On Working and Circulating Capital

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"Every capital is circulating capital"
(Marx, Grundrisse, p.620)

INTRODUCTION

The purpose of this paper is to investigate whether the terms “working” and “circulating” capital are two different terms for the same concept; or whether they should be considered two different terms for two different concepts. This purpose will be carried out in two steps. The first is devoted to an investigation of the use of the term “working” by the German economist Lowe (The Path of Economic Growth) and by some Austrian economists (Menger, Böhm-Bawerk, Hayek). The second is devoted to Keynes (A Treatise on Money). At the end of each step an assessment is made of the use of this term by these economists with an extension to the relationship between Lowe’s and Keynes’s treatment of their notion of working capital and two preceding streams of thought. These relationships run between Lowe and the Austrians, in the first case; and between Keynes and the classics (in Marx's sense), in the second. These assessments will eventually converge towards the conclusion that the terms “circulating” and “working” capital are *not* two different terms for the same notion; and that these two notions are different because they belong to two different *theories* and require two different *methods*. The paper argues that the two theories are the classical theory of *reproduction* and the modern theory of fluctuations as a special branch of the modern theory of *production*; while the two methods are the method of *vertical* integration and the method of *horizontal* integration. The identification of these theories and methods will be pursued more keenly than the differentiation of the two notions of “working” and “circulating” capital in that the aim of this paper is not to resort to the “bestiary” of our subject as if it were a “taxonomy”, let alone to the “taxonomy” as if it were a “machine” (see Shackle: The Years of High Theory, 1967, p.293).

1. LOWE

The notion of “working” capital is used by Lowe on the assumption that this term is a modern substitute for the old classical term of “circulating” capital:

"Working capital -he writes- is one of the neglected issues in neoclassical literature. As a matter of fact, very little of analytical use has been handed down to us even from classical writings. After two false starts by Smith and Ricardo, both trying to find a distinction between “fixed' and 'circulating' capital, the latter concept became more and more identified with the 'wage fund' and, thus, with one of the most dubious constructs of classical economics" (1976, p.48).

According to Lowe, the situation improved much later: first, through Taussig's Wages and Capital and Böhm-Bawerk's version of the structure of production (which according to Lowe "is really a special model of the circulation of working capital"); secondly, through the works of some economists of the 1930's and particularly through that of Keynes.

Lowe's treatment of working capital starts from what he calls "a census of an industrial community's wealth in physical terms". This wealth is classified into finished and unfinished goods depending on whether these goods are "ready for use" or not. Finished goods are in turn divided into the products of consumer-good industries (Sector II) which are final goods, and the products of equipment-good industries (Sector I) which are finished, but not final, goods. The equipment-good industries are in turn classified as industries that produce equipment for the consumer-good industries (Sector Ib) or for the equipment-good industries themselves (Sector Ia). The activities leading to a particular class of finished goods, whether final or not (say a dress, a loom or a steel mill), constitute a sector. This is depicted in Lowe's “schema of industrial production” (along with the sectors producing the corresponding equipment goods and machine tools) as consisting of four stages with the N’s, R’s and F's standing for the stocks of labour, natural resources and fixed capital (and the n's, r's and f's for their annual flows) combined in fixed proportions to produce different flows of finished goods. There are as many sectors as finished goods and as many stages as unfinished goods. Lowe's theory of production is therefore an analysis of the physical flows of production resulting from the application of physical stocks of wealth. Hence Lowe's distinction between fixed and working capital: while fixed capital is according to this terminology the stock of the finished goods which are not final, working capital is the stock of the unfinished goods which correspond to the output of the stages of each sector. Accordingly, while stage analysis is the study of the transformations undergone by working capital within a particular sector, sector analysis is the study of the transformations of the fixed capital of one sector in relation to the transformations of the working capital of another. Stage analysis and sector analysis are combined by Lowe to show the conditions required for the continuity of production. These conditions are studied with regard to “the circulation of fixed capital” and to the “circulation of working capital”[1]. The first type of circulation is a prerequisite for the latter. Its possibility is derived by Lowe from the existence of a commodity which may be able to perform in an industrial system the same self-reproductive role played by corn in a corn-economy. This commodity is found in machine tools, the typical output of sector Ia:

"Only if we can find in the mechanical sphere certain instruments that share with wheat and all other organic matter, including the human organism, the capacity for physical self-reproduction, can our problem be solved without historical regress. In other words, we have to look for some type of equipment that is technically suited, in conjunction with other productive factors, to reproduce itself as well as to produce other equipment. What we actually find is not one single such instrument but a comprehensive group of fixed-capital goods which are classified as machine tools. They are for industrial production what seed wheat and the reproductive system in animals are for agricultural production" (1976, p.30).

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[1] These conditions were initially studied by Wyler (1953) who also focused on the distinction (which is shared by Lowe and will be resumed below) between period of maturation (production) and period of observation. Wyler (like Lowe himself) conceives of the process of production in Robertson's sense of a sausage machine 'which it takes ten minutes to traverse, and which turns out one sausage per minute' (Robertson, 1959, p.85). Robertson's simple arithmetic implies that each potential sausage remains in the machine for five minutes and is worth half a completed sausage so that the aggregate value of the 'amorphous objects' in the machine at a particular moment is the value of five completed sausages, or of five minutes' output.

According to Lowe, stage analysis and sector analysis are mixed up by the Austrians. He argues that these economists look at the production of equipment as "a stage problem for the consumer-good sector" and concludes that this is "equivalent to treating fixed capital as if it were working capital"[2]. This treatment of fixed capital is at the roots of what Lowe calls the linear "imperialism" of the Austrians. i.e. their tendency (which is particularly clear in Böhm-Bawerk) to look at production as a one-way avenue from labour to consumption goods.

2. LOWE AND THE AUSTRIANS: AN ASSESSMENT

Lowe's elaborate scheme of production and use of the notion of working capital may be used as litmus paper for focusing, beyond Lowe's own horizon, on the Austrian theory of capital as well as on some differences between this theory and the theory of the classics. From this broader point of view it may be observed that Lowe's criticism of the Austrians boils down to an acknowledgement of a particular aspect of their theory; and that a shortcoming equivalent to what he believes to be a feature of their thought is embedded in the structure of his own scheme. In what follows this point will be developed in two stages: first, with regard to the Austrians; secondly, with regard to Lowe himself.

<u>As for the Austrians.</u> It should be acknowledged that their tendency to look at production as a one-way avenue from labour to consumption goods and, accordingly, their tendency to look at fixed capital as working capital descend from the method of vertical integration which they actually adopted in their scheme of thought (although they never mentioned it explicitly -as they did with the term “working capital” itself). On the other hand, it should be noted that the method of vertical integration was tacitly adopted by the classics themselves. The classics, however, made a sharper use of it than the Austrians. To begin with, they were led by this method to focus on the economic, rather than on the

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[2] This interpretation of the Austrians is quite common and is easily summed up in Haavelmo's words whereby "the Austrian theory of capital tried to squeeze even the instruments of production into the framework of 'final goods en route'" (Haavelmo, 1960, p.79).

technical, beginning of what the Austrians will call “time-consuming methods of production'. This beginning is the wages fund (free capital) as command of productive labour, rather than labour and land (pure inputs) as original factors of production. In this sense the classical theory of production is essentially a theory of reproduction of the final goods (national revenue) of which the wages fund (the command of productive labour) is just a fraction. In the context of this theory capital presents itself as circulating or fixed depending on whether its reproduction occurs in a single period or in a longer span of time. Unlike the classics, the Austrians focused on time-consuming methods explicitly. They failed, however, to frame this concept in the context of reproduction of final goods. What they did was, rather, to confine their treatment of these methods to the context of what should be properly called the production (however vertically integrated) of these very goods[3]. This is the fundamental reason of the fact (noticed but left unexplained by Lowe) that the Austrians eventually dealt with (what was to be called) working capital as the only form of capital. From this point of view their real shortcoming consists less in what is claimed by Lowe, i.e. in their looking at production as a one-way avenue from labour to consumption goods, than in their inability to give up their view of capital as working capital for the classical view of capital as circulating capital (an inability that Lowe is unable to grasp due to his inability to detect the difference between these two notions). This inability, it should be noted, descends from their broader failure to look at production in a classical sense, i.e. as a one-way avenue from consumption goods to consumption goods (reproduction of national revenue). It has been a great misfortune that the Austrians neglected

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3 Schumpeter seems to be aware of this difference when he presents Jevons's theory of production as a bridge between the classics and the Austrians: "Jevons -he writes in this connection- knew better than to let labour be added to a growing intermediate product until a finished consumers' good emerges that is consumed at once: as stated already, he included the process of 'uninvestment' so that his period was not simply a period of production" (1954, p.908).

the classical theory of reproduction to which the notion of circulating capital essentially belongs[4].

<u>As for Lowe</u>. His tendency to look at production as a whirlpool agitated by self-reproducing machine-tools and, accordingly, his tendency to look at fixed capital as combined with working capital for the production of finished and unfinished goods points to the method of horizontal, rather than of vertical, integration. Indeed, however much Lowe's analysis of the circulation of fixed and working capital may succeed in providing a view of capital contrasting with the linear "imperialism" of the Austrians, and however much it may succeed in tracing the beginning of production back to the work of machine tools, it fails to go far enough as to provide a view of capital similar to the view of the classics. For what, according to this view, does circulate is capital as circulating capital: which, in a vertically integrated economy, is nothing but the wages fund (free capital). Speaking of the methods of horizontal and vertical integration in the context of the theory of capital, it results that the distinction (which was introduced by Hawtrey in Keynes' footsteps and to which we shall return below) between <u>instrumental</u> and <u>working</u> capital[5] is to the method of horizontal

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[4] This may be at the root of the recurring misuse of words and concepts in the language of economists with regard not only to 'working' and 'circulating' capital but also to 'period of production' and 'period of reproduction', not to speak of the distinction between 'finished' and 'final' goods. In this sense a non-contradictory use of the Austrian and classical concepts is badly needed. The following statement has been constructed with a careful selection of words so as to squeeze out the most recurring ambiguities: <u>The longer the period of production of finished goods (ploughs or corn) and the longer the period of reproduction of final goods (corn) the greater is the amount of capital circulating from the beginning to the end of this period, and the greater is the amount of working capital goods required at a particular moment of time to carry out the process of production of finished goods</u>.

[5] These two kinds of capital are contrasted with each other by Hawtrey (who sharply defines them with regard to a moment of time as well as in the context of time-consuming methods of production): "Even if we conceive of the use of capital -he writes in this connection- as essentially a device for utilizing the technical advantages of a more prolonged period of production, we still find a place for the conception of capital as an accumulated stock of wealth. At any moment of the productive process those productive operations which are already past will have left their mark in some material objects which embody their contribution to the process as a whole. These material objects fall into two broad classes, instrumental capital and working capital' (1937, p.9). Now it should be noted that it is from these 'material objects' that a theory

integration what the distinction between free and invested capital (which was introduced by Jevons in the footsteps of the classics and which includes the distinction between circulating and fixed)[6] is to the method of vertical integration. The two methods, however, may be adopted with different intensities in the two cases. While, for instance, the method of horizontal integration may be pushed to the limit of leaving instrumental capital out of the picture the method of vertical integration may be exploited to show the scope and sophistication of the classical notion of the wages fund. Now, leaving aside the weaknesses of, and the impoverishments undergone by, this "dubious construct" (in Lowe's terms) it should be noted that at the core of the wages fund doctrine is the notion of the labour market as a meeting place between the supply of free capital for labour and of labour for consumption goods: hence the determination of the wage rate and the possibility that this rate may increase, remain constant or decrease as the "funds destined for the maintenance of labour" vary with a given labour-force.

There is no trace of the role of this market in Lowe's "schema of industrial production". It is true that the conditions for the "continuity of production" are spelled out in his scheme as the conditions for the reproduction of fixed and working capital. But these conditions are relevant for the continuity of production as a technical, rather than as an economic, phenomenon: the coefficients n_a, n_b and n_z play in this model the role usually assigned to production coefficients in a von Neumann model. In this sense they reveal a closer similarity between

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of fluctuations must begin and that such a theory is necessarily focused on what happens in a predetermined period of time in which the structure of fixed capital is given. This point will be resumed below with regard to Keynes' and Robertson's treatment of working capital. See in particular note 9 below.

6 It is interesting to note that while the first distinction properly runs between, and should be most correctly formulated in terms of, instrumental and capital goods the second distinction is most correctly formulated as it is normally used, i.e. without the term 'goods' after the term 'capital'. The analytical importance of this observation will become clear once it is acknowledged that the fate of capital proper (i.e. free capital) is to be invested (and, consequently, to become either circulating or fixed in the sense implied in Jevons' railway example to be discussed below) whereas the function of capital goods is to cooperate with labour either as 'active' or as 'passive' tools of production.

Lowe and the Austrians than between Lowe and the classics. For production is viewed by the classics in the context of the reproduction of final goods (national revenue) and, therefore, in the context of a one-way (but circular) avenue going from the consumption goods exchanged for labour at the beginning (rather than from pure inputs or machine tools) to the final (rather than finished) goods returned by labour at the end of time-consuming methods of production (roundaboutness in a classical sense). In this context every capital does circulate (and therefore presents itself as circulating capital) while fixed capital is circulating capital of a special kind (a kind, that is, the circulation of which requires a longer period of time).

It goes without saying, however, that when the economist's point of view shrinks from the process of reproduction of national revenue to the section of it which is contained in a period of arbitrary length (period of production or period of process) the distinction between circulating and fixed capital vanishes. Then it is replaced by the distinction between instrumental and working capital (goods). The shift from the former to the latter distinction is associated with a change in the very meaning of “period”: while this is the period of reproduction in the former case, it becomes in the latter what has been called by Lowe (1976) a period of observation and by Hicks (1981-83, Vol.II, Ch.18) an accounting period[7]. In the light of these distinctions it can be concluded that the more one departs from the method of the classics and the more one focuses on the functioning of an advanced economy the more the period of reproduction is replaced by the period of observation, the more the period of observation falls short of the average period of reproduction, and the more the distinction between circulating and fixed capital is turned into the distinction between instrumental and working capital (goods).

3. KEYNES

[7] After noting in the article cited above that the task of dynamics is 'to superimpose the pattern of change, which is one time-pattern, upon the underlying pattern of capital-using production, which is another' Hicks argues that 'in all its main forms, modern economic dynamics is an accounting theory' (Ibid., p.221). See also note 10 below.

Lowe's "census of an industrial community's wealth in physical terms" becomes in Keynes' Treatise on Money a census of the "stock of real capital or material wealth existing at any time":

"We shall call goods in use -he writes in this connection- fixed capital, goods in process working capital, and goods in stock liquid capital. Working capital is necessary because some goods take time to produce; and fixed capital is necessary because some goods take time to use or consume. Liquid capital is only possible when goods will 'keep'" (1930, Vol.1, p.116).

This distinction is formulated by Keynes in the light not only of his own distinction between “available” and “non-available” output (available, that is, for immediate consumption), but also of the distinction between final and finished goods mentioned above and shared by Keynes as well as by Lowe. In this sense the stock of real capital is entirely made up of non-available output (past and present) while that part of the unfinished goods which is not fixed capital consists partly of working capital and partly of liquid capital (by which Keynes means "surplus stocks" only, i.e. those stocks which are not regarded as belonging to working capital for they are not required for running an "efficient business").

It is important to note that Keynes' distinction is first provided in Volume 1 of his Treatise and is later expanded in Volume 2, Book VI. The title of this Book 'The Rate of Investment and its Fluctuations' provides a clue for the rationale of such a distinction. This rationale stems from the very definition of the rate of investment given in Volume 1 as "the net increment during a period of time of the capital of the community" and hinges on the different forces which, in the context of a disequilibrium between savings and investment in a monetary economy, affect the fluctuations of this rate when the capital to increase is of the fixed, working or liquid variety. After noting the close correlation between fluctuations in the amount of working capital and fluctuations in the volume of employment Keynes proceeds, first, to a discussion of the practical importance of changes in the working capital of a community, and, later on, to what he calls “the theory of working capital” which ends up in two sections titled “productive and unproductive consumption” and “the true wages fund”.

The classical terms of productive and unproductive consumption are reutilized by Keynes with a meaning which has nothing to do with the old framework. This meaning, however, is in perfect consistency with the new context of Keynes' analysis focused as it is on the functioning of a monetary economy with unemployment resulting from a disequilibrium between savings and investment. In this context those two terms are reutilized in connection with the different requirements of investment in working capital (with given fixed capital and unemployment) relative to the requirements of investment in fixed capital:

"An increase in working capital resulting from an increased volume of production and employment (and not from a lengthening of the productive process) -he writes in this connection- does not involve an equal abstention from, or a reduction of, current consumption by the community as a whole, as does an increase in fixed capital, but mainly a redistribution of consumption from the rest of the community to the newly employed. Investment, which requires a redistribution of current consumption but no reduction in its aggregate, may be said to substitute productive consumption for unproductive consumption" (1930, Vol.2, p.111).

4. KEYNES AND THE CLASSICS: A FURTHER ASSESSMENT

Keynes' distinction between productive and unproductive consumption is confined to the relation between the rate of investment in working capital and the level of employment in the short run in which the structure of fixed capital is given. In dealing with this distinction and relation, however, Keynes goes so far as not only to distinguish (unlike Lowe) between his "working capital" and the "circulating capital" of the classics, but also to contrast the two concepts of capital in the light of what he believes to be "the true wages fund". This is suddenly done in a long and crucial passage which is worth quoting fully (sentences are singled out by letters for references in the subsequent discussion):

"[a]Counsel has been darkened in this matter by a famous confusion of the classical economists and by the failure of their successors, who detected the confusion, to perceive the truth which lay, nevertheless, at the centre of the confusion. The classical economists emphasised the distinction between fixed capital and what they called "circulating capital". But they did not clearly distinguish my third category of capital, namely, 'goods in process' or working capital, which is not identical with their "circulating capital"[a]. [b]They appreciated the necessity of a fund to support labour during the period of production[b]; [c]but they overlooked the continuous character of production and output[c] [d]and confused the working capital, which is provided by continuously feeding the flow of available income back into the machine of process, with the liquid capital or goods in stock at the commencement of any period of process[d]. [e]They did not clearly perceive that the capital to keep labour in employment is found, not in the stocks of goods already available[e], [f]but by decisions which have the effect (a) of determining what proportions of the goods emerging from the machine of process are in fixed and liquid form respectively[f], [g]and (b) of applying the flow of available income in one way instead of in another, namely, by supporting productive consumers instead of unproductive consumers[g]" (Keynes, 1930, Vol.2, p.114; Keynes' italics).

The issues raised in this passage are so far-reaching and the wording or the argument so questionable that they require a closer scrutiny. This will be done in four steps.

First, it should be noted that Keynes' notion of fixed capital as defined above is even more distant from the corresponding notion of the classics as their circulating capital is from Keynes' working capital itself (on which more below). While Keynes' definition is focused on the goods which "take time to use or consume" and encompasses therefore all the goods that are <u>durable</u> (and nothing else, as required by the short-run theory of fluctuations and agreed-upon by other economists of the 30's including Hayek), the notion of the classics is best rendered by Jevons' observation whereby one should not say that "a railway is <u>fixed capital</u>, but that <u>capital is fixed in the railway</u>" (1871, p.264): a remark which invariably points to the wages fund as the typical form of capital at the beginning of its transformations (free capital). If Keynes were demanding from himself as much consistency as he calls for in the classics he should have abandoned the term 'fixed capital' (which was developed in a different context than his) for the more appropriate term of "instrumental" capital (which, indeed, was introduced by Hawtrey to contrast it with working capital in the context of the theory of fluctuations).

Second, it should be noted that Keynes' expressions "machine of process" and "period of process" in sentence [d-d] above have nothing to do with the expression "period of production" in sentence [b-b]. Indeed a distinction between these two periods is so important that the very notion of working capital is either unnecessary or misleading without it. This distinction, though implied by Keynes himself in his treatment of working capital and of productive and unproductive consumption, is made explicit in a passage where Hawtrey speaks of the "period of process" as distinct from -and indeed as a section of- the "period of production":

"One part, which we shall call the period of process, is the time occupied by the productive processes applied to the material composing the commodity itself, without regard to the time taken in the construction of the instruments used in those processes. It is the period of production as it would be if every instrument were treated as an original factor of production and if the only capital were working capital. The rest of the period of production is that which is composed of the respective ages and periods of production of the instruments used" (1937, p.11)[8].

Now, with regard to Keynes' passage above, it should be objected

i) that even Hawtrey's period of production is not the period of reproduction of the classics;

ii) that working capital is to the period of process what circulating capital is to the period of reproduction; and

iii) that working capital and the period of process belong to the analysis of the short run as much as circulating capital and the period of reproduction belong to the analysis of the long run.

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[8] The confusion between period of process and period of production seems to be at the root of the crucial misunderstanding between increases in working capital and increases in fixed capital in Hayek's trade cycle model (Meacci, 1994). This misunderstanding is not absent from the mind of other economists. See for instance Robertson (1959, ch.V) whose 'average period of production of goods' is, properly speaking, a period of process, and whose definition of what he calls 'circulating capital' is, properly speaking, a definition of working capital. "There is in a country at any moment -he writes in connection with his sausage-machine view of production- a great mass of unready goods, on which labour and ingenuity of various kinds have been spent, but which are not yet ripe for the consumer's hands or mouth. This mass of circulating capital, as it is called, includes not only the stocks of shirts in the shop-window and the stocks of raw cotton in the warehouses and ships, but the half-worked fabric on its way through the spindles and the loom" (Ibid., p.85). It is interesting to note that the chapter where these misunderstandings are committed is designed by Robertson to deal with the 'mechanics of banking' (Ibid. p.179) and particularly with the phenomena of credit and inflation, two typical ingredients of fluctuations.

On the other hand, if it is true that Adam Smith (followed by many others) often speaks of circulating capital as if it consisted of the same goods which properly belong to what is called today “working capital” this is not due to what Keynes believes. Rather, it stems from the fact that Smith used to deal with circulating capital sometimes from the point of view of an individual and sometimes from the point of view of the whole society. Unfortunately, the very meaning of the term 'circulation' changes in the two cases: it refers to a <u>change of hands</u> in the former case, to a <u>change of matter</u> (reproduction proper) in the latter. The beginning and end of circulation are consequently denoted by money capital and money income, in the former case; and by the final goods making up, respectively, the wages fund (free capital) and national revenue, in the latter. Furthermore, it is true that the point of view of the whole society is adopted by Keynes himself in most of his work. But even in this perspective the aims of Keynes and the classics remain very different. For while the purpose of Keynes is to investigate the fluctuations of production in a monetary economy where the structure of fixed capital is given (short run) the purpose of the classics (Smith) was to investigate the growth of national revenue in a real economy where the structure of fixed capital is still to be determined.

Third, it can be argued that while stressing the confusion of the classics between circulating and working capital along with their confusion between the wages fund as a flow and the wages fund as a stock, Keynes ends up by confusing the two confusions. For it is true that the classics overlooked the continuous character of production and output as argued in c-c above. They were indeed more interested in <u>advance economics</u> than in <u>synchronization economics</u>. But the reason why they did overlook synchronization is, indeed, overlooked by Keynes himself. For the classics (Smith) focused on the causes of the wealth of nations, and therefore on the principles of change (accumulation) rather than, as Keynes eventually did, on the functioning of the economy or on the complications entailed in this functioning by change itself - and particularly by changes induced by money as a store of value. On the other hand, Smith's inclusion in his concept of circulating capital of goods which properly belong to the modern concept of working capital (an inclusion which, it must be admitted, did affect the thought of most other classics, excluding Marx)[9] is not due to the fact that he confuses a stock with a flow. Rather, it descends from his tendency to express himself against his own distinction between the individual and the social point of view. For the role played by a stock when the point of view is that of an individual is played by a flow when the point of view is that of society (as Smith himself implies when he argues that a man who neither consumes himself nor has others consume the "stock which he possesses" -a stock, that is, of goods, and not of money in Keynes' sense- must be a fool). Furthermore, what is circulating capital from the point of view of

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[9] From what is argued above it follows that Smith's confusion between circulating and (what will be called) working capital may be associated with his misunderstanding between what Marx calls 'circulating capital' and 'capital of circulation' and, more generally, between the 'material forms' of capital and its different 'economic functions' (see Meacci 1989, 1991). The misunderstanding between the material forms and the different functions of capital, and therefore between circulating and working capital, has a long story and is, to a large extent, a matter of words. A most recent episode is provided by Blaug who presents Bohm-Bawerk's thought as follows: "Most of his reasoning -he writes- makes much better sense when it is realized that his 'capital' is only circulating capital, that is, funds tied up in the forms of goods in process. The function of working capital is, not to cooperate with labour in production, but as it were to support labour during the interval between the application of inputs and the emergence of output" (1990, p.499). In view of the distinctions highlighted above this sentence should be reworded as follows (italics are used to stress differences): 'Most of his reasoning makes much better sense when it is realized that his 'capital' is only working capital, that is, funds tied up in the forms of goods in process. The function of working capital is, not to support labour during the interval between the application of inputs and the emergence of output, but to cooperate, along with instrumental capital albeit in a difference sense, with labour in production'. Indeed Blaug's wording leads not only to an identification of circulating with working capital but also to a broader misunderstanding of the role of working capital in production for the role of the wages fund in reproduction. For a consistent use of the notion of working capital see, on the contrary, Hicks (1950, ch.IV), and for a proper use of the terms circulating and working capital as pointing to two different notions belonging to two different theories see again Hicks (1965, Part I, chapters IV and X in particular) and Hicks (1985). In this connection it may be added that Hicks' principle of self-containedness as discussed in these works is at the root of the notion of circulating capital in two different senses depending on whether this principle holds from the point of view of an individual (in which case capital presents itself as money capital at the beginning of its circulation) or of the whole society (in which case it presents itself as free capital).

an individual may not be circulating capital from the point of view of society[10]. Keynes, however, is so unaware of this confusion that he believes that Smith's general aim (the growth of wealth) is the same as his (the fluctuations of wealth), and that Smith's particular starting point (the stock which a man possesses) is the same as his “liquid capital” (which in sentence [d-d] above is however identified, to confuse things further, with Keynes’ own and different notion of “normal” stocks). Thus what the classics "did not clearly perceive" (sentences [ee] and [ff] above) was what Keynes does here actually confuse, i.e. the distinction between the period of process (in which instrumental capital goods are given) and the period of reproduction (in which the production of instrumental capital goods are considered as a step in the time-consuming reproduction of national revenue). But if "they did not clearly perceive" this distinction is, again, because they were concerned with (what happens to capital in) the period of reproduction and not at all with (what happens to unemployment in) Keynes’ period of process.

Fourth, given Hicks' remarkable insight that our theories are like "rays of light, which illuminate a part of the target, leaving the rest in a darkness" so that "we must work, if we are to work effectively, in some sort of blinkers" (1975), it can be concluded that Keynes and the classics used to wear two different types of blinkers. Keynes seems indeed to be wearing <u>by himself</u> two different types of blinkers in the passage quoted above: one for focusing on (what happens to unemployment in) the period of process, the other for preventing himself from realizing that the blinkers of the classics were aimed at a different target. If, however, all types (and particularly Keynes’ second type) of blinkers are dropped it should be easily concluded

i) that Keynes’ working capital is indeed different from the circulating capital of the classics;

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10 See in this connection the preceding note and reconsider it in the light of Hawtrey's hitherto unnoticed (and unexplained) conception of circulating capital as made up of 'working capital and net cash resources' (1937, p.139).

ii) that even Keynes' fixed capital is, in spite of Keynes' belief and terminology, different from the classical concept (for fixed capital is to Keynes "goods in use" and nothing else); and

iii) that the classical and keynesian blinkers require two different notions of capital for capital is, according to Smith and the classics, neither goods in use, nor goods in process nor goods in stock as Keynes implies in his classification (1930, p.115). Rather, it is that part of available output (in the sense suggested by Keynes himself for very different purposes) which is advanced to labour for its reproduction in a more or less distant future.

This basic difference is not understood by Keynes if only because his ray of light is focused on the fluctuations of wealth within a given period of time.

CONCLUDING REMARKS

In the light of the distinction between working and circulating capital discussed above and of the different theories to which these two notions belong it becomes possible at this point to single out some similarities and differences between Lowe, Keynes, the Austrians and the classics. In particular, we can now identify some essential elements which, on the one hand, Lowe and Keynes have in common against the Austrians; and, on the other, Lowe and the Austrians have in common against the classics. This will be done in this section on the basis of the distinction, noted above, between period of <u>observation</u> and period of <u>maturation</u> as well as of the distinction, argued above, between period of maturation and period of <u>reproduction</u> (of national revenue).

Take the period of maturation first. This notion is essentially shared by Lowe and the Austrians but does not coincide with the period of reproduction of the classics. For the production of particular goods (including physical reproduction, such as that of plants through their falling seeds) is one thing (even when it is thought to start from pure inputs); while the reproduction of national revenue (through the exchange of free capital for labour) is another. In this sense, however, the Austrians look closer to the classics relatively not only to Keynes (if only because their period of maturation is longer than the period of process and includes the production of durable goods) but also to Lowe (if only because they have their own theory of the labour market and their own notion, however wanting, of the wages fund).

Now take the period of observation. If its length were the same as that of the period of reproduction no room would be left for the distinction between working and instrumental capital goods. Since, however, the period of reproduction becomes longer and longer, or more and more differentiated from good to good, as the variety of final goods increases, and since the period of observation becomes accordingly shorter and shorter relative to the (average) period of reproduction, it should come as no surprise that the "rays of light" of modern theories are focused more and more on "working" and 'instrumental" and less and less on "circulating" and "fixed" capital. This helps understand the validity and limits of Lowe's observation on the imperialism of the Austrians. For it is true that the Austrians lack the notion of circularity. Lowe's own notion, however, falls short of the notion of the classics. For the circularity that occurs in a given period of observation is one thing, the circularity that occurs in a complete period of reproduction (from consumption goods to consumption goods) is another. The former may be called "whirlpool circularity", the latter "pipeline circularity": while the former concerns the interactions between the different molecules of water (finished and unfinished goods) once some of it is injected into a whirlpool of given size (period of observation), the latter concerns the flow of water through the hydraulic system as a whole (time-consuming methods of production), i.e. from the moment some water is injected into the whirlpool to the moment it returns increased (rather than diminished) to the point of injection.

Now it should be noted that what Lowe and Keynes (and many others) have in common against the classics is the focus on what happens in a period of observation rather than on what happens in the period of reproduction. While, however, the purpose of Lowe (and the Austrians) is to deal with <u>production</u> (rather than with reproduction), Keynes focuses on <u>fluctuations</u>. Furthermore, the period of observation is usually shorter in Keynes than in Lowe. For while Keynes is mainly concerned with what happens in the period of process Lowe's concern is with the period of production (maturation). Lowe's period of production, however, falls short of the classical period of reproduction for, however long, it is not long enough to include the reproduction and reinvestment of the wages fund. In both cases the gap is theoretical: it is determined, in the first case, by the lack of the notion of reproduction of fixed capital (which is studied by Lowe and overlooked by Keynes); and, in the second case, by the notion of reproduction of free capital (which is studied by the classics and overlooked by Lowe).

To bring these conclusions to an end all the arguments above can be synthesized in the light of a methodological distinction put forward by Hicks (1974). This is the distinction between Materialism and Fundism. If this distinction is applied to the authors discussed in this chapter, the following conclusions emerge: while Lowe and Keynes belong to Materialism, and the Austrians partly to Materialism and partly to Fundism, the classics fully belong to Fundism. On the other hand, if the distinction between Fundism and Materialism is applied to concepts and theories rather than to authors, a further regrouping becomes possible according to the following dichotomy: while the concepts of period of observation, period of production, period of process, horizontal integration, working and instrumental capital (goods) are benchmarks for, or belong to, Materialism (along with the theory of production, input-output analysis and the theory of fluctuations), the concepts of period of reproduction, vertical integration, free and invested capital, circulating and fixed capital are benchmarks for, or belong to, Fundism (along with the classical theories of capital, reproduction and growth).

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