The New Value debate and the birth of a paradigm

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Abstract

In the last fifteen years a new challenge has arisen both to neoclassical orthodoxy and to the orthodox view of Marx's thought. It is relatively unknown but has, I think, a number of theoretical achievements to its credit, not least a rigorous value-theoretic account of the falling profit rate, of crisis, and of unequal world development rooted in an account of the value-price relation that conforms to Marx's disputed expectations.

This challenge is not the work of a single thinker but represents what I consider a convergence of a number of different strains of thought.[1] On the one hand it involves a systematic reconsideration of the role of money and its relation to value and above all the question: in what sense, and with what effect, does money represent labour, in an exchange economy? On the other, it has explored a systematic alternative to the most persistent dogma of the century, that economic movement unlike all other may be captured by the structural transformations of a static equation system under the the temporal evolution of its parameters.

This alternative view asserts that the concept of simultaneous causality pioneered by Walras and Marshall, and expressed in the idea that an economy may be characterised by a set of simultaneous equations, must give way to a fundamentally different conception – a conception which, I will argue, is classical in its origins – namely that of successive causation. It has applied this first and foremost to a reconstruction – perhaps reappropriation might be the better term – of Marx's value theory by liberating it from the static formulation given it by its main proponents. The combination of these two insights has been variously termed the sequential nondualist or temporal approach (a term due to Gil Skillman). It might be termed the rebirth of successivism.

This revolution in thought is by no means limited in its scope to the discussion of Marx's theories and offers, I argue, a rigorous foundation for political economy as a whole. It has met powerful resistance.

The conclusion I draw is that the time has come for two exercises. The first is to enquire into the nature of and reasons for the depth and strength of this resistance. The second is to situate the 'new' theory – in actuality a reassertion of classical orthodoxy – in the general framework of the history of political economy.

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[1] A selection of articles and a bibliography is contained in Freeman and Carchedi (1996)

Introduction: Marginalism and its meanings

The term 'marginalism' it appears, is due to J. A Hobson who coined it as a pejorative term to describe the theoretical framework now ascribed among others to Jevons, Menger, Walras and Marshall and which is more commonly known as neoclassical economics. In researching this article it was a pleasant surprise to find that this derives from the earliest economic critic of imperialism. In recent years it has been applied most systematically by the followers of Piero Sraffa.

Yet the very term itself is contradictory and ambiguous. It amalgamates two previously distinct notions.

On the one hand it refers to the subjective marginalism of Jevons and to the substitution of a distinct concept of *value*. Its distinctive feature was codified by Eugen von Böhm-Bawerk in the following terms:

> [T]he early theory of value unnecessarily abandoned the most natural explanation. As a general rule, the *measure of the benefit depending on the good is really also the measure of the value of that good.* (Böhm-Bawerk 1960: 136, emphasis in original)

In the terms of the early debate about this concept, therefore, it referred not to marginalism in general, but to the specific idea of marginal utility as the basis of value. In short it conveys three ideas:

❏ value is subjective, not objective

❏ value originates in use, rather than exchange

❏ this concept of value uniquely determines a theoretical rate of exchange of one good for another which serves both as a predictor in some sense of actual prices and as an allocative measure or standard.

At a much later date there followed the surreptitious elimination of the concept of value in any form, as ordinal supplanted cardinal utility and simultaneous causation became the hegemonic expression of the ideas of the new school. As we shall indicate, this constituted a definite evolution in the ideas of this school which restructured not just marginal utility but the whole of economics.

In its origins, however, the distinctive feature of the new marginal ideas lay in its attempt to establish *consumption* choices as the prime causal factor in economic movement. The neoclassical enterprise in a certain sense consisted in the reformulation of economics from the standpoint of consumption rather than production.

Let us now consider the relation between this usage of the concept of marginalism, and that expressed by Piero Sraffa:

> 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. In a system in which, day after day, production continued unchanged in those respects, the marginal product of a factor (or alternatively the marginal cost of a product) would not merely be hard to find – it just would not be there to be found. (Sraffa 1960:v)

In this sentence the word 'marginalism' does not refer to marginal utility in any of the above senses.

The changes of which Sraffa speaks are not changes at the margins of social demand but at the margins of social *production*. Sraffa's critique originated in the 'Cambridge controversy' and the contradiction which this controversy claimed to have found between the neoclassical production function and neoclassical growth theory. Sraffa's purpose was to demonstrate a double determination of price by showing that price, profit and the wage could be determined completely autonomously from the physical structure of production and the distributional struggle between labour and capital. This being so, *no* marginal determination of these magnitudes could possibly apply, since they are *already* determined independent of the marginal product of any factor.

Second, Sraffa's target is not margins as the foundation of a concept of value but their function as predictors of prices. This might seem to correspond to the third proposition above and at a superficial level it does. However Sraffa's target is not just this *use* of margins but their very existence. Sraffa's critique consists in abstracting from all change. In this way, margins do not merely cease to explain anything; they cease to exist.

The targets which fall to this all-encompassing onslaught are not confined to the subjective margins of the utilitarians. A further casualty is a different, and earlier use of marginal analysis which is due not to the new school but to the classics themselves. For, if the impact of *all* change and *all* variation is excluded from the determination of price, and if the only factor determining exchange ratios outside of

distribution is the structure of the economy itself, then the marginal analysis of production itself is on the face of it excluded. What, for example, becomes of the Ricardian determination of rent?

Moreover there is a rather important difference between the marginalism of Ricardo (and as we shall see, Marx) and the marginal utility of the new school. This is as follows: marginal utility is above all *subjective*.

This has three senses. On the one hand it is psychological. It refers to preferences, feelings and desires. In the second case, however, and this sutble distinction is an important one, it refers to psychological states of which we have no direct knowledge. Third, it gives rise to a concept of value which is *dependent on the individual* concerned. The entire difficulty which the marginal utility school had to overcome in order to apply marginal concepts to the determination of value, was the fact that the preference of one person, even were it known, would be different from the preference of another. This difference was not overcome by the substitution of marginal for absolute utility. It remains the case that unless the concept of value is removed altogether, the value of a good for one person is different from the value of the same good for another. Indeed even the *marginal* utility of bread for one person, differs from the marginal utility of bread for another, even in a fully competitive equilibrium. The equilibrium establishes only an aggregate demand curve, not an identity between the respective demand curves which make up this aggregate.

This is not so for what I shall term the objective marginalism of the classicals and of Marx. The marginal productivity of agriculture, or of a labourer, or of a technique, is in both Ricardo and Marx entirely visible and measurable. It is a practical question of which new fields are available for cultivation or which new techniques come onstream. It is not concealed.

Second, in Marx as in Ricardo the value contribution of an input is not given by its marginal contribution but by its average contribution. The concept of the marginal product of labour not only exists in Marx but is a central aspect of his analysis. It forms the basis of his distinction between *individual* value and *social* value. This is, as we shall show, an indispensible element of Marx's investment and price dynamics. But if Marx's political economy is reduced to a simultaneous system from which all margins have been purged, this dynamic analysis is sacrificed on the same altar.

In effect and in summary, the word 'marginalism' has done the classicals an immense disservice which, as we shall see, colours and distorts the perception of the greatest inheritor of the classical tradition, Karl Marx. It has served to identify, in the public mind, the use of marginalism with the neoclassical paradigm and to foster the idea that the classics, above all Marx, stand opposed to the use of margins reducing the objective theory of value to a purely structural, technical account of the properties of an economy.

It has led to a popular classification of theory between two alleged bodies of theory, the classical whose pure form, it is implied, is an economics free of marginal concepts and the neoclassical whose pure form is an economics entirely reliant on marginal concepts. This, we argue, is utterly false.

The dynamic corn-hog model: an independent critique of the demand schedule

Consider the well-known equations of the (simplified) corn-hog or cobweb cycle

$$Q^D_t = a - bp_t \tag{1}$$
$$Q^S_t = c + dp_{t-1} \tag{2}$$
$$Q^D_t = Q^S_t \tag{3}$$

where Q^D, Q^S are the quantities demanded and supplied of an agricultural good, p is its price and the subscripts refer to time.

Provided the discriminant d/b is of absolute magnitude less than 1 this converges on the equilibrium price

$$p^e = \frac{a-c}{b-d}.$$

It is generally supposed, therefore, that this equilibrium price may be treated as the long-run or 'natural' price and that the weblike fluctuations of prices about this equilibrium may be treated as a mere temporary deviation from this natural price. From this it is deduced that we may speak of the demand and supply schedules

$$Q^D = a - bp \; ; \; Q^S = c + dp$$

as if they had an independent objective existence without reference to time. From this point of view the equilibrium price p^e may be treated as essentially the same thing as the fluctuating p_t in at least three senses. First, p_t converges on it. Second, it constitutes the time average of p_t over any reasonable given period. Thirdly, if we solve the difference equation 1,2 and 3 we obtain

$$p_t = p^e + \left(\frac{d}{b}\right)^t (p_t - p_0)$$

in which the number p^e appears as a definite magnitude in the equation, giving precise numerical expression to the slightly vague notion that p_t 'fluctuates' about p^e.

Nevertheless, we may make a minor modification to this model which poses severe doubts over this simple identification. Let us suppose that the coefficients b, d are subject to a slow exponential modification over time such that

$$b = b_0(1 + g)^t \tag{4}$$

$$d = d_0(1 + g)^t \tag{5}$$

This might be conceptualised by a neoclassical as a steady rotation of the demand and supply schedules about their intersection with the price axis, the demand schedule becoming steadily less elastic and the supply schedule steadily more elastic.

We now may 'predict' the resulting prices in two different ways. First, we may following the method of comparative statics calculate the 'moving equilibrium'. This 'moving equilibrium' price is given by the formula

$$p^e_t = \frac{1}{(1 + g)^t} \frac{a-c}{b_0 - d_0}.$$

Alternatively we may solve the difference equation system 1,2 and 3 as respecified by 4 and 5 to obtain the actual dynamic progress of the prices predicted by the model. For reasons that will become clear we shall in this article refer to these as 'successivist' prices. Alternative designations are 'sequential' prices, a term adopted by Andrew Kliman, Ted McGlone and myself or 'temporal' prices, a term suggested by Gil Skillman. The two price systems are shown in figure 1.

There is no reasonable sense in which these two predicted prices can be said to refer to the same thing. The successivist price p does not converge to p_e, does not iterate around it, and does not appear in any dynamic equation linking the two. The 'equilibrium' price has lost all explanatory value.

What we confront here is a well-known, but equally well-ignored feature of equilibrium models, namely *path-dependence*. Once agents trade at non-equilibrium prices, the blunt fact of the matter is that in the general case, there is no necessary relation at all between hypothetical equilibrium and the equally hypothetical, but considerable more realistic successivist prices.

From a neoclassical point of view, what has taken place is that during the formation of the new equilibrium, the supply and demand schedules have moved, disturbing the equilibrium before it can be attained. But this however means that, since agents never actually trade at equilibrium prices, the disturbance constantly runs ahead of the hypothetical equilibration process, and the equilibrium is never attained.

There are two awkward questions that must be posed, questions which stare neoclassical theory in the face, which it speaks of from time to time in hushed tones, but which it never seems capable of confronting squarely.

❏ In what sense may an equilibrium which is never attained, and never manifests itself in any measurable or observable sense, be said to exist?

❏ In what sense can a *demand schedule,* whose only manifestation is in the formation of this putative equilibrium and is not independently measurable, be said to exist?

To illustrate this in a more general way and to show what is at stake let us suppose that the quantity supplied of an agricultural good is a function both of price and of time, thus:

$$Q = Q^S (p, t) \tag{6}$$

The absolute differential of this magnitude yields

$$\frac{dQ^S}{dt} = \frac{\partial Q^S}{\partial p} \frac{dp}{dt} + \frac{\partial Q^S}{\partial t} \tag{7}$$

If it is assumed that there is no variation of quantity demanded due to any other factor than the variation of prices (in Hahn's words, if agents' demand functions are parametric functions of price) then we should in fact write

$$Q = Q^S(p) \qquad\qquad (8)$$

and equation **7** should be rewritten as

$$\frac{\mathrm{d}Q^S}{\mathrm{d}t} = \frac{\partial Q^S}{\partial p}\frac{\mathrm{d}p}{\mathrm{d}t} \qquad\qquad (9)$$

This amounts to the assertion that the demand schedule $Q = Q^S(p)$ is a *time-independent* function of price, or alternatively that

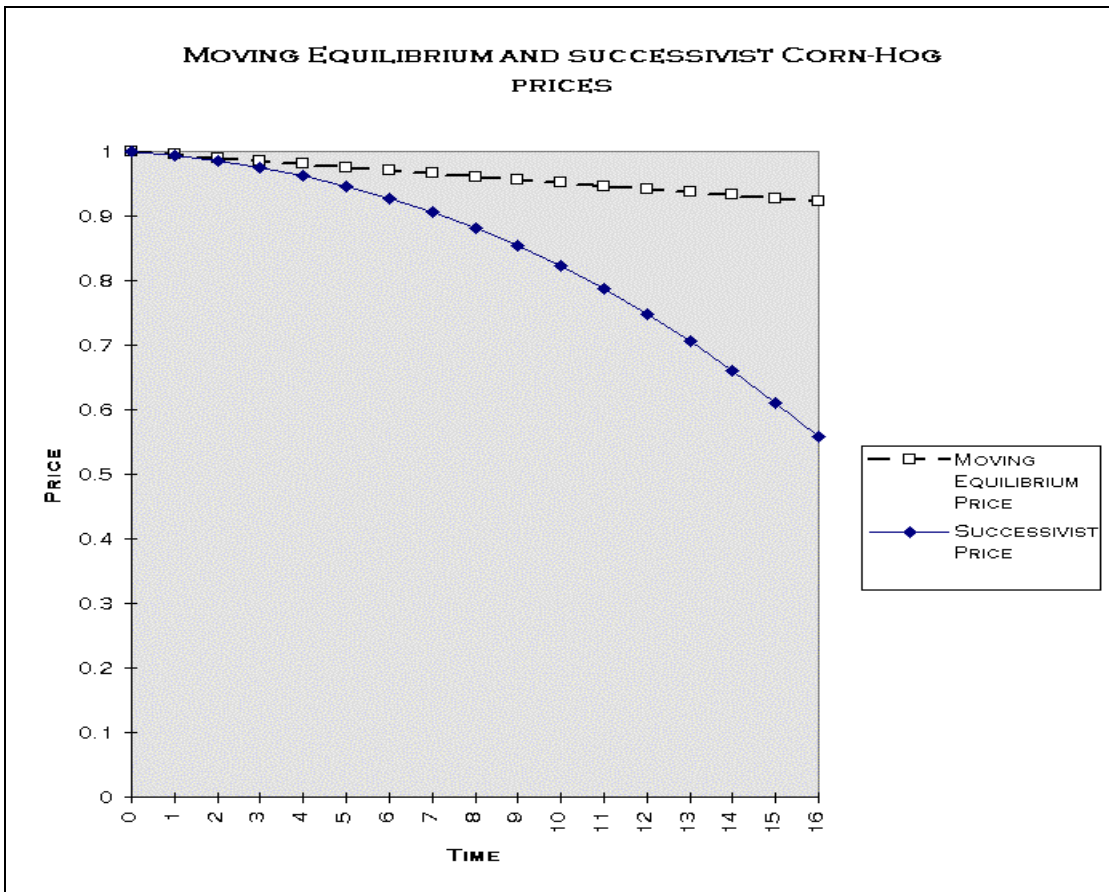$$\frac{\partial Q^S}{\partial t} = 0$$

Figure 1: Moving equilibrium and successivist prices in a simple cobweb

The fundamental defining 'axiom' of the concept of partial equilibrium developed by the founding subjective value theorists therefore, provided we suspend any residual prejudice against marginalism, amounts to a definite assertion: that there is *no direct dependence of supply (or demand) on time*. This is the concealed meaning of the concept that a supply or demand schedule has actual, objective existence.

A further point is important in the empirical verification of this concept. If time-series data is collected from the sequence of events described by the full dynamic equation, it is perfectly possible that this data could trace out all or many points on a putative demand or supply schedule either in the same direction as Q^S, in the opposite direction, or even trace out a schedule though demand and supply were both invariant, at each particular time, with respect to prices. The misspecification can lead to such serious errors, in other words, that there is actually no way the model can be verified.

This fact is often concealed in undergraduate lectures by a large amount of hand-waving, reference to substitution and income effects, and talk of the grand accomplishments of general equilibrium. If the economy is in a non-equilibrium state, it is explained, it is somewhat difficult to return to equilibrium but this equilibrium definitely exists and exercises a hypnotic but benign influence over the general course of events. In the course of attaining a new equilibrium some strange things will occur. If, for example,

adjustment in the market for butter results in a fall in the demand for margarine, then the demand schedule for margarine will shift and there will be a new equilibrium in the margarine market. The attainment of this equilibrium will in turn impinge on the bread market, and so on. Nevertheless, independent of all these apparent movements of the demand curves in partial markets, there is some sense in which the combined equilibrium in all markets definitely and 'objectively' exists. There is a single set of price and quantities which will simultaneously reduce excess demand in all markets including the factors of production, to zero.

However, a little consideration reveals that the same problem exists for the general case also. For in this case we may write the vector equation

$$Q = Q^S(p, t) \tag{10}$$

where Q and p are now vectors. But this now yields

$$\frac{dQ^S}{dt} = \Sigma_i \frac{\partial Q^S}{\partial p_i} \frac{dp_i}{dt} + \frac{\partial Q^S}{\partial t} \tag{11}$$

and exactly the same time-dependence as before is present. Again, the assertion that the unique moving equilibrium obtained by solving 10 is an accurate representation of the actual course of events *amounts to the assertion that there is no explicit dependency of supply on time*.

Marx in the margin

Everyone who seeks to understand the difference between what Marx really thought, and what is written by others about what he thought, should read (they are not long) chapters 37 and 38 of Volume III and the first few pages of chapter 39.

Demand

In the first place, reading this section of Marx dispenses with the notion that demand plays no role in the determination of value or price. This is not the most important conclusion of this article but is useful to illustrate a rather critical distinction between the neoclassical and classical approach to value and price.

On p774 of Volume III we find one of the clearest expressions of a concept also expressed elsewhere, which is that socially necessary labour time is only fully specified when the magnitude of social demand is taken into account.

> The law of value as it makes itself felt, not in relation to the individual commodities or articles, but rather to the total products at a given time of particular spheres of production autonomized by the division of labour; so that not only is no more labour-time devoted to each individual commodity than necessary, but out of the total social labour-time only the proportionate quantity needed is devoted to the various types of commodity. Use-value still remains a condition. But if in the case of the individual commodity this use-value depends on its satisfying in and of itself a social need, in the case of the mass social product it depends on its adequacy to the quantitatively specific social need for each particular kind of product and therefore on the proportional division of the labour between these various spheres of production in accordance with these social needs, which are quantitatively circumscribed. (Marx 1981:774)

This manner of posing it, we pause to note, is typically classical but we shall later make it clear that it is also fully general. For Marx demand is specified, at each point in time, by the total demand (need) for all goods, that is, a specification of society's requirements for every use-value. The demand for all goods, at any point in time, definitely exists as a function of time and the preceding states of the economy. At first sight it therefore appears as though the demand for each good is independent of the demand for each other good. This is not quite correct. The demand for each good is independent of the demand for each other good *at a given moment in time*. Nothing in the definition excludes the idea that demand for brandy in 1856 is related to the demand for corn in 1855 and Marx later indicates that it is. We shall return to this point.

In the second place, we should note that this formulation does not violate, as is sometimes thought, Marx's determination of aggregate value magnitudes and in particular the magnitude of profit. Let us suppose, for example, that in 1856 there is a social requirement for 3m quarters of corn, but the farmers produce 5m. Suppose also that 15m hours of labour are discharged in producing this corn. Treating corn as perishable (setting aside stockpiling), Marx argues that the individual value of each of the 5m quarters of corn comprises the labour that went into producing it, namely 20 minutes. The social value, however, is the necessary labour that went into it, and this is confined to the labour that society actually chooses to

use. Necessary labour is objectively, not subjectively defined, *in terms of demand.* That which is necessary is measurable as that which is used.

It does not, therefore, modify either the total value added by the labourers (15m hours) nor the magnitude of the farmers' profits (15m less the wage) nor surplus-value, which is the same thing. Nor does it even modify the total value produce of society. It modifies only the use-value expression of this labour. This point is not central to this article but we mention it here to avoid any secondary recriminations to the effect that values in this formulation are doubly determined or defined in a contradictory manner.

However it clearly modifies the unit value of each quarter of corn but in a way which is counter-intuitive to a neoclassical. It means the *result of oversupply is to make corn in value terms more expensive*. This is because society has been obliged to spend more labour in producing the corn than it actually used. It could have economised on this labour and used it to make beer instead, a circumstance of some annoyance to both Marx and Engels though their reaction to it on occasions crossed the narrow margin between subjective and objective judgement.

This difference between the neoclassical assessment of demand and Marx's, however, expresses something quite important. For the neoclassical analysis, oversupply is an anomaly which, in essence, does not happen. The neoclassical considers the hypothetical, imagined circumstance that the price actually falls to such a level that the whole of the corn is sold, and moreover takes this hypothetical price to be the actual value of the corn. Since oversupply by definition does not occur, value must be defined without reference to it.

The neoclassical value concept is thus given a further, extra dimension of subjectivity. Not only is it 'psychological' and thus concealed; it corresponds to an *ideal* rather than an *actual* state of society. As we shall see, it surprisingly shares this property in common with the Sraffians.

supply

Marx's analysis of agricultural rent, like Ricardo's, is a marginal analysis. He supplies the following schedule for four different fields A, B, C, D

	Product			Profit		Rent	
Type of soil	Quarters	Shillings	Capital advanced	Quarters	Shillings	Quarters	Shillings
A	1	60	50	$1/6$	10		
B	2	120	50	$1\,1/6$	70	1	60
C	3	180	50	$2\,1/6$	130	2	120
D	4	240	50	$3\,1/6$	190	3	180
Total	10	600				6	360

The explanation of these figures is as follows: assuming the total demand in society attains the total of ten quarters of corn, all fields will be brought into production. Leaving aside temporary fluctuations of price, the farmers A will expect and attain the price of production given by the profit rate in society as a whole, which is given as always by the total surplus value in society divided by the total social capital. This is given autonomously from the circumstances of the farmers. Marx takes it, as in most of Volume III, to be 20% so that the profit attained on the least profitable land will be 10 shillings; hence the sale price of 60 shillings per quarter on field A.

However, the formation of uniform commodity prices brings about a single price for corn. Hence the sales revenue of all other farmers is given by the yield of their fields multiplied by the unit 'individual price of production' of corn, 60 shillings per quarter. This accounts for the second column under the 'product' heading. But in this case the profit of each farmer, expressed as the difference between their sales and their costs, is given by the second column under the 'profit' heading (price of the product less capital advanced, which is presumably turned over completely during the year). Differential rent is then the difference between this individual profit and the price of production of farmers A (also the average profit in society), so that for example farmers C make a profit of 130 instead of the social average of 10, hence a rent equal to 120 shillings. This in turn is later expressed in a variety of ways, as a rent per acre, a rent per quarter, or whatever.

Differential rent is thereby revealed to be the sum of the marginal profits on all fields of lower productivity than the field concerned.

It is not our purpose here to treat the relation between Marx and Ricardo's conception of rent, except to remark that this concept is clearly a marginal concept for both. Moreover, the fact that a marginal profit (and a marginal product) exists is a function of an *objective* fact of society; the simultaneous existence of more than one producer. This in turn is an observation excluded by equilibrium treatments. In equilibrium, there can be no variation in producers since all producers must be using the most efficient technique available. An equilibrium analysis has to set on one side the different productivities of the land, the underlying origin of the surplus-profit which the landowners appropriate as rent, and attribute the different rents themselves as returns to the 'factor' of land. An extremely important difference thereby emerges: it is precisely because Marx treats the marginal value contribution of all labour-power as equal (to labour-time) that all other marginal magnitudes appear as marginal amounts of this labour-power *appropriated*. Marx's marginalism is a marginal theory of distribution. But, as we shall see, its implications for the actual course of society are fundamental, since one of the most vital aspects of distribution concerns the allocation of the unconsumed surplus-value to investment.

Our purpose here *is* to make a second and vital observation.

On first reading, Marx's treatment of differential rent contains a series of almost incomprehensible discussions on the different order in which fields of different productivity may be introduced. He speaks of the 'descending order' and 'ascending order' in which the fields are introduced.

To a reader schooled in neoclassical supply schedules this takes a great deal of work and puzzlement to unravel. Table 1 takes the superficial appearance of a supply schedule and when Marx discusses what he terms the 'descending sequence' this is explicit. If, he says, the level of social demand rises steadily beginning at 4 quarters (he indicates that this may be taken as representative of a total social product of 4 million quarters) then initially the price will be 15s per quarter. This corresponds to farmers D securing the average profit of 10 so that their 4 quarters realise 60s on the market. If the demand then rises to 7, farmers C will regulate the price which will rise to 20s per quarter (60/3) and farmers D will secure a price of 80, hence a profit of 30, hence a rent of 20. Continuing upwards we find a social demand of 9 results in a price of 30s per quarter and finally the original result that a social demand of 10 results in a price of 60s per quarter. We could combine these to produce what appears to be a supply schedule thus:

Price	Quantity
15	4
20	7
30	9
60	10

But then Marx speaks of the following, unexpected circumstance:

> But on the other hand, if the sequence were in the reverse order, that is, if the process initiated from A, then the price of the wheat at first would rise above 60 shillings per quarter when new land would have to be taken under cultivation. But since the necessary supply would be produced by B, a supply of 2 quarters, the price would fall to 60 shillings again; for B produced wheat at a cost of 30 shillings per quarter, but sold it at 60 shillings because the supply just sufficed to cover the demand. Thus a rent was formed, first of 60 shillings for B, and in the same way for C and D; it is assumed throughout that the market-price remained at 60 shillings, although C and D produced wheat having an actual value of 20 and 15 shillings per quarter respectively, because the supply of one quarter produced by A was needed as much as ever to satisfy the total demand. In this case, the increase in demand above supply, which was first satisfied by A, then by A and B, would not have made it possible to cultivate B, C and D successively, but would merely have caused a general extension of the sphere of cultivation, and the more fertile lands might only *later* have come under cultivation (Marx 1981:792; my emphasis)

To read this simply as if, neoclassical style, the *same* supply schedule is being read in a different order is completely to misunderstand what Marx is attempting to assess. What is involved is a *different historical ordering* of the bringing into cultivation of different fields. And has Marx goes on to comment this has a definite material effect:

> In the first sequence, an increase in price would raise the rent and decrease the rate of profit [by raising the price of wage goods - AF], Such a decrease might be entirely or partially checked by counteracting circumstances... in the second sequence the rate of profit on invested capital would remain the same. The amount of profit would be represented by less grain; but the relative price of

grain, compared with that of other commodities, would have risen. However, the increase in profit wherever such an increase takes place, becomes separated from the profit in the form of rent, instead of flowing into the pockets of the capitalist tenant farmer and appearing as a growing profit. The price of grain, however, could remain unchanged under the conditions assumed here. (ibid)

The different historical ordering of cultivation results in a different historical sequence of prices, profits and rents. The *temporal sequence* is decisive. The land at the margin is not necessarily the least productive:

> According to its mode of formation, differential rent can develop along with a stationary, rising or falling price of the agricultural product. In the case of a falling price, the total production and the total rental may rise, so that rent is formed on what was previously non-rent-bearing land, even though the worst soil A has been displaced by better, or has itself been improved, and even though the rent on other better types of soil and even on the best types, falls…in this way we can abandon the erroneous conception of differential rent which still prevailed with West, Malthus and Ricardo and which assumed a necessary progression to ever worse soil, or an ever declining agricultural fertility…from the beginning to the middle of the eighteenth century, England saw a steady fall in grain prices, despite the falling price of gold and silver, alongside a simultaneous growth in rents (taking the period as a whole) in the total rent, in the extent of land cultivated, in agricultural production and in population. This corresponds to Table I, combined with Table II [in which further extensions are made at the margins by both farmers A and farmers B -AF] in an upward direction, but in such a way that the worst soil A is either improved or taken out of cereal cultivation. (Marx 1981:798)

Finally we can see that an important but utterly different concept of objectivity is involved in sequential progression. What is objective for Marx is above all the *past*. The determination of supply, demand, and prices in the current period takes as its objective foundation the distribution and redistribution of a magnitude of value, and a magnitude of surplus value, whose objective character lies neither in the fact that it is located entirely in production nor in the fact that it is expressed in terms of labour – though these are both important issues. But the guarantee of its objectivity is precisely the fact that it has already happened. It is guaranteed by the arrow of time. Again and again, in distinction to this simple idea, we find in both neoclassical and in simultaneist marxist models an endless chase for the mysterious process of determination, the separation of essence from appearance, the isolation of exactly what depends on exactly what – all in vain. With the death of time comes also the death of causation, the death of objectivity and indeed the very distinction between being and thought, cause and caused, actual and potential, death and life.

Margins, Marx, Money and proudhon

The traditional notion of Marx's value theory amounts, simply put, to the following: Marx was a classical theorist of long-term equilibrium, whose concept of value can be summarised in an ideal system (simple commodity reproduction) that was historically prior to fully competitive capitalism, summed up in the equation

$$v = v\text{a} + 1 \qquad\qquad (12)$$

where the symbols have their usual meaning. His theory of price is essentialy a productivist version of the neoclassical general equilibrium system in which profits equalise to yield prices of production, being Marx's equivalent of the notion of long-term equilibrium price and represented by the equations

$$p = (p\text{a} + wbl)(1+r) \qquad\qquad (13)$$

again, where the symbols have their usual meaning. Virtually all assertions of Marx's 'errors' rest, incidentally, on this interpretation and it has hardly every occurred (with some honourable exceptions) to the great majority of academics who are content blithely to recite the standard catechism concerning these errors, that if the interpretation itself does not correspond to Marx's views, then nothing at all has been proved since the errors arise from the presentation of Marx's views using these equations. It is the equation and the interpretation, not Marx's own theory, which contains the errors.

We would characterise this concept of value and of price as a *reproduction* theory of value and price. Equation 12 can hold true only in economies that are actually reproducing in Proudhon's 'ideal proportions', that is, in proportion to the values implicit in a stationary society with no movement of capital. It can hold only on the assumption that such a society reproduces itself perfectly with no mismatch of supply to demand. Likewise equation 13 can only hold true in a society which reproduces itself equally perfectly and unchangingly (as Sraffa himself remarks) but with a fully equalised profit rate. We will deal with these two conceptions in order.

The problem with this standard view of Marx's concept of value is that his actual concept was developed out of a prolonged struggle against the Proudhonist conception, according to which exploitation arose from the *failure* by capitalism to adhere to 'natural proportions' of production, in short, the failure to trade at the 'fair price' represented by ideal labour values. Thus, it was absolutely critical for Marx to *deny* that equation 12 could apply to a real market society. It is, as Chris Arthur has convincingly established, only Engels who saw it necessary to highlight and make central the notion of an actual, historical stage of capitalism in which goods exchanged at their values.

This same notion appears in the banking reform proposals of the time-chitters such as Darimon, against whom Marx fulminates in the *Grundrisse*. Marx's whole point amounts to the following: first, exploitation arises even if Proudhon's assumptions are adopted. That is, it is 'because of' not 'in spite of' the valuation of goods by labour time that surplus value arises. This much, twentieth century Marxism has understood.

But Marx makes a second and much more profound point which is the heart of his critique, not just of Proudhon but the entire equilibrium tradition of classical economics as expressed in the works of Say, of the Mills, and of Ricardo insofar as he bows to Say. Marx's point is that in a market economy price *cannot possibly* be equal to value. This is because it is a *money* economy. Therefore, for example, it inevitably follows that during the course of the business cycle the nominal prices of *all* goods will rise above their value and then fall below their value. Hence, the bank reform proposals of the time-chitters could only actually be realised by sublating the market economy, if the bank actually took over the organisation of the economy and suppressed the market.

But as a consequence, value is *from the outset* and not just in volume III, distinct from price. Value is *not theorised by Marx as the outcome of a particular set of 'proportions' of production*. The price-value difference is from present in his work from the very beginning, and is not 'introduced' in Volume III. It is not introduced in Volume I until the end of Chapter 5 after a lengthy discussion concerning the impact of trade at prices distinct from values, and at this point it is made only to demonstrate that surplus value arises from the sale and purchase of the specific commodity labour-power.

I find that whenever I make this point in formal gatherings, or for that matter on paper, there is such general disbelief that it is clear that many people have ceased actually reading what Marx wrote, and I must therefore request the reader to suppress the boredom often provoked by long citations while I supply the texts that will no doubt be requested.

> Both on the question of relations of money to the value of metal and in his demonstration that the cost of production is the sole factor in the determination of value Mill succumbs to the error, made by the whole Ricardo school, of defining an *abstract law* without mentioning the fluctuations or the continual suspension through which it comes into being. If e.g. it is an *invariable* law that in the last analysis – or rather in the sporadic (accidental) coincidence of supply and demand – the cost of production determines price (value), then it is no less an *invariable law* that these relations do not obtain, i.e. that value and the cost of production do not stand in any necessary relation. Indeed, supply and demand only ever coincide momentarily thanks to a previous fluctuation in supply and demand, to the disparity between the cost of production and the exchange value. This is the *real* movement, then, and the above-mentioned law is no more than an abstract, contingent as one-sided movement in it. Yet recent economists dismiss it as accident, as inessential. Why? Because if the economists were to attempt to fix this movement in the sharp and precise terms to which they reduce the whole of economics this would produce the following basic formula: laws in economics are determined by their opposite, lawlessness. The true law of economics is chance, and we learned people arbitrarily seize on a few moments and establish them as laws (Marx 1844:260).

The fundamental notion is that the equality value and price, along with that of supply and demand is *contingent* and that their difference is on the contrary the normal and real state of affairs. This is repeated at critical points throughout Marx's later development:

> It is not the sale of a given product at the price of its cost of production that constitutes the "proportional relation" of supply to demand, or the proportional quota of this product relatively to the sum total of production, it is the variations in supply and demand that show the producer what amount of a given commodity he must produce in order to receive in exchange at least the cost of production. And as these variations are continually occurring, there is also a continual movement of withdrawal and application of capital in the different branches of industry...if M. Proudhon admits that the value of products is determined by labour time, he should equally admit that *it is the fluctuating movement alone that makes labour the measure of value. Poverty of Philosophy* (1932:52: my emphasis)

> The coincidence of price and value presupposes the equality of demand and supply, exchange solely of

equivalents (hence not of capital for labour) etc.; in short, formulated economically, it reveals at once that this demand is the negation of the entire foundation of the relations of production based on exchange value. G*rundrisse* p795

and finally in *Capital* itself.

In actual fact, demand and supply never coincide, or, if they do so, it is only by chance and not to be taken into account for scientific purposes; it should be considered as not having happened. Why then does political economy assume that they do coincide? In order to treat the phenomena it deals with in their law-like form, the form that corresponds to their concept. *Capital* Volume III:291

The rate of profit

This disssociation from an equilibrium view becomes even stronger in relation to price of production. The notion that Marx assumed the actual equalisation of profit rates is now so widespread that enormous astonishment results when the contrary is asserted. But what Marx actually says is that

Between the spheres more or less approximating the average there is again a tendency towards equalisation, seeking the *ideal* average, i.e. an average that *does not really exist*. (CIII:173: my emphasis)

or as Mandel notes (1976:75n)

The industrial rates of profit in various spheres of production are themselves more or less uncertain; but in so far as they appear, it is not their uniformity but their differences which are perceptible. The general rate of profit, however, appears only as the lowest limit of profit, not as an empirical, directly visible form of the actual rate of profit (CIII:367)

The rate of profit, on the other hand, may vary even within the same sphere for commodities with the same price, depending on different conditions under which different capitals produce the same commodity, because the rate of profit of an individual capital is not determined by the market-price of a commodity but rather by the difference between market-price and cost-price. These different rates of profit can strike a balance – first within the same sphere and then between different spheres – only through continual fluctuation (CIII:644)

Indeed for Marx the motor force of capital investment is the *deviations* of individual profit rates from the average, that is, the possibility of the capitalist to obtain an higher-than-average or surplus profit.

It is hard to reconcile this with the notion that Marx's views on price can be reduced to a Walrasian-style system of simultaneous equations in which it must necessarily be assumed that profits equalise, and it must necessarily be assumed that supply equates to demand. On the contrary, what leaps from the pages of marx's actual writings is an entirely dynamic, equilibrium-free concept of value which has to be defined independent of, and prior to, the formation of an equal profit rate or the equalisation of supply to demand.

From where, then, did the notion of Marx as an equilibrium theorist actually arise?

Origins of the simultaneous tradition

In his 'correction' of Marx, von Bortkiewicz offers what in retrospect should be seen as one of the defining features of the emerging marginal synthesis. "Alfred Marshall said once of Ricardo:", he writes,

'He does not state clearly, and in some cases he perhaps did not fully and clearly perceive how, in the problem of normal value, the various elements govern one another *mutually*, not *successively*, in a long chain of causation'. This description applies even more to Marx … [who] held firmly to the view that the elements concerned must be regarded as a kind of causal chain, in which each link is determined, in its composition and its magnitude, only by the preceding links … Modern economics is beginning to free itself gradually from the successivist prejudice, the chief merit being due to the mathematical school led by Léon Walras. (Bortkiewicz 1952:23-24)[2]

This passage expresses a deep and fundamental reorganisation of the structure of economic thought around the central organising focus of simultaneous determination. It is not generally understood, and it is a central thesis of this article, that this intellectual reorganisation restructured *both* branches of economic theory, leading on the marginalist side to the system of high general competitive equilibrium, and on the anti-marginalist side to the system of Sraffa and the surplus school. But both sides find their common grandparent in Walras. From Bortkiewicz – interestingly enough Wassily Leontieff's PhD supervisor at Berlin – descends the 'marxist' wing. From Marshall descends the marginalist wing.

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[2] I am indebted to Michele Naples for pointing out this passage.

Whatever the individual contribution of Gossens, Jevons, Menger, and even Marshall to the subjective concept of value, one theorist alone – interestingly enough the theorist who had least to say on the specific question of value and its nature – Marie-Esprit Léon Walras, founded the theory of general competitive equilibrium. The ordinal utility system of Debreu, Arrow and Hahn can trace direct descent from this system in which, for the first time, the characteristic features of the modern neoclassical system were brought together. It was the system of Walras which broke through the most intractable difficulty facing marginal utility theory, that of the *order of causation* of economic variables. It did so by means of what we can now recognise to be a radical reconstruction of the concept of causality which, in effect, eliminated temporal causation in favour of functional, or simultaneous determination.

Bortkiewicz's debt to Walras goes more than skin-deep. At the age of 19 he wrote to his idol as follows:

> Your writings, sir, have awakened in me a lively interest in the application of mathematics to political economy, and has pointed out to me the road to travel in my researches into the methodology of economic science. (Jaffé 1965 Vol II:230)

As one traces the evolution of the neoclassical school an enduring love-affair comes to light: between a procedure that all its most ardent exponents term 'mathematics' and a concept of determination according to which *causal* relations become synonymous with *functional* relations specified by simultaneous equations. An indication of how different this concept is from the normal view of causality in science is provided by the following comments of Kant:

> The principle of the causal connection among appearances is limited in our formula to their serial succession, whereas it applies also to their coexistence, when cause and effect are simultaneous. For example, a room is warm while the outer air is cool. I look around for the cause, and find a heated stove. Now the stove, as cause, is simultaneous with its effect, the heat of the room … Now we must not fail to note that it is the *order* of time, not the *lapse* of time, with which we have to reckon; the relation remains even if no time has elapsed. The time between the causality of the cause and its immediate effect may be [a] *vanishing* [quantity], and they may thus be simultaneous; but the relation of the one to the other will always still remain determinable in time. If I view as a cause a ball which impresses a hollow as it lies on a stuffed cushion, the cause is simultaneous with the effect. But I still distinguish the two through the time-relation of their dynamical connection. For if I lay the ball on the cushion, a hollow follows upon the previous flat smooth shape; but if (for any reason) there previously exists a hollow in the cushion, a leaden ball does not follow upon it. *The sequence in time is thus the sole empirical criterion of an effect in its relation to the causality of the cause which precedes it.* (Kant 1933:288, final emphasis added)

It was on this concept of causation – which of course remains the cornerstone of the physical sciences – that the marginalists turned their backs. In almost every case where a modern economist express a yearning for mathematics, we find that by this is meant the functional concept of causation and determination. The end result of the struggle for 'mathematics' was not the *general* adoption of mathematical methods into economics but the adoption of a very specific mathematics, namely the linear algebra of static systems. Indeed this took place at the cost of displacing the differential elements, containing at least in principle the prospect of a dynamic analysis of growth and change, with which Marx for one was perfectly familiar. The full irony of this is that now, with the substantial advances made in dynamic and particularly nonlinear dynamic mathematics, economics finds itself singularly unequipped to profit and thrashes around attempting to apply dynamical methods to inherently undynamical systems.

The variables in Walras's system are not linked in time. The prices which make up the equilibrium must be simultaneously derived at by means of a metaprocess external to the activity of trading. Hence the shadowy figure of the Walrasian auctioneer who 'cries' prices which serve as the parameters of the supply and demand functions, and the stipulation that trading may not commence until the market-clearing prices have been ascertained. The possibility outlined at the start of this article, that a path-dependent adjustment process may prevent equilibrium from ever being reached, is thus in effect ruled out of order.

Why did general equilibrium triumph as the marginalist paradigm?

The marginal school included non-equilibrium theorists among its ranks, and still does. The Austrian school including Böhm-Bawerk himself were staunch upholders of a dynamical account of economic

development.[3] The Austrian school remained resolutely opposed to the 'functional' price theory and Böhm-Bawerk held that the notion of mutual dependence involved 'a mortal sin against all the principles of logic' (Böhm-Bawerk 1892:359 cited in Kurz (1995))

An important question in the history of economic thought is the following: how did the final and evolved form of neoclassical theory the Walrasian-Marshallian concept of simultaneous determination and functional causation come to replace the classical concept of successive determination?

The final triumph of the marginal utility school in the 1930s coincided with two further decisive developments: the replacement of the cardinal utility principle with that of ordinal utility, and the quiet victory of the Walrasian-Marshallian principle of mutual-simultaneous or functional causation over the Austrian-Jevonian principle of successive causation.

That the marginalists were greatly troubled by the question of causation and temporality is clearly indicated by the debates in their ranks which accompanied the 'marginalist revolution'. As Dobb (1973: 184) Jevons' formulation that

    ⇨ Cost of production determines supply

    ⇨ Supply determines final degree of utility

    ⇨ Final degree of utility determines value

was strongly criticised by Marshall who commented that "if this series of causation really existed, there could be no great harm in omitting the intermediate stages and saying that cost production determines value." Heaven forbid. He ends up inverting Jevons' statement to read:

    ⇨ Utility determines the amount that has to be supplied

    ⇨ The amount that has to be supplied determines cost of production

    ⇨ Cost of production determines value

but his central objection is the assertion that what is required in place of any 'catena of causation' is an alternative notion of *mutual* determination of "supply price, demand price and amount produced". The 'catena of causation' has dogged all neoclassical debates ever since. But the end result was a triumph of the Marshallian 'mutual determination' concept of causality over that espoused not only by Marx and Ricardo but also by Jevons and indeed Böhm-Bawerk himself.

The notion which Marshall and Bortkiewicz extolled, which did indeed originate with Walras, and which Bortkiewicz successfully imposed on Marx, is the following: *time* is removed from the process of causation. In the equations of an equilibrium system, what persists is in reality a system of algebraical relations between variables: quantity in terms of price, price in terms of profit, profit in terms of wage, wage in terms of price; these equations at the end of the day express no more nor less than a set of mutual dependencies. It makes as much sense to read the equation

$$Q^D = a - bp$$

as meaning that a price of p 'causes' a demand of $a - bp$ as it does to say that a demand of Q^D 'causes' a price of $(a - Q^D)/b$. There is nothing in the equations as such from which we are entitled to deduce either one or the other and indeed 'schools' of marginalism have chosen to read the causation with equal skill in either direction.

The question that we now seek to answer is: how and why did it come about that this interpretation, and its attendant methodology, became the hegemonic expression and unifying factor among the wealth of concepts and schools that went into the founding of the marginal utility school? This is the subject of the next section.

Oh Say can't you see: money and equilibrium

Outside of the labour theory of value, probably no single idea has evoked a longer, or confused or controversial debate than what has become known as Say's Law of markets.

Not the least of its claims to fame is its inclusion by Keynes as a prime target of attack among the tenets of those he chose to label as 'classicals'. It is extremely easy to get lost in the byways and alleyways of

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[3] though according to Kurz, Sraffa's 1928 defeat of Hayek turned on revealing the hidden equilibrium assumptions in Austrian capital theory

discussion concerning whether Say really gave voice to the law that bears his name, whether he deduced it from the assumption of barter, what conception of money led him to voice it, and so on. Our concern here is not the formal history of the words that are used to express this law, but the role which the logical concept itself plays in the formation of the modern view.

It is therefore easiest, with Keynes, to begin from the most coherent (and hence most transparently wrong) expression of this law, conveniently supplied by J. S. Mill and cited on p18 of the *General Theory*:

> What constitutes the means of payment for commodities is simply commodities. Each person's means of paying for the productions of other people consist of those which he himself possesses. All sellers are inevitably, and by the meaning of the word, buyers. Could we suddenly double the productive powers of the country, we should double the supply of commodities in every market; but we should, by the same stroke, double the purchasing power. Everybody would bring a double demand as well as supply; everybody would be able to buy twice as much, because everyone would have twice as much to offer in exchange. (Mill book III Chap XIV Section 2, cited in Keynes 1973:18)

The notion which is here expressed, and to which Keynes wishes to draw attention, is the idea of exchange as an activity in which commodities are directly exchanged against one another. It does not alter the error of this view if we include, among the commodities figuring in the exchange, a commodity which also serves as the measure of value. The mere act of measuring one commodity in another commodity, be it gold, corn or seashells, does not convert the measuring rod into money. Among the distinctive features of money are:

❑ It is the universal means of exchange. All goods must be exchanged for money, and none are actually exchanged for each other.

❑ It serves not only as the measure but as the store of value. Hence, having parted with goods for money, the owners of money may and do choose not to spend it again.

❑ In its function as money it doubles its use value. It acquires a use distinct from that which it acquires from its natural properties (being usable for jewellery, make paper boats or to light the gas with), namely the use of serving as a means of purchase. It may be, and is, hoarded for this purpose regardless of its intrinsic usefulness.

All this is summed up in the quite well-known proposition that money is not a veil. A second, however, and less obvious problem arises from Say's law as expressed by Mill and, I think, almost undoubtedly espoused by Ricardo. This is the following. What is the logical relation between the idea that goods exchange for goods, and the idea that supply creates its own demand? This relation is by no means as transparent as at first sight it might appear.

On the face of it, the derivation runs as follows. If a community of owners, including producers, exchange among each other the goods they possess, then at the end of the process there can be no more goods than there were before. Place on one side of the equation all 'sold' goods where, by the word 'sold' we mean passing out of the hands of a person or agent for whom it is not a use-value, into the hands of a user. Place on the other side of the equation all 'bought' goods, meaning all goods acquired by those who use them. Then every good figures exactly twice, once as a bought and once as a sold good, once on one side of the equation and once on the other. The total of each good bought must therefore equal the total of each good sold.

This equation is at first sight not modified by the introduction of production. In this case, 'bought' goods must extend to include those goods that are used to produce other goods. If, however, production actually takes place, then there is a more substantial change. Production itself alters the amount of each good in existence. What guarantees, therefore, that society will not mistakenly transform all its available products into chewing gum or left-hand shoes? There is a presupposition, expressed in the idea that there may be temporary disproportions, that every good is a wanted good. Very well, let us assume that there is no temporary disproportion of any good, and that all produced goods are in fact wanted goods. In this case there is indeed a set of prices at which both production and exchange may take place, such that

❑ Every produced good passes from the producer to the immediate consumer

❑ All producers acquire in the exchange the goods they require to *reproduce* the goods they have just parted with

This passage from a Walrasian exchange economy to a Walrasian production economy has, nevertheless, brought about some fundamental changes in the way we are now forced to conceptualise this Millenarian

economy. For though all goods find a use, there are now two quite distinct types of use; use in consumption and use in production. The question then arises: what generates the demand for goods which are used in production?

To this question we must answer that the demand for production goods is generated by the act of production itself. Why does society require 10 tons of iron? Three to make wrought-iron gates for the gentry, two for the cleats on the workers' clogs, and five for the production of steel – no doubt eventually destined for the swords of the soldiery. But only half this demand is actually generated by direct use. The other five tons of demand is generated by the steel industry.

Now, however, a very peculiar conundrum emerges. Exactly how does the supply of steel generate the demand for iron? The steel does not exist at the time that the iron is purchased. This manner of thinking has, as its logical presupposition, the idea that supply in the future generates demand in the past. The normal relation of causality, that the past causes the present and the present causes the future, has to be suspended if this law is to operate effectively.

The passage from exchange economy to production economy is thus a great deal more fraught than is often supposed either in the economics textbooks or in the classic works on the question including Walras and Debreu, to name but two.

In particular, it would appear that the very idea of Say's law, or to put it another way, the habit of thinking about an economy whilst paying insufficient attention to the phenomenon of money, engenders a strong need to play fast and loose with the normal concepts of causation.

But Say's Law has a very precise mathematical expression. It is contained in the *n* equations of general equilibrium which assert that the excess demand for each good is precisely and only equal to the difference between the supply of that good and the consumption of that good. It is, so to speak, a virus in the BIOS of Walras' law. One cannot express Walras's equations, or the equations of any system of general equilibrium, without appealing to the notion that production introduces backward causation; that production in some sense *causes* to be demanded that which has in reality already been purchased. This notion promptly replicates itself all over any theory founded in an equivalent system of equations. Functional causation is an inescapable joint product of simultaneous representation.

Simultaneism as the necessary form of marginalism

The real problem faced by the marginal utility school was the following: on the one hand the cost of producing a good is established in time *before* the good is purchased; on the other, the price magnitudes which determine production decisions is established before the production process begins. Therefore first of all the equation

$$Q^D_t = a - bp_t$$

is functionally incorrect. Determination cannot possibly operate in the direction suggested by the organisation of the symbols. What actually happens is that a definite volume of monetarily effective social demand encounters a previously determined magnitude of social supply, and modifies the price accordingly. Moreover this social demand cannot retrospectively alter the actual cost of producing this social supply but can only modify – by its effect on market prices – the distribution between producers of the social labour which this social supply represents.

Anyone who sets about solving the cobweb problem immediately discovers this on attempting to write down the equation connection p_t and p_{t-1}. The first necessary step is to reorganise the above equation as

$$p_t = a - Q^D_t$$

and the next step is to recognise that Q^D is actually determined by the pre-existing quantities of products available and resulting from previous phases of reproduction. Moreover the equation

$$Q^S = c + dp$$

is temporally circumscribed. If a time dimension is assigned to the variables, it is required that the variables on the left have a time subscript later than the variables on the right. Supply decisions cannot depend on prices not yet established.

The direction of causation which the marginal utility school sought to establish, from consumer requirements to real social cost, thus required them to redirect the arrow of time. If Marshall's chain of causation were literally taken as both true and an accurate temporal description, we should be able to produce a Tachyonic version of 'dated utility' according to which the cost of producing any article could

be written as the sum of all the future demands that not yet placed upon it and its products. Alternatively, we could work backwards from today to the remote past and conclude that the cost of creation was merely the dated sum of the combined hopes and desires of all humanity for ever. The seventh day was needed.

Indeed it is more than coincidental that the founder of the modern intertemporal theory, according to which agents strike contracts for their future requirements, was non other than Böhm-Bawerk. The last economist with his feet planted squarely enough in the Nineteenth Century to recognise the logical impossibility of functional determination, he recognised that the only possible way that the future could determine the past in a temporal sequence, was to endow his agents with perfect clairvoyance and require them to bargain away the whole of time. With the crisis of high general equilibrium he has had the last laugh as rational expectations and 'intertemporal' economics have displaced their increasingly discredited predecessors.

Marginalism had to square the circle. On the one hand it required to make subjective utility, that is private consumption, the determinant of all other concepts of economics. Above all this meant that it had to formulate a concept of *costs of production* which was causally derived from the consumption requirements of society. But in any temporal formulation – and in reality – costs of production are antecedent to consumption decisions. This could in fact be reversed only in a society where social need is met according to a plan and where agents can therefore make their production decisions in full knowledge of the demand that these production decisions are intended to meet. In a society where production is a private activity organised without foreknowledge of whether or not the product will sell, the actual sequence of events is that first of all the goods are produced, and then the market determines whether or not they are necessary. At the time when goods are purchased, the quantities available are a known and given magnitude. It is not practically possible retrospectively to modify the quantities offered for sale and these quantities cannot therefore be a function of the price attained.

Two essential consequences followed. First of all, marginalism had to sacrifice time altogether. It had, as we shall see, to replace temporal by simultaneous causation. Second, it had to construct – or rather, eagerly seize upon – an intrinsically apologetic representation of the market according to which, since consumer requirements had become the determinant of social production, this social production in turn was logically and necessarily the direct reflection of social need. Misallocation became a logical impossibility. All had to be for the best in the best of all possible worlds. The Walrasian system lay to hand and fitted the bill to perfection.

The equilibriation of Marx

The transformation problem does not exist. It is a creation of Austrian economics. It is necessary only to recognise, as a growing number of writers do that when Marx (1981:309)wrote

> a deviation in prices of production from values arises for the following reasons:
>
> 1) because the average profit is added to the cost-price of a commodity, rather than the surplus-value contained in it;
>
> 2) because the price of production of a commodity that diverges in this way enters as an element into the cost-price of other commodities, which means that a divergence from the value of the means of production consumed may already be contained in the cost price, quite apart from the divergence that may arise for the commodity itself from the difference between average profit and surplus-value.
>
> It is quite possible, accordingly, for the cost price to diverge from the value sum of its elements of which this component of the price of production is composed

he meant exactly what he said. The contribution of constant capital to the value of a product arises from the use made by the capitalist of her or his capital, which in the course of the circuit of production starts life, and passes once each time in the circuit, in the form of money. It is a money sum which the capitalist spends on means of production and it is the value of the money that this sum represents – which, as the expression of a definite magnitude of dead labour-time, represents value every bit as much as the goods it purchases. To this is added the living labour of the worker, which enters the formation of the value of the product directly as abstract labour-time measured in hours. The resultant product may then sell for any arbitrary market price which in turn represents a value magnitude, an aliquot portion of the total value in society given by the ratio of the money it realises to the total price of all commodities offered for sale.

It is only if the issue is expressed simultaneously that the problem exists. Expressed temporally, the sequence we have just described reads as follows:

(M-C…P-C') $£X_t = £C_{t-1} + £L_{t-1}$

(C'-M') $£M'_t = £X_t + £E$

where £X is the value, expressed in money, of the product, £C is the value, expressed in money, of the sume expended on constant capital, £L is the value-product of labour, given as the hours worked by the individual labourer multiplied by the monetary expression of this labour, and £E is the price-value difference of the product concerned. The wage £V being also given as the value of the money paid to the labourers, surplus-value is given by

$$£S_t = £L_{t-1} - £V_{t-1}$$

and profit is given by

$$£\Pi_t = £M'_t - (£V_{t-1} + £C_{t-1})$$

At the social level $\Sigma£X = \Sigma£M'$ and it then follows that

$$\Sigma£\Pi_t = \Sigma£S_t$$

giving Marx's two equalities. This gives a completely distinct expression for price and for value either in terms of money or in terms of labour-hours. There is no redundancy and no inconsistency.

The 'transformation problem' arises from the following manner in which the problem has to be expressed in a simultaneous framework: since price and value must each be simultaneously but separately determined, we have to be able to write down an equation for each of them. Being a simultaneous equation, the price equation refers to a hypothetical society in equilibrium in which the unit prices of the commodities expressed in £M' at the end of production must be the same as the unit prices of these same commodities at the beginning of production. This gives rise to a system of n equations in the $2n$ unknowns p_j, $£E_j$ where $j = 1…n$.

To render this determinate, the vector of price-value differences £E must be given a further determination. This is provided by the Ricardian assumption of an actually equalised profit rate leading to an eigenvector equation that specifies relative prices and the profit rate.

The question then arises: what could values be? Following Böhm-Bawerk, we treat values not as the labour-time actually embodied in the commodities through the successive operations of purchasing the elements of constant capital and adding new labour, but as the prices for which goods *would* sell *if* the rate of profit did not equalise. These values, which for reasons that should be clear we will term Vertically-Integrated-Labour-Embodied values, correspond not only to different exchange ratios but to a completely different society, for in order for goods to exchange in these ratios they must also be produced in different proportions. The 'transformation problem' therefore consists in transforming one special set of prices derived from one hypothetical society ('simple commodity production') into another set of prices derived from another hypothetical society (long-run equilibrium).

This way of expressing the issue has become so universal in the world of academic marxist economics that it is useful to step back a few paces and what this approach has brought into being.

The grand classical synthesis

It is sometimes advisable to view a theory which one favours through the eyes of a theorist one does not. Writing in 1968, Martin Bronfenbrenner baldly states a view that has held sway, almost universally, at least since Sraffa's book:

> the Marxian system is easily transformable into a balanced Walrasian general-equilibrium one. In an algebraic restatement, the number of its equations equals the number of its unknowns; this is the *prima facie* evidence that both circularity and inconsistency have been avoided

The views expressed by Lange as early as 1935 illustrate how long this view has held sway:

> That Marxian economics fails is due to the labour theory of value, which can explain prices only as equilibrium prices (i.e. 'natural prices' in the terminology of Ricardo). Deviations of actual from 'natural prices' are more or less accidental and the labour theory has nothing definite to say about them. But the central problem of business cycle theory is one of deviation from equilibrium – of the causes, the course and the effect of such deviation. Here the labour theory of value inevitably fails (reprinted in Horowitz 1968:79)

Arestis (1994) defines, and argues against, what he terms the 'grand neoclassical synthesis'. This forms the orthodoxy around which economics closed ranks against Keynes after purging him of all his most unpalatable insights. A major contention of this article is that this synthesis extends further. Marx himself has been absorbed into what we by analogy would term the 'grand classical synthesis'. The tenets of this synthesis are:

Classical economics in its entirety constitutes a precursor of general equilibrium theory. Its object of study is a society in a steady state. Its 'natural prices' are an early attempt to establish the 'long-run equilibrium' prices of neoclassical theory.

Marx, the most developed classical, overcame the deficiencies of Ricardo in establishing that goods actually sold not for their vertically-integrated values but at a 'natural price' given by the price of production, prices determined by a uniformly equalised profit rate and a uniform technology.

There is a formal identity between the marxian system and general competitive equilibrium. Both solve for long-run equilibrium prices on the basis of a simultaneous equation system. Both are derived from the requirement of clearing all excess demand

Neoclassical equations are derived from the the psychological or subjective desires of consumers; the marxian system is derived from the technical structure of the economy via the requirement of 'simple reproduction'

Marxian labour values constitute either the vertically-integrated (direct and indirect) labour inputs of the society this system represents, or (which is mathematically equivalent) the prices which the system above would attain, were the profit rate to be zero.

Summary

It seems that when any economist of the neoclassical school wishes to inflict a truly devastating attack on another economist of the neoclassical school, the most secure way to do so is to discover in her or his theory a relationship that is alleged to be stable in time, and is not actually stable in time, whether this be the invariable measure of value, the Phillips Curve, the consumption function, the price level, the choice of technology, or whatever next serves to demolish the last of the great contenders. But the real question to ask is why, under that most unstable and unpredictable of all known systems – capitalism – any relationships should be stable in time at all except the one magnitude which cannot vary in time, namely time itself. Marxian and classical analysis, we would argue, with a theory of production costs rooted on the one universal factor of production – labour-power – and the one invariant measure – labour time – offers a basis worthy of examination as the rigorous basis for an economics truly free of arbitrary restriction.

Acknowledgements

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