to be presupposed in the classical theory.

More explicitly, the two important distinguishing features of the classical or surplus-based theory of prices which allow this openness may be underlined here. First, the theory separates, in the first instance, the determination of quantities and of prices; in the sense, that the output levels and composition, methods of production and the wage are given or are determined prior to prices; whereas in the marginalist theory all quantities and prices are determined simultaneously and within the same framework of relations.

This "separation", as a first step, may appear unduly restrictive. On the contrary, it opens the possibilities of introducing a wider range of determinants and the real dynamics of the process of change; precisely because thereby the more complex, historical, institutional and social specificities that influence changes, particularly in distribution, technology of production, and investment could be introduced without being constrained to the purely exchange-based sphere of price formation. While prices may in turn, influence the quantities it is recognised that there are even more significant factors that may be considered to operate fairly independently of relative prices. This is illustrated, for example, in Adam Smith's treatment of the relation between the division of labour and the extent of the market; or, Marx's discussion of qualitative and quantitative changes in capital-labour relations, influencing and influenced by technical change. Keynes' analysis of the multiplier could fall in the same approach. That wages (i.e. distribution) are influenced by various historical and social factors is amply evident from labour studies.

A growing literature on the intricacies of growth of technical knowledge, innovations, imitation and adaptation etc. has again demonstrated the importance of factors other-than-prices. The relationship between prices and quantities is asymmetrical in the force of their mutual determination so that the relative prices of commodities are derived on the basis of given quantities. We may even go a step further and say that the major influences that act upon the determination of investment, distribution and technical change are not only not confined to relative prices but the real dynamics of economies are generated through the direct *interactions* among these. It is this openness of the prices of production of Marx that enabled him to account for "historical tendencies" in the domain of production, distribution and accumulation.

In the classical theory, at any observed position of the economy, given the wage, the methods of production, and the principle of surplus sharing among the capitalists (the uniformity of the rate of profit), it was possible to know the rate of profit, the value of the surplus and prices and the corresponding distributive shares simultaneously. Prices are thus seen to

be conforming to the rule of appropriation and distribution of surplus appropriate to the particular mode of production. In Sraffa, the primary role of price-variations ("their net result, and their complete justification") is to redistribute the surplus amongst industries so as to satisfy the rule of uniformity of the profit<sup>74</sup>. In contrast, in the neoclassical theory the relative prices function as allocators of the "scarce resources" or "factor endowments", determining simultaneously outputs, factor-uses and factor-prices: "the value theory takes over the stage".

The second important distinctive feature of the classical structure is its view of production as a circular process. The one-way-avenue of the marginalist theory, as Sraffa called it, takes factor-endowments as given, the principal economic problem being allocation of these scarce resources to alternative uses under the guidance of optimizing principles. In the classical circular view (emphasized by Sraffa's title, production of commodities by means of commodities), the more important part of resources are the reproducible ones and the economic problem is the creation of resources as much as their allocation. Very different analytical implications emerge from these diverse viewpoints. For example: in the neoclassical theory, relative prices performing their role of resources allocation would lead to full employment of all "factors of production", contrary to the actual experience of capitalist economies. Another example is: in a circular view of the process of accumulation, the savings-generating role of investment could be seen to operate not only in the Keynesian short period but also in relation to capacity creation in the "long period".

Finally, we refer briefly to some misinterpretations of the classical theory prompted by habits of marginalist thought. The idea that the classical theory of value is "incomplete" and would require the demand side to be provided occurs repeatedly in critical writings<sup>75</sup> and sometimes, following Marshall, it has been suggested that indeed the demand analysis was incipiently present in Ricardo<sup>76</sup>. Our discussion above has indicated the difference in the classical notion of effectual demand and the demand schedule of the marginalist theory. Further, as Garegnani has argued

<sup>74</sup> Forewarning that analogies are dangerous if interpreted too precisely, we may use one here. The statement that a train is moving — obeying, no doubt, its laws of motion — implies that the wheels are on the tracks at each moment during the time it moves. It is a statement of compatibility or consistency. The prices of production state similarly the set of prices consistent with the rules of surplus generation and distribution. Using the analogy, we may say that the marginalist theory, to generate consistent prices requires not only that the wheels be on the tracks but need additionally to ensure that tracks also turn in required directions (thus depending essentially upon hypothetical changes and having to impose the convexity conditions on the feasible sets of choices).

<sup>75</sup> See, for example, P. SAMUELSON, "Understanding the Marxian...", *op. cit.* and "The Canonical Classical Model", *op. cit.*

<sup>76</sup> See S. HOLLANDER, *The Economics of David Ricardo*, *op. cit.* For a detailed discussion of this work see K. BHARADWAJ, "On a Controversy over Ricardo...", *op. cit.*

elsewhere<sup>77</sup>, the role that demand functions play in the marginalist theory arises solely from their explanation of distribution on the basis of the equilibrium between demand and supply forces. That theory thus has to rely on the complement of the demand schedule which is no more necessary when wages are given by historical and other factors from outside the price-schema.

Hicks too imposes the marginalist structure on classical theory when he attributes a simple static model relying on "fixed technical coefficients" to Smith and Ricardo and concludes that "the range of problems to which such a model could be applied was nevertheless limited. For in strictness it is only if there is just one original factor, into terms of which all costs are ultimately reducible (the "labour theory of value") that the technical coefficients are sufficient to determine relative costs; if there is more than one factor, the relative prices of the factors must also play a part"<sup>78</sup>, and then goes on to define the conditions on factor-prices such as to keep factor-supplies from changing. All this is contrary to the way both Smith and Ricardo perceived the problem of distribution. The question of changes in methods of production was not confined to changes in factor prices nor were factor prices determined on the basis of demand and supply of factors.

A common misunderstanding in relation to *Production of Commodities* arises from Sraffa's statement that his investigation is concerned with such properties of the system as do not depend upon changes in the scale of production or in the proportions of factors. This has tempted some to look upon the system as one which is invariant under these changes and hence attribute to it such assumptions as would render the system invariant under general equilibrium theory. The attribution of constant returns to scale as an essential assumption is one such. The system of relations is also seen as "invariant" and hence a stationary state. We have attempted to clarify in what way change is an essential requirement for the marginalist theory unlike for Sraffa. However, that the propositions in the book do not depend upon change does not imply the assertion that no changes could follow.

In the circular view of the economic process that Sraffa endorses, the condition of self-replacement is not identical with self-reproduction. It is only in the system without surplus that exact reproducibility occurs. Self-replacement refers to the viability of the system and does not indicate how the system would change in the next period. In fact, Sraffa takes an observed system of relations as given. When wages change, changes in other quantities may or may not follow. What Sraffa implicitly denies is

<sup>77</sup> See P. GAREGNANI, "The classical Theory of Wages and the Role of Demand Schedules in the Determination of Relative Prices", *American Economic Review*, May, 1983.

<sup>78</sup> J. R. HICKS, *Causality in Economics*, *op. cit.*, pp. 47-48.

the *necessity* for his theory to postulate quantity-price responses or of imposing conditions on the direction of these responses for the derivation of prices and the rate of profit. Thus, a change in wage may or may not induce a permanent shift to another method of production; even if it does, it may not be presupposed that the new method would replace a more (less) "capital intensive" method when the wage declines (rises). Similarly, not all changes in wage necessitate changes in output composition or level. It is not therefore to deny that changes take place but only to deny that the scheme of relations determining relative prices is the exclusive and comprehensive domain for analysing changes in quantities and to emphasize that the theory of price determination does not rely in an essential way on "changes" to occur. In contrast, the "substitution principle" is at the heart of the analysis of change in the marginalist theory.

Sraffa's return to classical theory lies in his attempt to clearly delineate the structure of the surplus-based theory of value and distribution. In *Production of Commodities*, he had a specific constructive goal: to identify and resolve some central problems in the basic structure so that the approach could be shown to survive the passage from the labour theory of value to prices of production. A much-needed clarification was to demonstrate the inessentiality of certain appendages of theory, adopted for momentary convenience, especially by Ricardo. Not only did these cripple the theory and lead it into deviant directions through easy misinterpretations but some of the features were precisely those that the early marginalists built upon. Some of these had already been discarded in Marx. For example, the "population dynamics" to explain the subsistence wage in Malthus, which, with some hesitation, was used by Ricardo and criticised by Marx. Sraffa's given and variable wage removed the association with the fixed subsistence wage, seen by some critics as a requisite of the classical theory. Sraffa in his chapter on land shows how the classical view of rents could be divorced from "the law of diminishing returns" and from any "universal" relation inferred therefrom between output and unit cost. We have seen how powerful the rent theory was in the original construction of marginalism. In fact, he shows, correcting the classicals, that differential rents as well as the identity of the "no rent" land depends on the rate of profit<sup>79</sup>. Similarly, the adherence to Say's Law, as in Ricardo, is no more an essential feature of the prices of production, as indeed Marx expressly recognised<sup>80</sup>.

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<sup>79</sup> In this sense, under capitalist production, rents become subordinated to profits, as Marx argued. Paradoxically, however, in the neoclassical theory an increasing temptation seems to be of treating capital as land.

<sup>80</sup> It may be noted that Marx too comes to the realization problem sequentially separated from the determination of prices.